150063 - 413816
Attachments A-H

July 1, 2016
Project No. 605174001

Mr. Todd Martin
Maricopa County Air Quality Department
1001 North Central Ave, Suite 125
Phoenix, Arizona 85004

Subject: Non-Minor Modification of Non-Title V Air Permit
Shutterfly, Inc.
7195 South Shutterfly Way
Tempe, Arizona 85283
MCAQ Permit #150063

Dear Mr. Martin:

Attached please find an application for non-minor modification to the Non-Title V Air Permit #150063, which was originally issued by your department in 2015. The purpose of this modification is to add 12 new digital presses (HP Indigo 10000 Series) to the equipment list. Original HP 6000 and 7000 Series presses will remain. The new equipment is designed to replace 22 Xerox presses that do not utilize VOC materials, and are not part of the existing air permit. Because of the beneficial relationship between Shutterfly and HP, the overall capacity of the HP presses far exceeds the anticipated production in the next 5-year air permit cycle; however, potential-to-emit (PTE) calculations of the maximum HP press capacity and emissions at 8,760 hours per year can be provided upon request.

If you have any questions or comments concerning the attached air permit modification application, please contact us at your convenience.

Sincerely,
NINYO & MOORE

Mark J. Guatney, PE, CHMM
Senior Environmental Engineer

MJG/hmf

Attachments: Attachment A – Non-Minor Modification Application Form
Attachment B – Site Plans
Attachment C – Process Flow Diagram
Attachment D – Operations & Maintenance Plan
Attachment E – 12-Month Facility Emissions Thru May 2016
Attachment F – Estimated Emissions of New Equipment, and Future Facility Emissions Estimate with Growth Factor
Attachment G – HP Indigo 10000 Digital Press Information
Attachment H – TRESU Americas Chiller Information
Attachment I – Safety Data Sheets (MSDS or SDS)

Distribution: (1) Addressee (Hard Copy)
(1) Emerly Leano-Lay, Shutterfly, Inc. (Electronic Copy)

ATTACHMENT A

NON-MINOR MODIFICATION APPLICATION FORM

U.S.P.S Money Order $4200 #23520571977

AQ 160001498

Maricopa County

Air Quality Department

JUL 01 2016

Return completed form to:
Maricopa County Air Quality Department
1001 N Central Ave, Suite 125, Phoenix, AZ 85004
Phone (602) 506-6010 Fax (602) 372-0587
AQPermits@mail.maricopa.gov

NON-MINOR MODIFICATION TO NON-TITLE-V PERMIT

Documents may be submitted in person at:
1001 N. Central Ave. Suite 125, Phoenix, AZ 85004 or 501 N. 44th Street, Suite 200, Phoenix, AZ 85008.

FOR OFFICIAL USE ONLY

Date Received: Log Number:

NOTIFICATION OF NON-MINOR PERMIT REVISION ✓

(As required by A.R.S. §49-480 and Maricopa County Air Pollution Control Regulations, Rule 200)

READ INSTRUCTIONS FIRST. ALL APPLICANTS MUST COMPLETE ITEMS 1 - 20 AND EACH APPLICABLE SECTION A - Z.

1. Business Name (as filed with the Arizona Corporation Commission) :

2. Is this a portable source?
- ☐ Yes (If Yes, provide the current site information in items 2a, 3 and 3a)
- ☒ No (Complete items 2a, 3 and 3a)

2a. Address of site: 7195 S. Shutterfly Way

City: Tempe State: AZ Zip: 85283

3. Contact person at site: 3a. Telephone at site: (480) 494-4204

4. Type of ownership: ☒ Corporation ☐ Partnership ☐ Sole Owner ☐ Government ☐ Other-specify:

5. Ownership or legal entity
Name: Shutterfly, Inc.
Address: 2800 Bridge Parkway
City: Redwood City State: CA Zip: 94065

6. Ownership contact:
Name: James Nelson
Phone: (480) 282-1731 Fax:

7. Send all correspondence (including invoice and permit) to:
Company: Shutterfly, Inc.
Address: 7195 S. Shutterfly Way
City: Tempe State: AZ Zip: 85283
Attention: Emerly Leano-Lay

8. SIC (Standard Industrial Classification) or NAICS (North American Industrial Classification) code(s): 323000, 323111

9. Existing Air Quality permit number for this site: 150063 – 413816

10. Brief description of business or process at site: Printing of digital photo products and services.

11. Operating Schedule: Hours per day: 24 Days per week: 6 Weeks per year: 52

12. Projected start-up date (new facilities): Aug 1, 2016

13. The authorized contact person regarding this application is:

Name: Emerly Leano-Lay Phone: (480) 494-4204
Title: EHS & Training Manager Fax: (480) 491-0780
Company: Shutterfly, Inc. Email: eleanolay@shutterfly.com

14. I certify that I am familiar with the operations and equipment represented on this application and attachments, and the information provided herein is true and complete to the best of my knowledge.

Signature of owner or responsible official of business: James Nelson Date: 7/1/2016

Type or print name and title: James Nelson, Director Manufacturing

Revised 02Jun16

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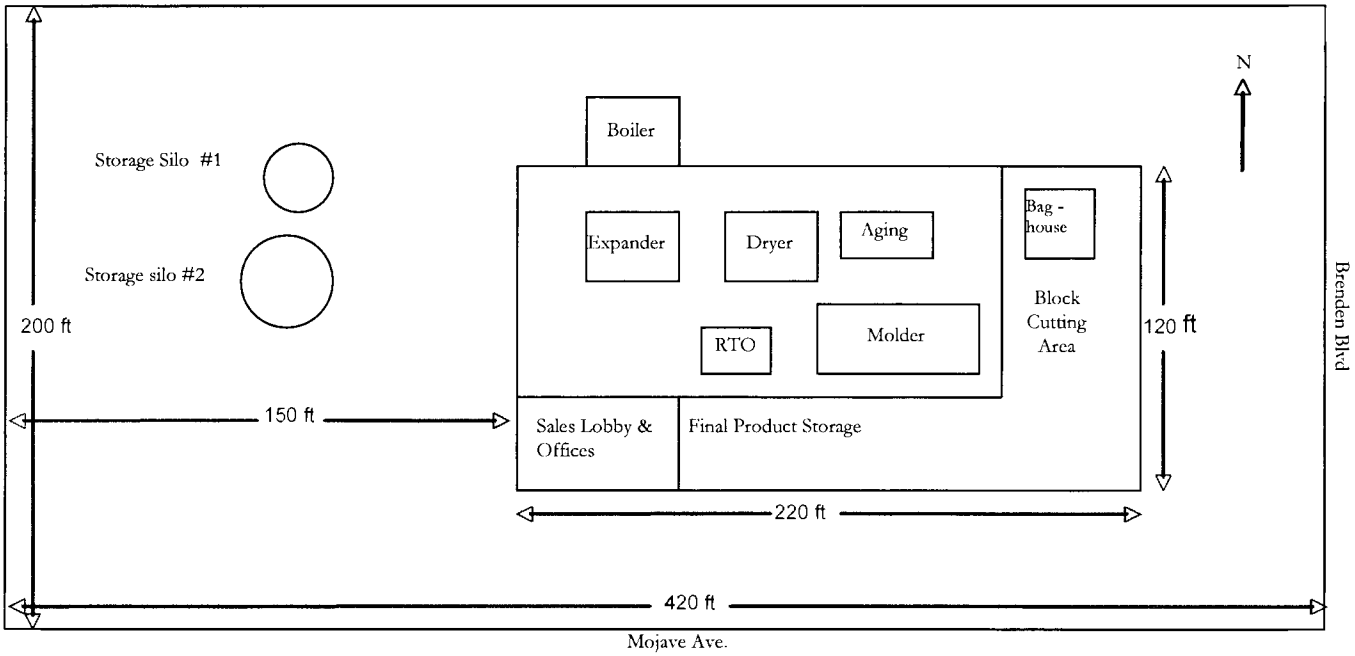
15. SITE DIAGRAM. Attach a site layout showing istances to property lines, equipment, controls, ducts, stacks and emission points. Also show storage areas for fuels, raw materials, chemicals, finished products, waste materials, etc.

EXAMPLE SITE DIAGRAM



16. PROCESS FLOW DIAGRAM. Attach a flow diagram which indicates how processes/activities are conducted at the facility. Begin with raw materials and show each step in the production process. Also indicate emissions control devices and all emission points. An example process flow diagram is provided below.

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17. OPERATION & MAINTENANCE (O&M) PLAN(S). O&M Plans are required for any process that vents emissions through a control device and includes both add-on control type equipment or processes whose controls are integrated into the design of the process equipment. Indicate if your facility has such control devices. (The list below is not an all-inclusive list of control devices.)

Equipment	No	Yes	How Many?
Baghouse	■	☐	_____
Dust Collector/Filter	■	☐	_____
Incineration System (e.g., catalytic or thermal oxidizer, afterburner, boiler, process heater, flare) – Specify: _____	■	☐	_____
Scrubber	■	☐	_____
Adsorption Unit (e.g., resin, carbon filter, other) - Specify: _____	■	☐	_____
Absorption Unit	■	☐	_____
Other - Specify: TRESU Americas DPC4 v2015 Chiller	☐	■	_____

If you checked YES to any of these boxes, attach a separate O&M Plan for each control device. The O&M Plan should describe key system operating parameters and appropriate operating ranges for these parameters. For new equipment or processes, provide an educated estimate of the ranges of any parameters to be monitored. These ranges should be supported with manufacturer's test data or other manufacturer's data from engineering calculations and/or experience with the equipment. In addition, O&M Plans should be prepared in accordance with Maricopa County Air Quality Department - Operation and Maintenance (O&M) Plan Guidelines. A copy of these guidelines can be obtained at: http://www.maricopa.gov/aq/divisions/permit_engineering/docs/pdf/OMGuidelines.pdf or by contacting the Permits Program Coordinator at (602) 506-6094. Multiple control devices can be combined in a single O&M Plan providing they are identical in type, capacity, and use. A separate O&M Plan is required for each device that is unique in type, capacity, or use.

18. DUST CONTROL PLAN. The owner and/or operator of a dust-generating operation shall submit to the Control Officer a Dust Control Plan with any permit applications that involve dust-generating operations with a disturbed surface area that equals or exceeds 0.10 acre (4,356 square feet). Facilities subject to Rule 316: Nonmetallic Mineral Processing are also required to submit a Dust Control Plan.

Requirement	No	Yes	Disturbed Surface Area ≥ 0.10 Acre	Subject to Rule 316
Dust Control Plan	■	☐	☐	☐

For further guidance completing the dust control plan, review the "Guidance For Dust Control Permit For Application" document located at http://www.maricopa.gov/aq/divisions/compliance/dust/docs/pdf/DustControlPlanStationarySource.pdf or contact the Dust Compliance Division at (602) 506-6010.

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19. APPLICABLE SECTIONS. Review each section of the application and mark below which sections apply to this facility. In the final application, submit only those sections that apply to this facility. Note that Section Z must be completed by all applicants.

- ☐ A Fuel Burning Equipment
- ☐ B Internal Combustion Engines & Turbines
- ☐ C Petroleum Storage Tanks
- ☐ D Water & Soil Remediation
- ☐ E-1 Spray Painting & Other Surface Coating (excluding vehicle and wood coating)
- ☐ E-2 Vehicle & Mobile Equipment Coating
- ☐ F Woodworking and Wood Coating Operations
- ☐ G Solvent Cleaning
- ☐ H Plating, Etching & Other Metal Finishing Processes
- ☐ I Dry Cleaning Equipment
- ☑ J Graphic Arts
- ☐ K-1 Concrete Batch Plants
- ☐ K-2 Non-Metallic Mineral Mining and Processing
- ☐ K-3 Asphalt Production
- ☐ K-4 Non-Metallic Mineral Processing (continued)
- ☐ L Other Dust-Generating Operations
- ☐ M Abrasive Blasting
- ☐ X-1 Point Source Emissions of Hazardous Air Pollutants
- ☐ X-2 Non-Point Area Emission Sources for Hazardous Air Pollutants
- ☐ Y Other Sources
- ☑ Z Air Pollution Emissions

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NON-MINOR MODIFICATION TO NON-TITLE V PERMIT

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SECTION J. GRAPHIC ARTS

Your facility may not require a Non-Title V permit if the facility is eligible to obtain an authority to operate (ATO) under a general permit. (Refer to http://www.maricopa.gov/aq/divisions/permit_engineering/docs/pdf/Graphic-Arts-Application.pdf to determine eligibility.)

This section applies to screen, letterpress, flexographic, and lithographic processes, including related coating and laminating processes.

1. Equipment list. (List each press individually.)

Assigned Equipment Number	Press Manufacturer & Model	Date Installed	Impression Area (sq in)	Press Type*	How Many	Exhaust Flow Rate	Exhaust Vent	Control Device
301 thru 309, and	HP Indigo 10000 Digital	7/2016	588	Digital	12	250 ☒ cfm ☐ fps	☐ to Air ☒ to Control	TRESU Chiller
30A, 30B & 30C						☐ cfm ☐ fps	☐ to Air ☐ to Control	
						☐ cfm ☐ fps	☐ to Air ☐ to Control	
						☐ cfm ☐ fps	☐ to Air ☐ to Control	
						☐ cfm ☐ fps	☐ to Air ☐ to Control	
						☐ cfm ☐ fps	☐ to Air ☐ to Control	
						☐ cfm ☐ fps	☐ to Air ☐ to Control	

*(F) - Flexographic; (L) Lithographic - specify heatset web, sheet-fed, or cold-set; (G) Gravure; (LP) Letter Press; (S) Screen; Other (please specify)

2. Materials List

List all materials including, but not limited to, inks, fountain solution, blanket wash, varnishes, roller wash, etch solutions, fixers, developers, replenishers, alcohol substitutes, finishers, adhesives, solvents, and cleanup materials. Complete the table below for each material. Provide material safety data sheets (MSDS) for each material and number them to correspond to the table below.

MSDS Number	Material	Annual Usage or Throughput (gal/yr or lb/yr)	VOC Content (% by weight)	Amount Shipped as Waste (gal/yr or lb/yr)
various	See 12-Month Rolling Total Spreadsheet, App. E	13,100 gal/yr	83	9,570 gal/yr
various	See Estimated Emissions of New Equipment, App. F	19,504 gal/yr	83	13,665 gal/yr

3. Substrate Type: ☒ Porous ☐ Non-porous ☐ Coated ☒ Uncoated

4. Describe Control Devices. Provide flow diagrams and/or briefly describe how volatile organic compounds (VOC) emissions are controlled. Include equipment type, manufacturer, model, date of installation, rating, efficiency, ID or serial number, and location. Attach vendor data sheets and general design details. Provide Operation & Maintenance Plans for each control device.

A TRESU Americas DPC4 v2015 Chiller is integral to each press. Press will shut down if chiller is inoperable or out of operating spec.

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SECTION Z. AIR POLLUTANT EMISSIONS

Provide a summary of the projected actual air emissions on an annual basis for the entire site in the following summary tables. Attach detailed calculations to support the figures. **If supporting calculations are not included with the application, the application will be deemed incomplete.**

Pollutant	Emissions (lb/yr)
Carbon Monoxide (CO)	
Oxides Of Nitrogen (NO_x)	
Oxides Of Sulfur (SO_x)	
Particulates Of 10 Microns Or Smaller (PM_{10})	
Total Suspended Particulates (TSP), Including PM_{10}	
Volatile Organic Compounds (VOCs)[1]	74,557
Lead	
Federal hazardous air pollutants (list each one separately):	
Methylene diphenyl diisocyanate (MDI) (current use + 35% growth)	820
[1]VOCs are defined by EPA at: http://www.epa.gov/ttn/naaqs/ozone/ozonetech/def_voc.htm	
Do not include the emissions from motor vehicles. Include the emissions from stationary sources, portable sources, test areas, experimental facilities, evaporative losses, storage and handling losses, fuel loading and unloading losses, etc. Specifically identify the following in detailed calculations:	
1. Emissions From Each Point Source And Each Stack	4. Overall Efficiencies
2. Capture Efficiencies	5. Fugitive Emissions
3. Control Efficiencies	6. Non-point (area) Emissions
For particulate (dust) emissions, describe the types of particulates being emitted and the quantities of emissions for each type. Whenever a material is identified by a trade name, also provide its generic name and its chemical abstract service (CAS) number.	
Help sheets for calculating emissions from specific industries or processes can be obtained at: http://www.maricopa.gov/aq/divisions/planning_analysis/emissions_inventory/instructions.aspx	

If you need help completing the application package, please see our website or contact 602-506-5102.
http://www.maricopa.gov/aq

Maricopa County

Air Quality Department

TEXT

FEDERAL HAZARDOUS AIR POLLUTANTS LIST

(Federal Clean Air Act, Title I, Section 112(b))

CAS No.	Chemical name
75070	Acetaldehyde
60355	Acetamide
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic acid
107131	Acrylonitrile
107051	Allyl chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene (including benzene from gasoline)
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl)phthalate (DEHP)
542881	Bis(chloromethyl)ether
75252	Bromoform
106990	1,3-Butadiene
156627	Calcium cyanamide
133062	Captan
63252	Carbaryl
75150	Carbon disulfide
56235	Carbon tetrachloride
463581	Carbonyl sulfide
120809	Catechol
33904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene
1319773	Cresols/Cresylic acid (isomers and mixture)
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	Cumene
94757	2,4-D, salts and esters
3547044	DDE
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-chloropropane
84742	Dibutylphthalate
106467	1,4-Dichlorobenzene(p)
91941	3,3-Dichlorobenzidene
111444	Dichloroethyl ether (Bis(2-chloroethyl)ether)
542756	1,3-Dichloropropene
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Diethyl aniline (N,N-Dimethylaniline)
64675	Diethyl sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl aminoazobenzene
119937	3,3'-Dimethyl benzidine
79447	Dimethyl carbamoyl chloride
68122	Dimethyl formamide
57147	1,1-Dimethyl hydrazine
131113	Dimethyl phthalate
77781	Dimethyl sulfate
534521	4,6-Dinitro-o-cresol, and salts
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane (1,4-Diethyleneoxide)
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin (1-Chloro-2,3-epoxypropane)
106887	1,2-Epoxybutane
140885	Ethyl acrylate
100414	Ethyl benzene
51796	Ethyl carbamate (Urethane)
75003	Ethyl chloride (Chloroethane)
106934	Ethylene dibromide (Dibromoethane)
107062	Ethylene dichloride (1,2-Dichloroethane)
107211	Ethylene glycol
151564	Ethylene imine (Aziridine)
75218	Ethylene oxide
96457	Ethylene thiourea
75343	Ethylidene dichloride (1,1-Dichloroethane)
50000	Formaldehyde
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine
7647010	Hydrochloric acid
7664393	Hydrogen fluoride (Hydrofluoric acid)
123319	Hydroquinone
78591	Isophorone
58899	Lindane (all isomers)
108316	Maleic anhydride
67561	Methanol
72435	Methoxychlor
74839	Methyl bromide (Bromomethane)
74873	Methyl chloride (Chloromethane)
71556	Methyl chloroform (1,1,1-Trichloroethane)
60344	Methyl hydrazine
74884	Methyl iodide (Iodomethane)
108101	Methyl isobutyl ketone (Hexone)
624839	Methyl isocyanate
80626	Methyl methacrylate
1634044	Methyl tert butyl ether
101144	4,4-Methylene bis(2-chloroaniline)
75092	Methylene chloride (Dichloromethane)
101688	Methylene diphenyl diisocyanate (MDI)
101779	4,4'-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	Parathion
82688	Pentachloronitrobenzene (Quintobenzene)
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic anhydride
1336363	Polychlorinated biphenyls (Aroclors)
1120714	1,3-Propane sultone
57578	beta-Propiolactone
123386	Propionaldehyde
114261	Propoxur (Baygon)
78875	Propylene dichloride (1,2-Dichloropropane)
75569	Propylene oxide
75558	1,2-Propylenimine(2-Methyl aziridine)
91225	Quinoline
106514	Quinone
100425	Styrene
96093	Styrene oxide
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene (Perchloroethylene)
7550450	Titanium tetrachloride
108883	Toluene
95807	2,4-Toluene diamine
584849	2,4-Toluene diisocyanate
95534	o-Toluidine
8001352	Toxaphene (chlorinated camphene)
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethyleneprocessing
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl acetate
593602	Vinyl bromide
75014	Vinyl chloride
75354	Vinylidene chloride (1,1-Dichloroethylene)
1330207	Xylenes (isomers and mixture)
95476	o-Xylenes
108383	m-Xylenes
106423	p-Xylenes

Chemical name
Antimony Compounds
Arsenic Compounds (inorganic including arsine)
Beryllium Compounds
Cadmium Compounds
Chromium Compounds
Cobalt Compounds
Coke Oven Emissions
Cyanide Compounds[1]
Glycol ethers[2]
Lead Compounds
Manganese Compounds
Mercury Compounds
Fine mineral fibers[3]
Nickel Compounds
Polycylic Organic Matter[4]
Radionuclides (including radon)[5]
Selenium Compounds

For all listings above which contain the word "compounds" and for glycol ethers, unless otherwise specified, these listings are defined as including any unique chemical substance that contains the named chemical as part of that chemical's infrastructure.

[1] X'CN where X = H' or any other group where a formal dissociation may occur. For example KCN or Ca(CN)2.

[2] Includes mono- and di- ethers of ethylene glycol, diethylene glycol and triethylene glycol R(OCH2CH2)n-OR' where:

n = 1, 2 or 3

R = alkyl C7 or less, or phenyl or alkyl substituted phenyl

R' = H, or alkyl C7 or less, or carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.

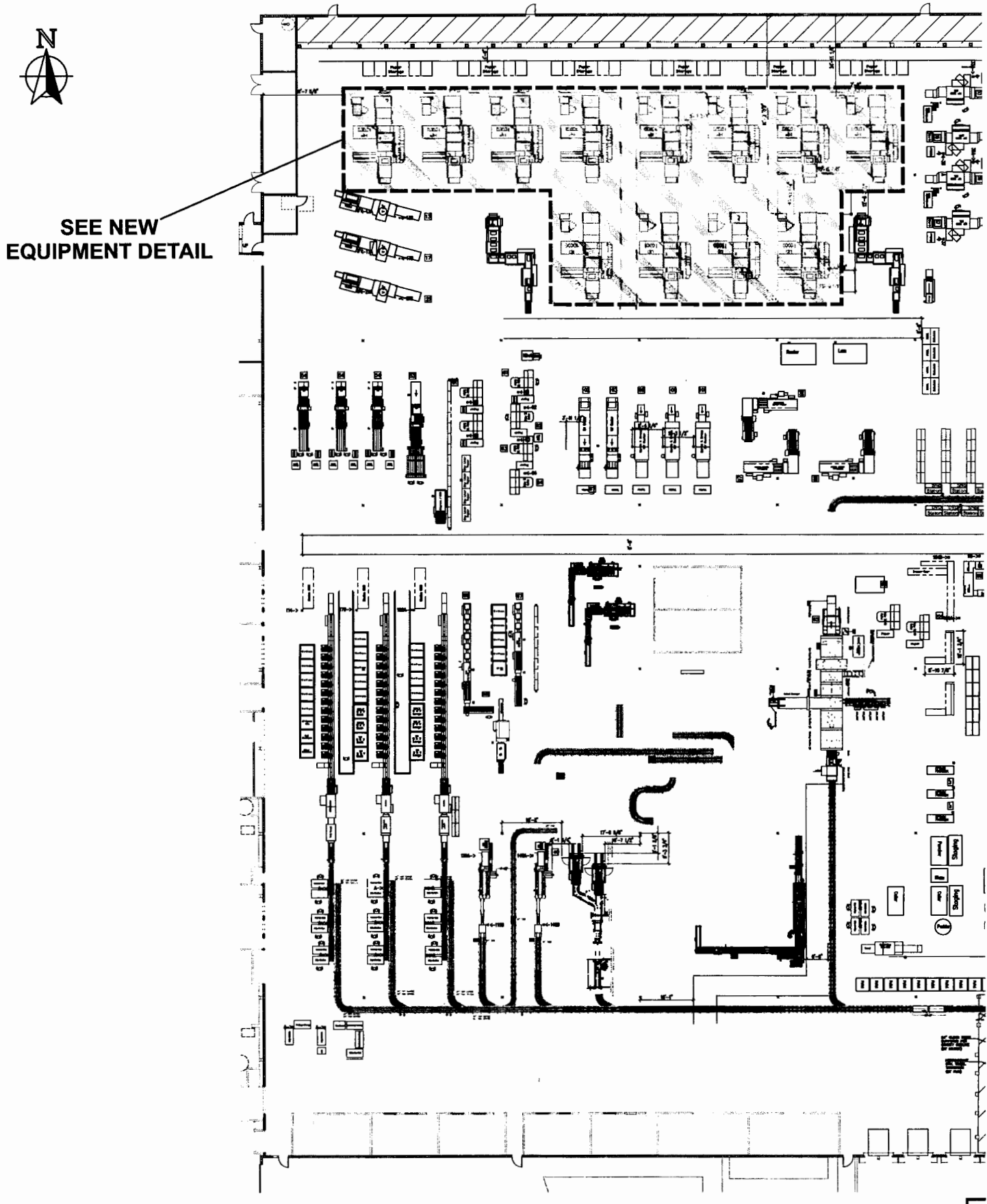
[3] Includes mineral fiber emissions from facilities manufacturing or glass, rock or slag fibers or other mineral derived fibers of average diameter one (1) micrometer or less.

[4] Includes organic compounds with more than one (1) benzene ring and which have a boiling point greater than or equal to 100°C.

[5] A type of atom which spontaneously undergoes radioactive decay

ATTACHMENT B

SITE PLANS



0 60

Approximate Scale:
1 inch = 60 feet

Note: Dimensions, directions, and locations are approximate.

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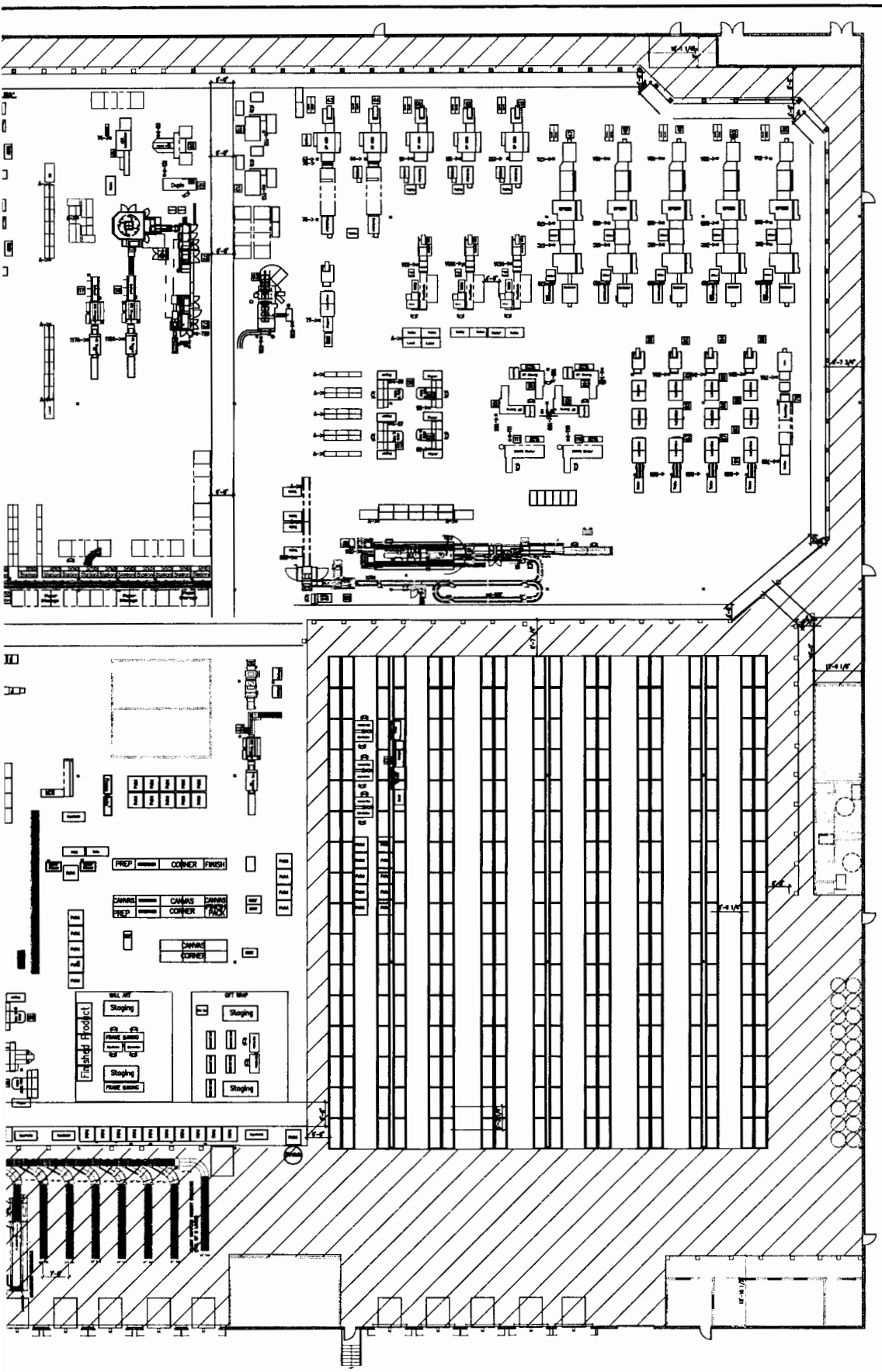
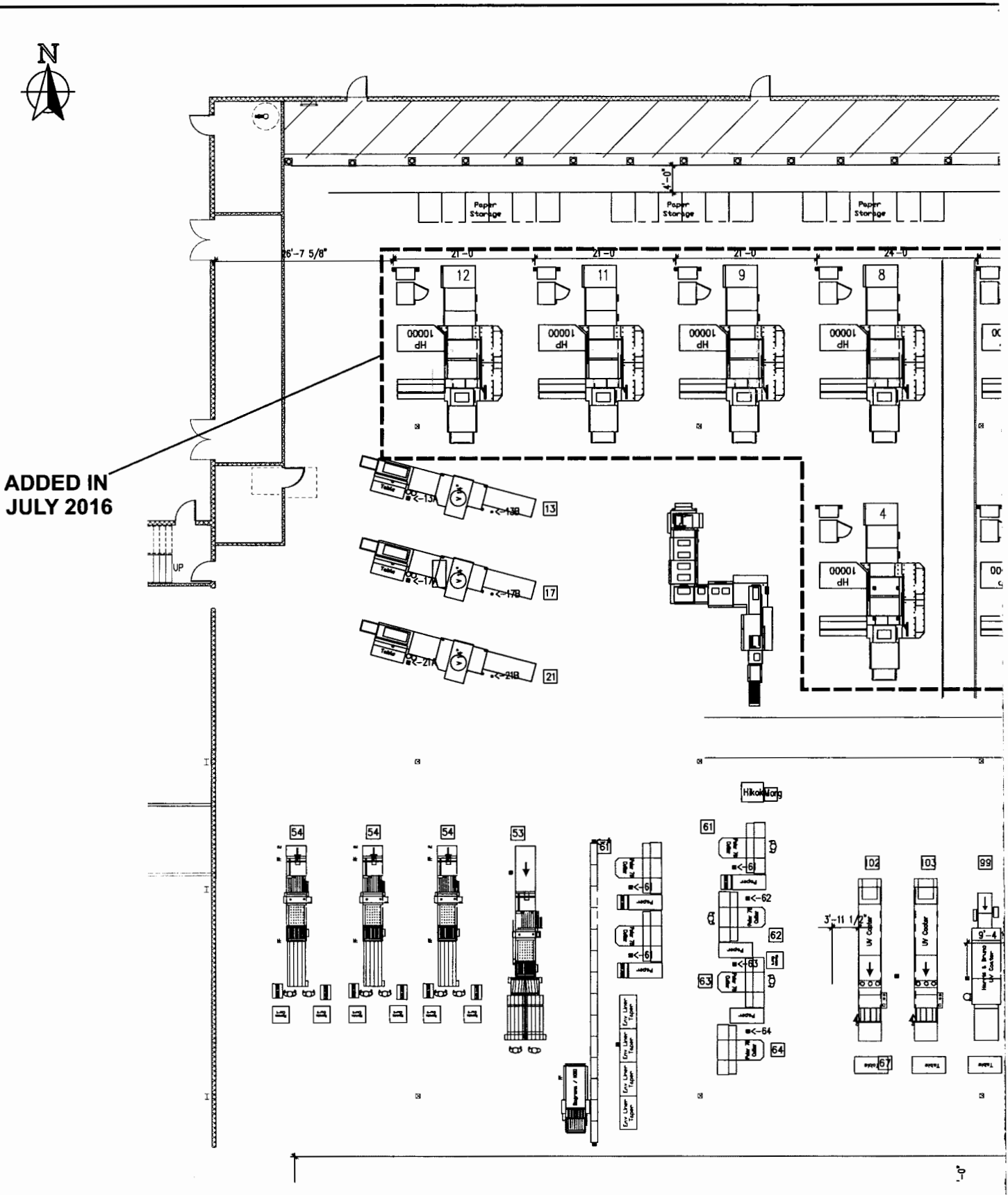


Ninyo & Moore	SITE DIAGRAM	FIGURE
PROJECT NO: 605174001	DATE: 6/16	SHUTTERFLY, INC. 7195 SOUTH SHUTTERFLY WAY TEMPE, ARIZONA 85283	1



Note: Dimensions, directions, and locations are approximate.

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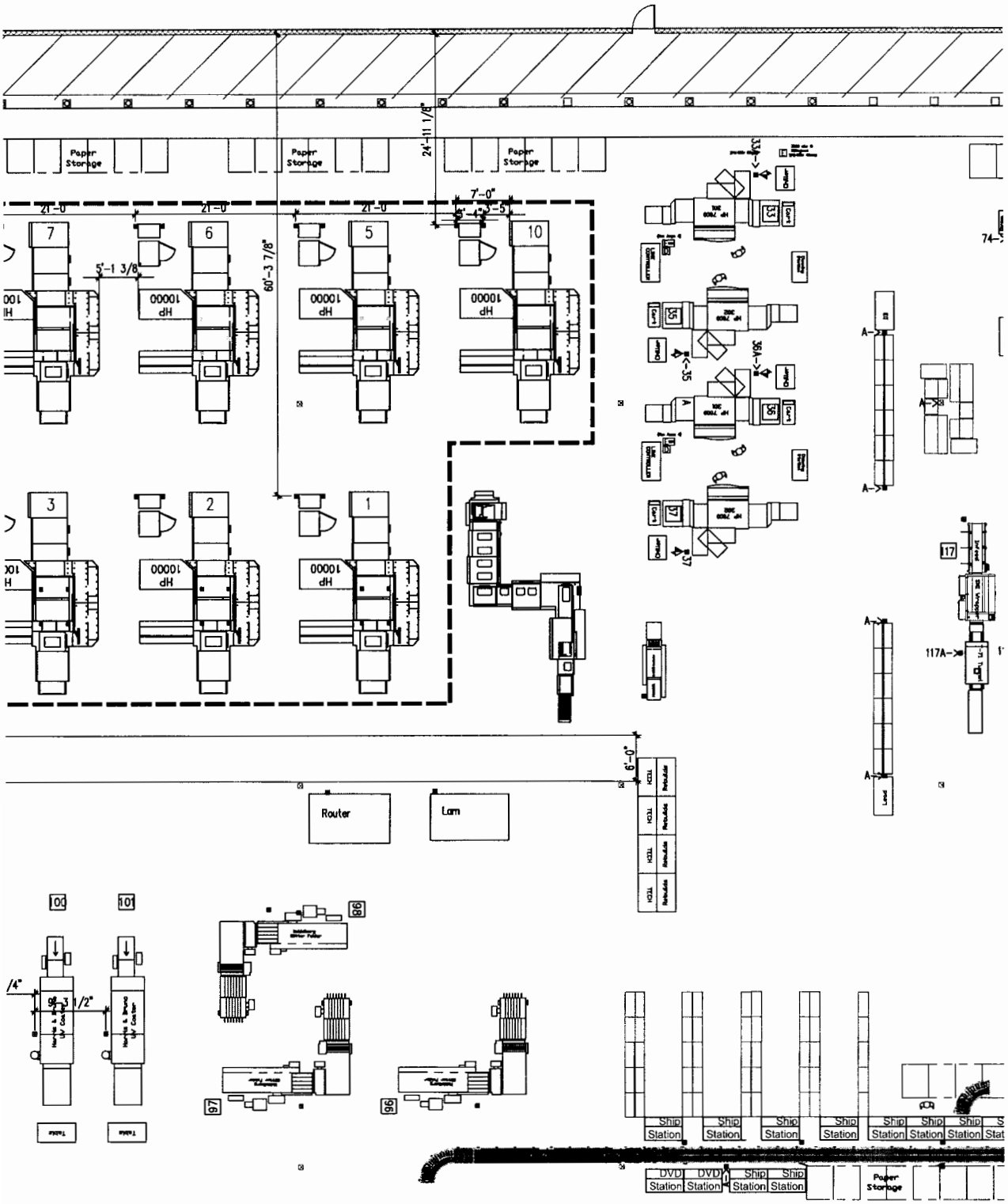
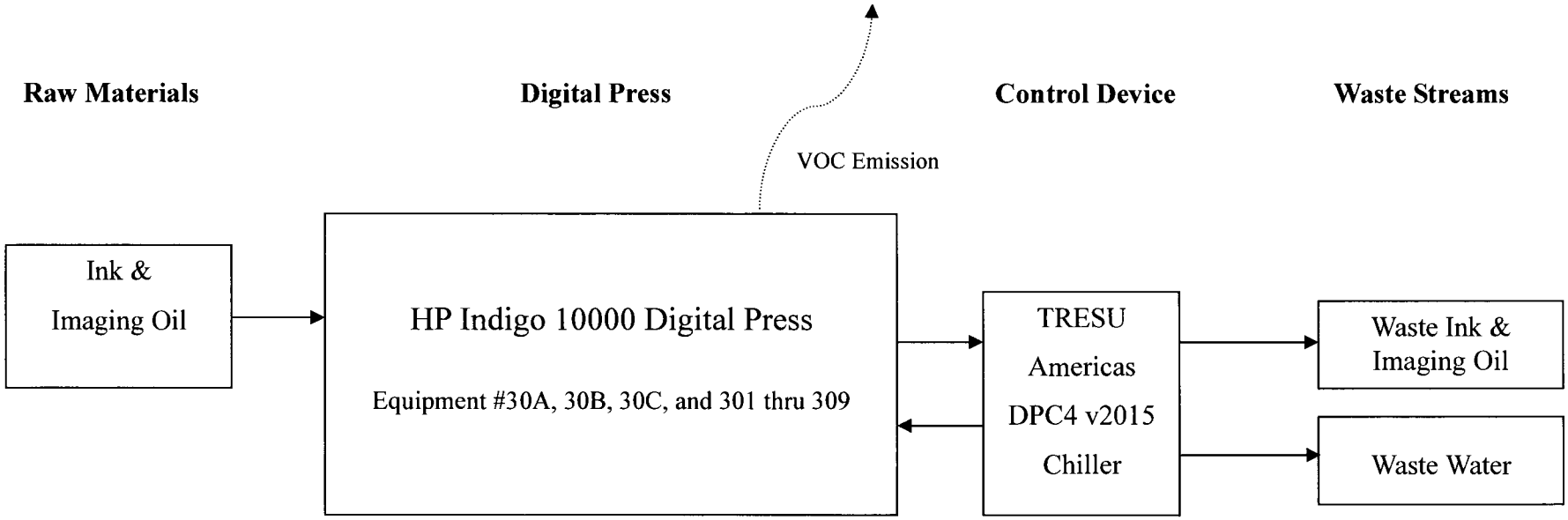


Ninyo & Moore	NEW EQUIPMENT DETAIL	FIGURE 2
PROJECT NO: 605174001	DATE: 6/16	SHUTTERFLY, INC. 7195 SOUTH SHUTTERFLY WAY TEMPE, ARIZONA 85283

ATTACHMENT C

PROCESS FLOW DIAGRAM

Process Flow Diagram of HP Indigo 10000 Digital Press



ATTACHMENT D

OPERATIONS & MAINTENANCE PLAN

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OPERATION AND MAINTENANCE (O&M) GENERAL PLAN

Permit #: 150063 Date of Preparation: 7/1/2016 Business Name: Shutterfly, Inc.

Business Address: 7195 S. Shutterfly Way City: Tempe State: AZ Zip: 85283

General description of facility operations:
Shutterfly, Inc. located at 7195 S. Shutterfly Way, Tempe, AZ is a family of brands in the business of digital personalized photo products and services. This site houses a portion of our production, warehouse and data storage facilities, as well as software engineers and customer service personnel for both Shutterfly and Tiny Prints. Products manufactured in-house include photobooks, personalized holiday cards, stationary, as well as custom home decor products and giftwraps.

Description of process(es) ducted to control device(s) including pollutants controlled:
Due to space limitation in this form, please refer the original O&M plan that was submitted in August, 2015 for process information including the pollutants controlled.
12 New chillers are going to arrive from Tresu group manufacturer that will be dedicated to the 12 new HP10000 Indigo presses. The "process chiller" manual and "technical service" manual are included in Appendix H of this permit application package for reference.

Complete description of the control device(s) covered by the O&M Plan including manufacturer, model, rated capacity, total number of identical units, equipment identification number:
Control device: Condenser (Press Chiller)
Description: The press uses a water chiller/condenser to regulate ink and press temperature. The chilled water runs continuously through the press & ink tanks to keep these parts at their nominal predefined temperatures. The cold water comes in from the water chiller/ condenser to the press with a hose. The basic maintenance is carried out Weekly, Monthly and Yearly (Please refer our original O&M plan submitted in August, 2015 as there are no changes to the maintenance activities schedule).
We do not have all the information about Chillers at this time and we have provided everything we have on file.

Manufacturer: Tresu Group
Model/Type: Tresu Americas DPC4 v2015; Rated Capacity: 42 kW, 50/60 Hz
Total Number of Identical Units: 12
Equipment Identification Numbers: We do not have the Serial #s yet from the manufacturer.

Maricopa County

Air Quality Department

Return completed form to:
Maricopa County Air Quality Department
1001 N Central Ave, Suite 125, Phoenix, AZ 85004
Phone (602) 506-6010 Fax (602) 372-0587
AQPermits@mail.maricopa.gov

List the operating parameters to be monitored including the units of measure (inches H2O, deg F, gpm), upper and lower operating limits, and frequency of recording measurements (daily, continuous). List the method of recording measurements (manual, stripchart recorder, data acquisition system) and the type of instrumentation (magnehelic, temperature sensor, flowmeter) with instrument display range for each operating parameter.

Operating Parameter	Units of Measure	Operating Limits	Recording Frequency	Record Method	Instrument Type	Display Range
Press Environment	Temp	20 - 30C	When getting ready or press start-up	Press built-in software - log	Press hardware	-5 -40C
Chiller Glycol Level	Percentage	2%-30%	Annual	Sample	Refractometer	0-100%

Attach a copy of all operations log sheets, stripcharts, and computer printouts utilized to document operating parameters of the equipment.

Additional Guidance:
Operating limits may require modifications to reflect annual conditions during performance testing. An operations log sheet should be completed for every day the process and/or control device is in operation. Records are required to be retained for a minimum of five years.

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List the maintenance procedures to be performed and the frequency of each procedure.

Procedure	Frequency
Example: Inspect spray nozzle distribution pattern	*Monthly*
The procedures stated in the original O&M plan remain the same. In addition, the new chillers maintenance procedure is included in Appendix H. Also included the weekly, monthly and annual logs.	Weekly, Monthly, Annually
Attached: Pit Stop Log Sample, Press Chiller Log Sample (Weekly and Monthly).	

Attach a copy of all maintenance checklists and computer printouts utilized to document completion of maintenance procedures performed on the equipment.

Additional Guidance:
The spare parts inventory should be sufficient to handle all maintenance requirements and reasonably expected malfunction corrections. Records are required to be retained for a minimum of five years.

Maricopa County

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Training Requirements:

1. HP Indigo Operator - Basic Operation of Press Training (40 hours)
2. HP Indigo Tech Assistant - Operator Level with Basic Preventive Maintenance Training (80 hours)
3. HP Indigo Technician - Technical diagnostics and repair training (4 weeks)

Additional Information:

As we have limited information to provide regarding the new chillers, we have included all the information we have in Appendix H and in this revised O&M plan.

I certify that the information provided in this form and accompanying documents is true, correct and complete to the best of my knowledge.

Authorized Signatory: Emerly Leano-Lay Date Signed: 7/1/2016

Title: Environmental Health & Safety & Training Manager Company: Shutterfly, Inc.

OFFICE USE ONLY

Approved By: Date:

Maricopa County
Air Quality Department

Engineering & Permitting Division
1001 North Central Ave., Suite 125
Phoenix, Arizona 85004
Phone: 602-506-6010
Fax: 602-506-6985

November 5, 2015

Emerly Leano-Lay
EHS, Training & WC Manager
Shutterfly, Inc.
7195 S. Shutterfly Way
Tempe, AZ 85283

RE: Operation and Maintenance Plan for Shutterfly, Inc.
Permit Number: 150063

Dear Ms. Leano-Lay:

This letter is to inform you that your Operation and Maintenance (O&M) plan for the LAUDA ULTRA COOL CHILLER has been approved.

It is important to note that the Department may request additional information in the future to ensure ongoing compliance with air quality regulations. Any changes to an approved plan will require resubmittal of the plan in its entirety for review.

If you have any question, please contact me at (602) 506-6711.

Sincerely,

Lizabeth Gomez
Air Quality Engineering Associate

Maricopa County

Air Quality Department

Return completed form to:
Maricopa County Air Quality Department
1001 N Central Ave, Suite 125, Phoenix, AZ 85004
Phone (602) 506-6010 Fax (602) 372-0587
AQPermits@mail.maricopa.gov

OPERATION AND MAINTENANCE (O&M) GENERAL PLAN

Permit#: 150063 Date of Preparation: 8/21/2015 Business Name: Shutterfly, Inc.

Business Address: 7195 S. Shutterfly Way City: Tempe State: AZ Zip: 85283

General description of facility operations:
Shutterfly, Inc. located at 7195 S. Shutterfly Way, Tempe, AZ is a family of brands in the business of digital personalized photo products and services. This site houses a portion of our production, warehouse and data storage facilities, as well as software engineers and customer service personnel for both Shutterfly and Tiny Prints. Products manufactured in-house include photobooks, personalized holiday cards, stationary, as well as custom home decor products and giftwraps.

Description of process (es) ducted to control device(s) including pollutants controlled:
The HP Indigo presses are digital presses that use inks that contain a VOC solution called "Imaging Oil", which acts as a carrier to transfer ink particles to the image development drum. The press produces images by laying down impressions of each color. Most of the Volatile Organic Compound (VOC) content of the Imaging Oil are not emitted to the atmosphere. The enclosed digital press contains an on-board recycling system that serves a dual function of (1) Capturing Imaging Oil for re-use in the press and (2) reducing VOC emission to the atmosphere. The reclaimed Imaging Oil is reused to dilute the concentrated inks introduced into the press. This internal, on-board capture system collects VOCs formed after the printing. The VOC is directed to a condensation collection tray and condenser (Chiller) where they are cooled and returned to liquid form. (CONTINUED on PAGE 4, Additional Information)*

Complete description of the control device(s) covered by the O&M Plan including manufacturer, model, rated capacity, total number of identical units, equipment identification number:
Control device: Condenser (Press Chiller)
Description: The press uses a water chiller/condenser to regulate ink and press temperature. The chilled water runs continuously through the press & ink tanks to keep these parts at their nominal predefined temperatures. The cold water comes in from the water chiller/condenser to the press with a hose. Press Technicians monitor water chillers and replace the water & water filters, as needed. These water chillers / condensers recover VOC emissions as oil & water waste from the presses. The basic maintenance is carried out Weekly, Monthly and Yearly. (Refer to Appendix C of the Permit Application for Process Flow Diagram & Appendix D for O&M Plan for Condensers)

Manufacturer: Laudat Ultra cool S.L.
Model/Type: UC-0240SP; Rated Capacity: 50/60Hz
Total Number of Identical Units: 19
Equipment Identification Numbers: Serial #61405, #51672, #53757, #53580, #53586, #49668, #50061, #51793, #51797, #51496, #51489, #51499, #51495, #53758, #53761, #52820, #51265, #48783, #60103

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OPERATION AND MAINTENANCE (O&M) GENERAL PLAN

List the operating parameters to be monitored including the units of measure (inches H20, deg F, and gpm), upper and lower operating limits, and frequency of recording measurements (daily, continuous). List the method of recording measurements (manual, strip chart recorder, data acquisition system) and the type of instrumentation (magnehelic, temperature sensor, flowmeter) with instrument display range for each operating parameter.

Operating Parameter	Units of Measure	Operating Limits	Recording Frequency	Record Method	Instrument Type	Display Range
Press Environment*	Temp	20C to 30C	When getting Ready or press start-up	Press built-in software log	Press hardware	-5C to 40 C
Chiller Glycol Level	Percentage	2% to 30%	Annual	Sample	Refractometer	0 to100%

(*) OPERATING PARAMETERS - although the control device is the press chiller water temperatures, the operating parameters for the press that will actually be recorded in the form of "Press errors" will be used as a reference, and not the press or chiller water temperatures. See example in red box below.

SPAN

Generated By EMEA\cohenniv 8/27/2015 3:29:18 PM

Indigo Proactive Tool v1.0- Technical Recommendations

SHUTTERFLY

Failures

Engine #	Name	Rate per million imps	# of Occurrence	Last date of occurrence	What to do
1	BID_HVF_ERROR	3	1	8/19/2015 9:02:58 AM	BID controller detected high voltage out of limit (usually caused by ink parameters). 1. Check ink properties (density, conductivity, flow). 2. Check the wiring isolation of HV connector at the rear of the press. 3. If needed, replace BDIu. 4. If needed replace BID motor.
	NO_HOST_HEARTBEAT	3	1	8/19/2015 9:34:53 AM	
	SC_FIRST_JOB_TIMEOUT_ERROR	3	1	8/22/2015 4:49:45 AM	Check DFE connections and communications
2	WHEL_LASER_TEMP_OUT_OF_LIMIT	10	3	8/22/2015 4:32:30 AM	1. Check chiller functionality and setup 2. Check chiller hose routing and connections to chiller and press. 3. Check that the utility cabinet power works properly 4. Check the WHEL power supply output
	HVPS_CR_PIP_VOLTAGE_BELOW_MINIMUM_LIMIT	3	1	8/22/2015 5:38:38 AM	1. Clean charge roller bias 2. Check the pins in the back of the unit. 3. Check the PIP foil 4. Check electrometer. 5. Reset charge bias and repeat the calibration. 6. Check charge roller charging power
	IOC_INDUSTRIAL_WASTE_BOTTLE_FULL_ERROR	3	1	8/22/2015 4:04:44 AM	Empty waste bottle if needed. Check that doors are closed.
Master	WATCHDOG_PROCESS_STOPPED	3	1	8/19/2015 9:34:24 AM	

Attach a copy of all operations log sheets, stripcharts, and computer printouts utilized to document operating parameters of the equipment.

Additional Guidance:
Operating limits may require modifications to reflect annual conditions during performance testing. An operations log sheet should be completed for every day the process and/ or control device is in operation. Records are required to be retained for a minimum of five years.

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List the maintenance procedures to be performed and the frequency of each procedure.

Procedure	Frequency
HP Indigo Press, 2 Million Preventive Maintenance (2M Pit Stop)	every 2 Million Impressions
HP Indigo Press, 8 Million Preventive Maintenance (8M Pit Stop)	every 8 Million Impressions
HP Indigo Press, Baseline Maintenance (Baseline)	Annually
Attached: Pit Stop Log Sample	

Attach a copy of all maintenance checklists and computer printouts utilized to document completion of maintenance procedures performed on the equipment.

Additional Guidance:
The spare parts inventory should be sufficient to handle all maintenance requirements and reasonably expected malfunction corrections. Records are required to be retained for a minimum of five years.

Maricopa County

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Training: Requirement:

1. HP Indigo Operator- Basic Operation of Press Training (40 hours)
2. HP Indigo Tech Assistant- Operator Level with Basic Preventive Maintenance Training (80 hours)
3. HP Indigo Technician- Technical diagnostics and repair training (4 weeks)

Additional Information:

*CONTINUATION FROM PAGE 1 - Description of Process

The oil-water separator separates the two liquids with the water settling to the bottom of the container, and the Imaging Oil rises to the top. Reclaimed Imaging Oil is returned to the reservoir and re-used within the press to dilute inks, in a continuous recycling and re- use process. The portion of the Imaging Oil that cannot be reclaimed for re-use overflows from the reservoir and is collected in liquid form in a container inside the digital press, and goes to waste barrels properly labeled that is collected by outside recyclers for proper recycling and disposal. HP Presses uses the following material inputs that contain liquid VOCs: Ink cartridges, Imaging Oil, Imaging Agent, and Recycling Agent. The press recovers liquid VOC-containing output streams: (a) Imaging Oil flashed off during printing, cooled & returned for re-use (b) Excess recovered Imaging Oil which cannot be used by the press overflows from the Imaging Oil Reservoir; (c) Oil & water condensed within an internal condenser and (d) Other internal transfers that cannot be collected by the recycling system.

I certify that the information provided in this form and accompanying documents is true, correct and complete to the best of my knowledge.

Authorized Signatory: Emerly Leano-Lay Emerly G. Leano Lay Date Signed: 8/21/2015

Title: Environmental Health & Safety & Training Manager Company: Shutterfly, Inc.

OFFICE USE ONLY

Approved By: Lizabeth Gomez Date: 11/05/2015

Maintenance Checklists

ATTACHMENT #2
PRESS CHILLER WEEKLY MAINTENANCE

Press Chiller Log 311				
Name/Initials		MJB	DB	
Date		8/15/2015	8/22/2015	8/58/2015
Weekly Inspection & Maintenance				
Chiller is in proper condition		Yes	No	
Issues of Alarms		No	Yes	
Were issues corrected?		No	Yes	
Alarm Indicators				
Alarm code FL:	Wrong power supply phase sequence, low water level alarm or pump overload	No	Yes	
Alarm code A1:	Antifreeze alarm	No	No	
Alarm code tC1:	Compressor overload alarm	No	No	
Alarm code LP1	Low refrigerant pressure	No	No	
Alarm code HP1	High refrigerant pressure	No	No	
Alarm code Ht:	High water temperature	No	No	
Alarm code E1, E2, E4:	Sensor disconnected, short circuited or faulty	No	No	
Alarm code Epr:	EEPROM error during operation	No	No	
Alarm code Epb	EEPROM error at start-up	No	No	
Alarm code ELS:	Low supply voltage	No	No	
Alarm code EHS:	High supply voltage	No	No	

PRESS CHILLER MONTHLY MAINTENANCE

Press Chiller Log 311			
Name/Initials	TL	TL	
Month	June	July	August
Monthly Inspection & Maintenance			
Clean the condenser	6/30/15	7/31/15	
Clean the air filter	6/30/15	7/31/15	
Clean the housing	6/30/15	7/31/15	
Inspect for leaks	6/30/15	7/31/15	

e:	TM	MB/AA	SH/JS	DB	DB	RM	rm	TM	SG	JS
	12/11/2014	12/15/2014	12/19/2014	1/17/2015	2/19/2015	3/22/2015	4/13/2015	6/1/2015	7/19/2015	8/11/2015
t - End Time:	4:40-6:05pm	11:45-2:00a	12:30A-2:00A	730-925PM	915-1115pm	10-12am	930-1110	6:30p-8:45p	12pm-3pm	1pm-5pm
Impressions:	84,451,076	85,610,594	86,340,982	98,917,492	99,299,966	101,072,246	106706140.00	108,202,242	112,500,650	112,788,318
Shift:	2	4	4	4TH	4th	2nd	2nd	2nd	3rd	1st
Pitstop Type:	2M	2M	8M	2M	2m	2m	8M	2m	2m	2m
Run Auto Lubrication and Reset Counters	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Check bid/pip/blanket impression counts	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Check ILP water and Sapphire (refill/drain as needed)	TM	AA	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Power down press and perform LOTO	TM	AA	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Hard reboot of DFE/LC (tech)	N/A	N/A	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Vacuum Power supply fiters in back of press E1	TM	AA	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Vacuum filters on top of press engine E1	TM	AA	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Inspect recycling system	TM	AA	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Check/ clean all ILP rollers	TM	AA	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Check/clean blue nip roller in both engines	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean ITM brushes (de-glaze if needed)	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean ITM slip rings	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean the cleaning station (replace rollers if needed)	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean external heating lamps	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean the PTE, airknife and exit roller housing	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean impression roller	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Check chiller gauges	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Run grey 20's for quality check	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean writing head window	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Clean ink tanks, pumps and cabinet	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Reset counters	TM	MB	SH/JS	CFD	CFD/TRM	RM	rm	TM	SG	JS
Drain ink tanks and fill with fresh oil			SH/JS				rm			
Calibrate ink densities and conductivities			SH/JS				rm			
Clean ITM bias and PIP ground slip rings			SH/JS				rm			
Lubricate IBS (feed & exit side)			SH/JS				rm			
·ricate ILP Cylinder Assy Buffer (NSK grease)			SH/JS				rm			
ate UW lift spindle (NSK grease)			SH/JS				rm			
ıcate UW expanding shaft gear (NSK grease)			SH/JS				rm			
Lubricate LS6 worm wheels (NSK grease)			SH/JS				rm			
Lubricate SE6 spindles & drive shaft (NSK grease)			SH/JS				rm			
Replace chiller filter			SH/JS				rm			
Perform software backup			SH/JS				rm			
Reset counters			SH/JS				rm			
Replace ITM, PIP and thermostat carbon brushes							rm			
Replace UW electrical cabinet air filter							rm			
Replace UW and DU2 measuring wheel oring							rm			
Replace LS6 electrical cabinet air filters (2)							rm			
Replace SE6 electrical cabinet air filters (2)							rm			
Clean recycling system and refill with oil/water							rm			
Replace PIP underlayer							rm			
Drain and re-fill chiller coolant							rm			
Reset all counters							rm			

Daily Operations Log Sheets

ATTACHMENT 1B
RE: DAILY PASSDOWN (PRESSES)

Emerly Leanolay

From: Luis Garces
Sent: Wednesday, November 04, 2015 5:15 PM
To: Emerly Leanolay
Subject: FW: Indigo Press Status

* Note: Refer to page 3 on CHILLER 311 Temp. ISSUE.

From: Matt Schmid
Sent: Friday, October 16, 2015 4:13 PM
To: Azucena Nunez <anunez@shutterfly.com>; Benjamin Velasquez <bvelasquez@shutterfly.com>; Bruce Clark <bclark@shutterfly.com>; Carl Miller <cmiller@shutterfly.com>; Carrillo, Jesus (jesus.carrillo@hp.com) (jesus.carrillo@hp.com) <jesus.carrillo@hp.com>; Charles Power <cpower@shutterfly.com>; Chris Collins (chris.collins@hp.com) <chris.collins@hp.com>; Chris Mooney <cmooney@shutterfly.com>; Chris Rose <CRose@shutterfly.com>; Cory Burtis <cburtis@shutterfly.com>; Crystal Quintero <cquintero@shutterfly.com>; Curtis D. Johnson <cdjohnson@shutterfly.com>; Dale Holden <dholden@shutterfly.com>; David Bradford <dbradford@shutterfly.com>; David King <DKing@HP.com>; Dominic Cabrera <dcabrera@shutterfly.com>; Edward Mata <emata@shutterfly.com>; Garrett Herber <gherber@shutterfly.com>; Gayle Hutchison <gHutchison@shutterfly.com>; Hardev Virdi <hvirdi@shutterfly.com>; Harlin Mahan <hMahan@shutterfly.com>; James Nelson <jnelson@shutterfly.com>; Jay Phillips <jphillips@shutterfly.com>; Jenessa Hargrove <jhargrove@shutterfly.com>; John Boger <jboger@shutterfly.com>; Julie Mead <jmead@shutterfly.com>; Kristen Toehe <ktoehe@shutterfly.com>; Louis Bellavance <louis.mc.bellavance@hp.com>; Luis Garces <lgarces@shutterfly.com>; Mark Buennagel <mbuennagel@shutterfly.com>; Martin Labrado <mLabrado@shutterfly.com>; Matt Schmid <mschmid@shutterfly.com>; Michelle Conway <mconway@shutterfly.com>; Natasha Velasquez <nvelasquez@shutterfly.com>; Nathan Bartlow <nbartlow@shutterfly.com>; Nathan Day <nathand@shutterfly.com>; Norberto Maciel <norberto.maciel@hp.com>; Patricia Olmedo <polmedo@shutterfly.com>; Peter Stanley <peter.stanley@hp.com>; Ralph Deitrick <rdeitrick@shutterfly.com>; Raymond Marin <rmarin@shutterfly.com>; Ryan Hilke <rhilke@shutterfly.com>; Scott Jones <scjones@shutterfly.com>; Scott Ramsdell <sramsdell@shutterfly.com>; Scott Whiting <swhiting@shutterfly.com>; Shawna Gill <sgill@shutterfly.com>; Sonia Esparza <sesparaza@shutterfly.com>; Steven Goalder <sgoalder@shutterfly.com>; Timothy Long <tlong@shutterfly.com>; Tom Viehmann <tom.viehmann@hp.com>; Vanessa Robles <vrobles@shutterfly.com>; Vanessa Solarez <vsolarez@shutterfly.com>; Vincent Nicosia <vnicosia@shutterfly.com>
Subject: Indigo Press Status

Press 311 has the Spare Chiller on it at this time, There is a call opened 1042286 to HP to Lauda for a tech to come out. No ETA yet.

321	UP

Pg 1/c

322	UP
323	UP
324	UP
325	UP
[redacted]	
331	UP
332	UP
333	UP
334	UP
335	UP
[redacted]	
311	UP
312	UP
313	UP
314	UP
[redacted]	
HK301	UP
LX301	UP
LX302	UP
LX303	UP
LX304	UP
DUP301	UP

Equipment	Tech/Op	Date	Reason	Note
INDIGO 322 PX	Ben Velasquez	10/16/2015 @ 3:54PM	Needs Filters / Fluid / Rolls	empty BCS replaced BCS on E1 and E2. *Duration:* 16 mins *TRT:* 0 mins
INDIGO 323 PX	Matt Schmid	10/16/2015 @ 3:51PM	Jams / Web Break	web break E2 re-webbed E2 and spliced the web. *Duration:* 22 mins *TRT:* 9 mins
DUPLO 301 PX	Ben Velasquez	10/16/2015 @ 3:13PM	Jams / Web Break	jam in paper track cleared jam and good to go *Duration:* 11 mins *TRT:* 5 mins
INDIGO 335 PX	Tom Viehmann	10/16/2015 @ 3:00PM	Scheduled / Preventative maintenance of machine.	Finished CE level audit, handing over to techs *Duration:* 4 hr 24 mins
INDIGO 324 PX	Matt Schmid	10/16/2015 @ 2:41PM	Jams / Web Break	FI error on E1 manually tightened the web in E1 and bypassed the imagine oil cleanliness sensor E2. *Duration:* 15 mins *TRT:* 12 mins
INDIGO 323 PX	Ben Velasquez	10/16/2015 @ 1:56PM	Error Message / Software Issue	UHG page shifting too often. Rebooted DFE. *Duration:* 36 mins *TRT:* 1 mins
LASERMAX 303 PX	Matt Schmid	10/16/2015 @ 12:54PM	Mechanical, Software, or Quality problems encountered	stacker homing failure shut the machine down and adjusted the bottom sensor. *Duration:* 8 mins
INDIGO 325 PX	Ben Velasquez	10/16/2015 @ 12:39PM	Image Memory / Picking	recycling system overflow found a big clog in the water drain. took all hoses apart to clean. should be good now. E1

Pg 2/6

						Duration: 1 hr 5 mins *TRT:* 44 mins
GMP301	**UP**					
ABG301	**UP**	INDIGO 311 PX	Matt Schmid	10/16/2015 @ 12:35PM	Press Won't Get Ready or Stopped Unexpectedly	ink over temp issues found the chiller with a bad relay replaced it and a TC1 error came up on the chiller. The pump seized opened a call on the chiller and swapped out the bad chiller with the spare working as it should and press is ready. *Duration:* 1 hr 36 mins
		INDIGO 325 PX	Matt Schmid	10/16/2015 @ 11:25AM	Streaks / Banding	imagine oil under pip replaced the pip and CR , cleaned the CR housing and got the press ready. *Duration:* 8 mins *TRT:* 7 mins
		INDIGO 325 PX	Ben Velasquez	10/16/2015 @ 11:02AM	Streaks / Banding	streaks in E2 charge roller lines would not clean off. replaced charge roller. also water overflow error. reset in Systab, running well *Duration:* 1 mins
		INDIGO 335 PX	Tom Viehmann	10/16/2015 @ 10:36AM	Scheduled / Preventative maintenance of machine.	CE baseline audit *Duration:* 4 hr 24 mins
		INDIGO 334 PX	Tom Viehmann	10/16/2015 @ 10:34AM	Scheduled / Preventative maintenance of machine.	replaced drain assy. Finished with CE baseline. *Duration:* 26 hr 5 mins
		INDIGO 325 PX	Ben Velasquez	10/16/2015 @ 10:25AM	Needs Filters / Fluid / Rolls	recycling system overflow found water in second chamber of recycling system. vacuumed out all chambers. sucked out lines to bellows pump. checked conductivity to tanks all look good. giving back to production. *Duration:* 33 mins *TRT:* 2 mins

INDIGO 332 PX	Matt Schmid	10/16/2015 @ 9:56AM	Mechanical, Software, or Quality problems encountered	frequency drive 9 error on re-winder shut the re-winder down. and reset the frequency drive and got the press ready. *Duration:* 6 mins *TRT:* 1 mins
LASERMAX 301 PX	Matt Schmid	10/16/2015 @ 9:49AM	Jams / Web Break	web break in perf unit re-webbed the perf unit and spliced the web. *Duration:* 14 mins *TRT:* 14 mins
INDIGO 321 PX	Ben Velasquez	10/16/2015 @ 9:37AM	Scratches	streaks in E2 had to replace the spot color bid. chunks inside that I couldn't get out, so i put a new one in. good now *Duration:* 18 mins *TRT:* 0 mins
INDIGO 322 PX	Ben Velasquez	10/16/2015 @ 9:27AM	Press Won't Get Ready or Stopped Unexpectedly	ELO touchscreen stopped working had to shut down press for 15 mins to fix. *Duration:* 27 mins *TRT:* 0 mins
INDIGO 333 PX	Ben Velasquez	10/16/2015 @ 8:47AM	Streaks / Banding	streaks in prints small ink build up on pip and blanket causing streak. it is outside the image area, still good to run *Duration:* 15 mins *TRT:* 1 mins
INDIGO 335 PX	Matt Schmid	10/16/2015 @ 7:59AM	Mechanical, Software, or Quality problems encountered	GMP temp issues cleaned the rear brushes and raceways. *Duration:* 24 mins *TRT:* 22 mins
INDIGO 321 PX	Ben Velasquez	10/16/2015 @ 7:25AM	Press Won't Get Ready or Stopped Unexpectedly	yellow ink tank low found yellow bid leaking in press causing tank to go too low. replaced bid and good to go. *Duration:* 10 mins
LASERMAX 301 PX	Ben Velasquez	10/16/2015 @ 7:13AM	Jams / Web Break	paper tear at Perf unit straightened out and re taped. good now

Pg. 4/6

				Duration: 9 mins *TRT:* 5 mins
INDIGO 331 PX	David Bradford	10/16/2015 @ 7:10AM	Needs Filters / Fluid / Rolls	BCS roll empty. Replaced BCS roll. *Duration:* 4 mins *TRT:* 3 mins
INDIGO 321 PX	Ben Velasquez	10/16/2015 @ 7:06AM	Error Message / Software Issue	issue with press not booting up had to do two shutdowns to get press up. good now *Duration:* 48 mins *TRT:* 10 mins
INDIGO 332 PX	David Bradford	10/16/2015 @ 6:06AM	Jams / Web Break	Problems with re-winder roll guide hold down roller. Found shock not connected to roller lift arms, causing the roller to just fall down when unlocked. Fixed shock to resolve. *Duration:* 3 mins
INDIGO 333 PX	Ben Velasquez	10/16/2015 @ 6:05AM	Failed Casio / Color Matching	failing Casio did first transfer and another color adjust. should be good. giving back to production *Duration:* 22 mins *TRT:* 11 mins
INDIGO 321 PX	Matt Schmid	10/16/2015 @ 5:56AM	Press Won't Get Ready or Stopped Unexpectedly	ILP liquid tanks keep overflowing` found 2 inlet and outlet tubes crossed in on the water side tank, swapped them back to the right direction of flow no issues. *Duration:* 34 mins *TRT:* 4 mins
INDIGO 325 PX	David Bradford	10/16/2015 @ 5:29AM	Error Message / Software Issue	Water overflow error in E2. Inspected, cleaned and reset recycling system to resolve. *Duration:* 4 mins
INDIGO 332 PX	Ben Velasquez	10/16/2015 @ 5:24AM	Press Won't Get Ready or Stopped Unexpectedly	drum not rotating during pip change. one of the ITM flags was stuck causing press to error. fixed flag by resetting connector and was able to get pip on. good to go

					Duration: 13 mins *TRT:* 0 mins
		INDIGO 323 PX	David Bradford	10/16/2015 @ 5:18AM	Press Won't Get Ready or Stopped Unexpectedly	Drum will not rotate when changing PIP. Found screws loose and 1 missing from PIP clamp and lock. PIP clamp handle was catching on BID guide and stopping drum. Fixed PIP clamp to resolve. *Duration:* 20 mins *TRT:* 1 mins
		INDIGO 325 PX	Matt Schmid	10/16/2015 @ 5:02AM	Needs Filters / Fluid / Rolls	brush broken in charge roller replaced brush and good *Duration:* 9 mins *TRT:* 2 mins
		INDIGO 325 PX	Luis Garces	10/16/2015 @ 4:24AM	Jams / Web Break	Press was not getting ready at start up Clear all the errors, operator had press the emergency button because she thought the press was going to get a web break. start up the press and this time it started up fine. *Duration:* 10 mins *TRT:* 8 mins

Thank you,
Matt Schmid
HP Indigo Press Technician
mschmid@shutterfly.com | O (602)659-4818 | M (623)505-8140 |
7195 S Shutterfly Way Tempe, AZ 85283

P9. 6/6

ATTACHMENT E

12-MONTH FACILITY EMISSIONS THRU MAY 2016

Shutterfly, Inc., 7195 S. Shutterfly Way, Tempe, Arizona

Graphic Arts Materials						2015						
Item #	Item Description	Org	Spec. Gravity	Units		June	July	Aug	Sep	Oct	Nov	Dec
10-1002-02	UV Gloss Coating UV-9020 5 gallon 40# pail	PHX	1.080	5	Gal	48	43	56	94	99	86	50
10-1004-02	Coating 3.2% Sapphire 55 Gal Drum P5753	PHX	1.01	55	Gal	1	0	0	3	5	3	4
10-1008-01	UV matte coating UV-9790 5 gallon 40# pail	PHX	1.043	5	Gal	7	16	5	7	5	7	4
10-1011-04	Agent HP Recycling Case Q4315A 7xxx	PHX	0.79	4	Liters	6	6	8	21	18	21	19
10-1011-05	Oil HP Imaging Case Q4313A 7xxx	PHX	0.77	16	Liters	14	54	55	79	102	165	93
10-1012-03	Ink HP Black Case Q4133A 7xxx	PHX	0.819	7.6	Liters	42	26	49	91	68	88	119
10-1012-04	Ink HP Calibration Black Case Q4137B 7xxx	PHX	0.819	1.56	Liters	0	2	0	2	0	1	1
10-1013-03	Ink HP Cyan Case Q4132A 7xxx	PHX	0.815	7.6	Liters	43	54	60	138	114	150	214
10-1013-04	Ink HP Calibration Cyan Case Q4136B 7xxx	PHX	0.815	1.56	Liters	1	3	1	0	0	2	0
10-1014-03	Ink HP Magenta Case Q4131A 7xxx	PHX	0.817	7.6	Liters	45	56	60	140	109	148	228
10-1014-04	Ink HP Calibration Magenta Case Q4135B 7xxx	PHX	0.817	1.56	Liters	1	2	1	2	0	0	0
10-1015-03	Ink HP Yellow Case Q4130A 7xxx	PHX	0.818	7.6	Liters	8	53	58	127	104	143	208
10-1015-04	Ink HP Calibration Yellow Case Q4134B 7xxx	PHX	0.818	1.56	Liters	1	3	0	0	0	0	0
10-1018-03	Imaging Agent HP Each Q4314A 7xxx	PHX	0.819	1	Liters	5	13	16	46	29	48	46
10-1032-01	Adhesive Protein Case Making	PHX	1.1	66	Lbs.	31	19	6	46	16	17	69
10-1033-05	Purmelt QR 2580, 40 lbs. pail	PHX	1.2	40	Lbs.	11	7	5	12	13	8	9
10-1033-06	Purmelt QR 2580, 37.4 lbs. slug	PHX	1.2	37.4	Lbs.	4	14	11	26	24	22	27
10-1033-07	Technomelt PUR 3317 BRJ Bulk, 40 Lbs. 2Kg Slug	PHX	1.2	40	Lbs.	0	0	0	0	0	11	39
10-1071-01	Ink Bulk Black Dye (775ML) 4030, CA862 Series	PHX	0.950	0.775	Liters	2	0	0	0	0	2	0
10-1072-01	Ink Bulk Cyan Dye (775ML) 4030, CQ863 Series	PHX	0.950	0.775	Liters	5	0	0	0	0	1	1
10-1073-01	Ink Bulk Magenta Dye (775ML) 4030, CQ864 Series	PHX	0.950	0.775	Liters	0	0	0	0	0	0	0
10-1074-01	Ink Bulk Yellow Dye (775ML) 4030, CQ865 Series	PHX	0.950	0.775	Liters	2	2	0	0	0	0	0
60-1019-01	Alcohol IPA (16 oz.)	PHX	0.789	16	Oz	38.7	39.6	44	47.3	48.4	51.6	57.4
60-1019-01	Alcohol IPA (1 gal)	PHX	0.789	1	Gal	12	2	12	8	18	9	22
60-1019-02	Alcohol IPA (5 gal)	PHX	0.790	5	Gal	2	0	2	1	2	4	2
Days of Operation						23	26	27	27	24	26	24
Hours of Operation						444	407	504	444	564	540	552

Waste Shipments						2015						
Item #	Waste Description	Org	S.G.	Units		June	July	Aug	Sep	Oct	Nov	Dec
	Waste Ink & Imaging Oil	PHX	0.82	1	Gal	770	605	990	0	1,515	1,305	1,250
	IPA w/UV Coating	PHX	0.79	1	Gal	0	0	55	0	55	55	0
	Waste Glue	PHX	1.2	1	Gal	0	0	0	0	110	0	0

* MDI is a Hazardous Air Pollutant (HAP) per Maricopa County and EPA regulations. MDI emissons based on mass balance, maximum concentration, and 100

Product Usage and Emissions

May 2016

2016					12-Month Rolling Total		Conversion Factor	12-Month Rolling Usage (Gal/Yr)	12-Month Rolling Usage (Lbs/Yr)	12-Month Rolling Waste (Gal/Yr)	12-Month Rolling Usage Net (Gal/Yr)	VOC Content (Lbs/Gal)	12-Month VOC Emissions (Lbs/Yr)	101688 Methylene diphenyl diisocyanate (MDI)*	
an	Feb	Mar	April	May	Units/Year									(%)	(Lbs/Yr)
49	76	56	50	51	3,790.0	Gal	1	3,790.0	34,137	0	3790.0	0.00065	2	0%	0
1	1	2	1	2	1,265.0	Gal	1	1,265.0	10,656	0	1265.0	0.0100	13	0%	0
2	3	8	8	7	395.0	Gal	1	395.0	3,437	0	395.0	0.080	32	0%	0
6	7	17	16	11	624.0	Liters	0.264	164.8	1,086	115	49.3	6.59	325	0%	0
35	20	49	53	69	12,608.0	Liters	0.264	3,330.7	21,389	2334	997.1	6.43	6,411	0%	0
51	39	44	45	60	5,487.2	Liters	0.264	1,449.6	9,901	1016	434.0	5.33	2,313	0%	0
0	0	1	0	1	12.5	Liters	0.264	3.3	23	2	1.0	5.33	5	0%	0
118	103	105	138	137	10,442.4	Liters	0.264	2,758.6	18,750	1933	825.8	5.30	4,377	0%	0
0	1	0	1	0	14.0	Liters	0.264	3.7	25	3	1.1	5.30	6	0%	0
122	102	103	137	137	10,541.2	Liters	0.264	2,784.7	18,974	1951	833.7	5.39	4,493	0%	0
0	0	1	1	0	12.5	Liters	0.264	3.3	22	2	1.0	5.39	5	0%	0
111	93	103	123	125	9,545.6	Liters	0.264	2,521.7	17,203	1767	754.9	5.18	3,910	0%	0
0	0	1	0	0	7.8	Liters	0.264	2.1	14	1	0.6	5.18	3	0%	0
24	21	26	23	33	330.0	Liters	0.264	87.2	595	61	26.1	5.14	134	0%	0
14	13	13	12	12	17,688.0	Lbs.	0.109	1,928.1	17,688	110	1818.1	0.00	0	0%	0
10	5	5	9	8	4,080.0	Lbs.	0.100	407.7	4,080	0	407.7	0.00	0	5%	204
19	18	17	16	18	8,078.4	Lbs.	0.100	807.2	8,078	1	806.2	0.00	0	5%	403
14	11	19	1	14	4,360.0	Lbs.	0.100	435.7	4,360	0	435.7	0.00	0	0%	0
2	0	0	0	0	4.7	Liters	0.264	1.2	10	0	1.2	2.00	2	0%	0
1	0	0	0	0	6.2	Liters	0.264	1.6	13	0	1.6	2.02	3	0%	0
0	0	0	0	0	0.0	Liters	0.264	0.0	0	0	0.0	2.03	0	0%	0
1	0	0	0	0	3.9	Liters	0.264	1.0	8	0	1.0	2.04	2	0%	0
32	40	55	44	48	8,736.0	Oz	0.0078	68.3	449	54	14.4	6.57	94	0%	0
16	11	11	14	20	155.0	Gal	1	155.0	1,020	122	32.6	6.57	214	0%	0
1	1	2	3	5	125.0	Gal	1	125.0	824	99	26.3	6.589	173	0%	0
27	26	31	30	28	319	Days		**22,490**	**172,743**	**9,571**	**12,919**		**22,521**	**Lbs/Yr**	**607**
420	444	492	456	456	5,723	Hours							**11.3**	**Tons/Yr**	**0.30**

2016					12-Month Rolling Total	
an	Feb	Mar	April	May		
0	750	750	750	500	9,185	Gal
55	0	0	0	55	275	Gal
0	0	0	0	0	110	Gal
					9,570	Gal

Pollutant	Annual Permit Limit	Actual Emissions	Units	Within Permit Limit?
VOCs	18.67	11.3	Tons/Yr	Yes
VOCs	120	70.6	Lbs/Day	Yes
HAPs	None	0.30	Tons/Yr	Yes

% volatility (worst case).

ATTACHMENT F

ESTIMATED EMISSIONS OF NEW EQUIPMENT, AND FUTURE FACILITY EMISSIONS ESTIMATE WITH GROWTH FACTOR

Shutterfly, Inc., 7195 S. Shutterfly Way, Tempe, Arizona

Existing HP 6000 & 7000 Series Presses - Opera						
Air Permitted Equipment List Units #	Item Description	# of HP Press Units	Operating Hours Per Unit (Hrs/Yr)	Average Format Per Unit (in^2)	Average Speed Per Unit (Pg/Hr)	Maximu Produc (see de
1a, 1b, 2a, 2b, 2c, 3a, 3b, 3c, 3d, 4a, 5a, 5b, 6a & 6b	HP Indigo 6000 and 7000 Series Presses	14	5,723	646	1800	93,1

New HP 10000 Series Presses - Equivalent Operations,						
Air Permitted Equipment List Units #	Item Description	# of Units	Operating Hours (Hrs/Yr)	Format (in^2)	Speed (Pg/Hr)	Maximu Produc
30A, 30B, 30C, 301, 302, 303, 304, 305, 306, 307, 308 & 309	HP Indigo 10000 Series Presses	12	5,723	585	3450	138,6

Existing Equipment - Production Capacity Detail					
Unit Type	Units	Operations (Hrs/Yr)	Format (in^2)	Speed (Pg/Hr)	Max. P (i
HP Indigo 6000	2	5723	481	1800	9,909
HP Indigo 6600	3	5723	481	1800	14,86
HP Indigo 7200	4	5723	963	1800	39,68
HP Indigo 7250	1	5723	963	1800	9,920
HP Indigo 7500	2	5723	456	1800	9,394
HP Indigo 7600	2	5723	456	1800	9,394
Totals	**14**				**93,16**

ns of New Equipment

tions, Production, Chemical Usage and Emissions						
im Product ed (in^2/Yr) tail below)	Annual Chemical Usage in HP 6000/7000's (Lbs/Yr)	Annual Chemical Usage in HP 6000/7000's (Gal/Yr)	Annual Waste Ink/Oil Generation from HP 6000/7000's (Gal/Yr)	Annual Net Chemical Usage in HP 6000/7000's (Gal/Yr)	Chemical Usage per Square Inch of Production Available in HP 6000/7000's (Gal/in^2)	VOC Emissions per Square Inch of Production Available in HP 6000/7000's (Lbs/in^2)
65,861,600	13,110	87,984	9,185	3,925	4.21E-08	2.36E-07

Production, Chemical Usage and Emissions/Inch Produced						
im Product ed (in^2/Yr)	Estimated Annual Chemical Usage in HP 10000's (Lbs/Yr)	Estimated Annual Chemical Usage in HP 10000's (Gal/Yr)	Estimated Annual Waste Ink/Oil Generation from HP 10000's (Gal/Yr)	Estimated Annual Net Chemical Usage in HP 10000's (Gal/Yr)	Estimated VOC Emissions from HP 10000's (Lbs/Yr)	Estimated VOC Emissions from HP 10000's (Tons/Yr)
05,337,000	19,504	130,896	13,665	5,839	**32,707**	**16.4**

roduction ^{2}/Yr)
,946,800
,920,200
,992,800
,248,200
,876,800
,876,800
,861,600

Existing VOC Emissions, All Operations	22,521	11.3
New Emission Estimate, All Operations	**55,227**	**27.6**
Growth Factor over Next 5 Years	35%	35%
New Emissions Estimate w/Growth Factor	**74,557**	**37.3**

ATTACHMENT G

HP INDIGO 10000 DIGITAL PRESS INFORMATION

Imposition efficiency. Print 5.83 x 8.27 inch event flyers 10 up on a 29 inch sheet.

A 29 inch digital press for any commercial application

Leading print quality and color

Like all HP Indigo presses, the HP Indigo 10000 Digital Press delivers offset-matching quality.

High image quality. ElectroInk and the HP Indigo process deliver crisp linework, attractive images and smooth vignettes with a very thin ink layer that gives uniform gloss between ink and substrate.

Color flexibility. Up to 7 ink stations for the extended color gamut, including HP Indigo ElectroInk White and special colors.

Pantone on press. 4, 6, or 7 process colors for vivid printing and optimal on-press Pantone emulations.

Accurate spot colors. True spot colors can be mixed off press for outstanding Pantone-approved solids. Covering up to 97% of the PANTONE® color range, the HP IndiChrome Ink Mixing Service uses CMYK as well as orange, violet, green, reflex blue, rhodamine red, bright yellow, and transparent.

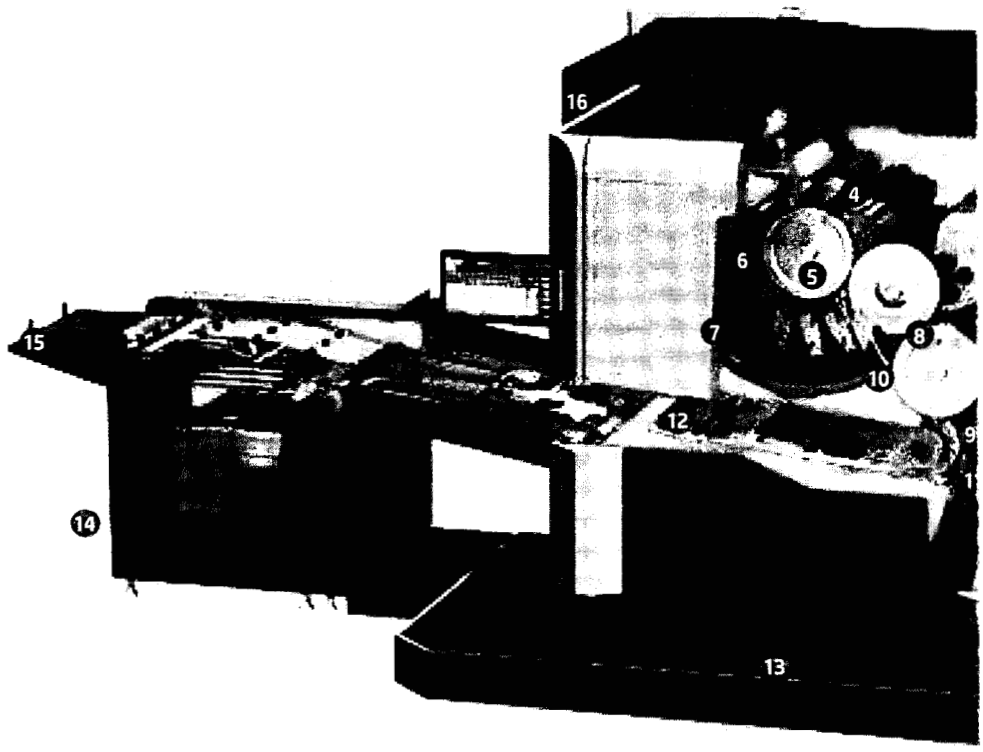
Quality Automation Suite. This embedded system makes it easy to achieve the highest possible Indigo quality within jobs and between jobs, and includes three different capabilities. Registration cameras maintain tight image registration between sheets, front-to-back, and in color plane registration (CPR); a Vision System performs automatic hands-free press calibrations and validates uniformity; and the spectrophotometer calibrates color automatically.

High productivity, high usability

Extensive automation enables high press uptime and productivity, freeing operators from routine tasks.

HP Indigo Worldwide Services—
Driving your production excellence
A comprehensive system of tools, knowledge and support ensures you are able to print what you need, when you need it, at the highest level of efficiency and Indigo print quality. Our certified service teams are committed to meeting your end-to-end needs for accelerated ramp-up, increased system utilisation and maximum uptime.

Learn more at hp.com/go/indigoservice



Automated consumable replacement. The Photo Imaging Plate (PIP) is changed by an automated system freeing operators to do other tasks and increasing press uptime.

Intuitive on-press software. Operators enjoy ease of use with 3D navigations, helpful drill downs, and multi-touch gestures.

Large volume supplies. High capacity, high concentration ink cartridges support the high quantities of ink consumed by the press, while minimizing the number of replacements required by the operator.

Robust paper handling system. Designed for 29 inch sheets, the press enables easy loading by palette and/or drawers. The robust system enables seamless switching between jobs and media types, as well as printing of multi-substrate jobs.

Print Care. Maximize productivity and uptime with a fast diagnostic process and step-by-step guidance for problem solving, independently or through remote support.

Designed for the environment. The press is designed for environmental sustainability and features energy efficiency techniques.

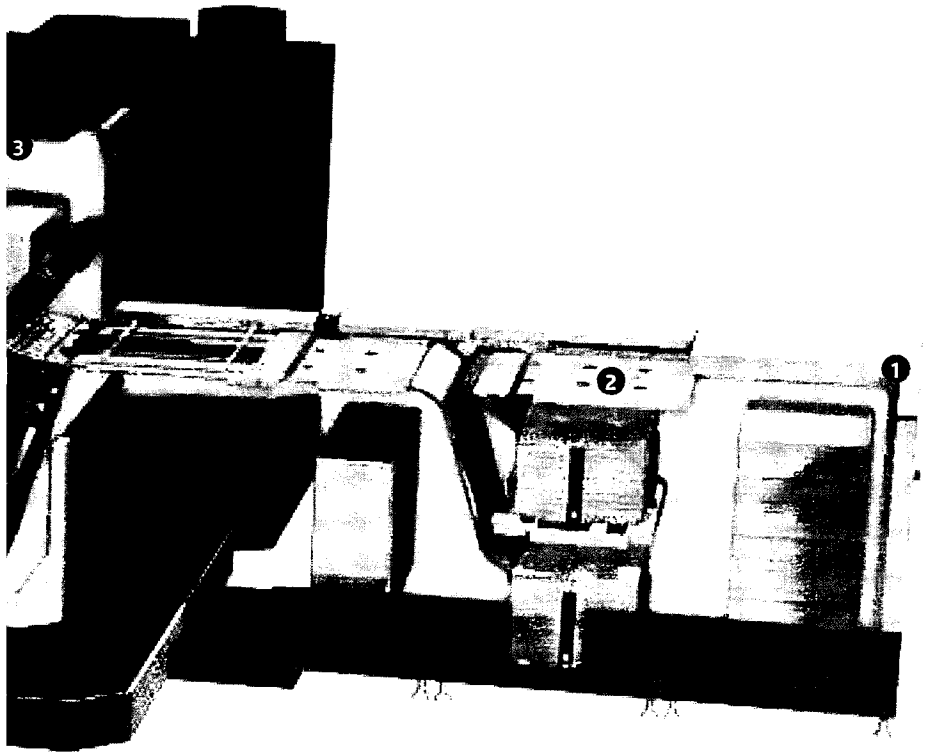
End-to-end workflow

Both the press and its workflow are designed to produce virtually any application end-to-end including with digital finishing.

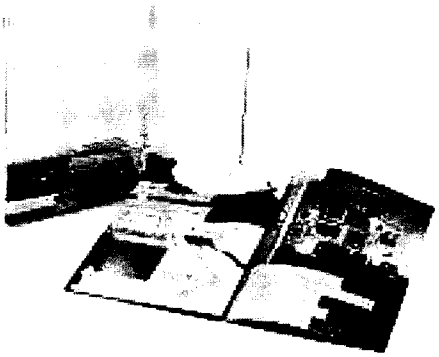
Powerful DFE. HP Indigo SmartStream Production Pro is specifically designed to support 29 inch imposition and high-volume production of large quantities of jobs, including variable data.

Open JDF workflow architecture. Supports both upstream and downstream JDF connectivity, including inline and near line finishing. Enables integration with third-party production systems through Software Development Kits (SDKs) and leverages HP SmartStream products including Production Center and Production Analyzer.

Inline and near line finishing. Digital inline and near line finishing devices with automatic setup, instant make-ready, and automated error recovery leverage digital capabilities to achieve higher levels of productivity. Solutions include the Horizon Smart Stacker and MBO signature folder.



Direct mail. Large-sized poster pieces



New marketing collateral possibilities.
Pocket folders and 6-page folded brochures.

Use HP SmartStream products and partner solutions with the HP Indigo 10000 Digital Press to improve production efficiency and support digital growth.
To learn more visit hp.com/go/smartstream

1. Palette feeder
2. Two drawer feeder
3. High-speed laser writing head
4. Charge roller
5. Photo Imaging Plate (PIP)
6. PIP Automatic Replacement System (PARS)
7. Binary Ink Developers (BIDs)
8. Blanket
9. Impression cylinder
10. Registration cameras
11. Perfector
12. Vision System & Spectrophotometer
13. Operator platform
14. Stacker
15. Proof tray
16. Ink cabinet

Technical specifications

Printing speed	3450 sheets per hour 4/0; 4600 sheets per hour in EPM 1725 sheets per hour 4/4; 4600 sheets per hour 1/0 and 2/0
Image resolution	812 dpi at 8 bit, addressability: 2438 x 2438 dpi HDI (High Definition Imaging)
Line screens	175, 180, 180m , 180EPM lpi, HMF 200 lpi
Sheet size	Maximum sheet size: 29.5 x 20.8125 in. (In-house cutting: 29.527 x 20.866 in) Minimum sheet size: 20.1 x 11.7 in for simplex; 20.1 x 13 in for duplex.
Image size	29.1 x 20.1 in maximum
Paper weight*	Uncoated media: 50 lb text to 150 lb cover. Coated media: 60 lb text to 150 lb cover; Thickness 3-18 pt
Feeder	Palette feeder 33.4 in of media. Drawer feeder: Two drawers, each with 11.8 in of media.
Stacker	Main stacking tray with 33.4 in stack height supporting offset jogging
Print servers (DFE)	HP SmartStream Production Pro Print Server
Press dimensions	Length: 320 in; Width: 185 in; Height: 94 in
Press weight	24,250 lb
HP Indigo ElectroInks	
Standard 4-color printing	Cyan, magenta, yellow, and black
HP IndiChrome 6-color printing	Cyan, magenta, yellow, black, orange, and violet
HP IndiChrome Plus 7-color printing	Cyan, magenta, yellow, black, orange, violet, and green
Special effect inks	White, light cyan, light magenta
HP IndiChrome off-press spot inks	HP IndiChrome Ink Mixing Service for spot color creation using CMYK as well as orange, violet, green, reflex blue, rhodamine red, bright yellow, and transparent
PANTONE® colors	Supports PANTONE PLUS®, PANTONE MATCHING SYSTEM®, and PANTONE Goe™ HP Professional PANTONE Emulation Technology using CMYK on-press; HP IndiChrome on-press; HP IndiChrome Plus on-press; HP IndiChrome off-press for achieving up to 97% of the PANTONE® color range
Options	
Print server (DFE)	HP SmartStream Ultra Print Server
Expanded color capabilities	5, 6 or 7 ink stations
Operator Control Station	Proof jobs, control the press, DFE remote station

*Media characteristics vary. If the media you are about to use is not listed in the Media Locator, HP cannot guarantee performance and we recommend that you test it prior to use.

Please scan this QR code to learn more about the HP Indigo 10000 Digital Press

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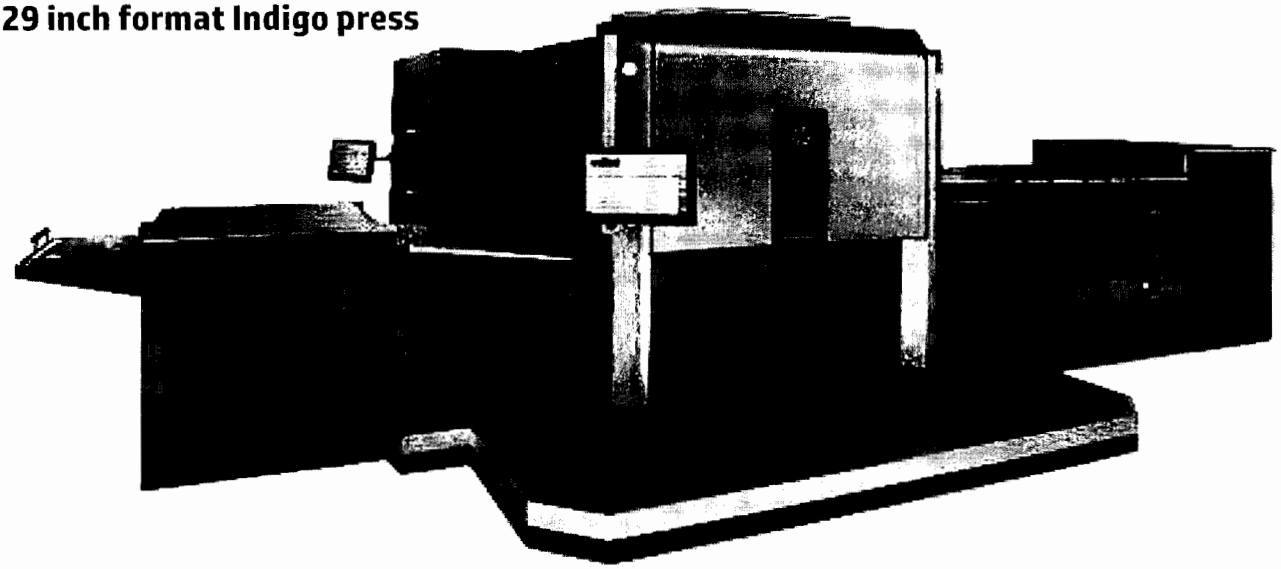
4AA3-6493ENW, June 2015.

HP Indigo 10000 Digital Press

A 29 inch format Indigo press



Break digital barriers and grow your business

The 29 inch format HP Indigo 10000 Digital Press produces virtually any commercial job—with Indigo quality, substrate versatility, and production flexibility. This robust press is an easy fit for offset print service providers, printing large volumes of high-value pages and a wide variety of applications.

Print any commercial job
With its 29 inch format and built-in duplex mechanism, the press makes it possible, for the first time, to digitally print any size application, including pocket folders, six-page brochures, posters, and large lay-flat books.

Offset-matching print quality
Enabled by HP Indigo's liquid ElectroInk technology and unique digital offset process, HP Indigo prints are of the highest quality. They match or even exceed offset, allowing them to be used interchangeably. ElectroInk also provides the widest digital color gamut using up to 7 ink stations on the press.

High productivity
Printing 3450 full size 29 inch sheets per hour (4/0) or 4600 sheets per hour using Enhanced Productivity Mode (EPM), the press is capable of producing over two million color sheets per month. The 29 inch format enables highly efficient imposition of jobs and lowers the cost per copy, pushing the digital breakeven point vs. offset to new heights. The combination of press speed with the high number of copies imposed per sheet delivers at least two and a half times the productivity of any digital sheetfed press in the market today.

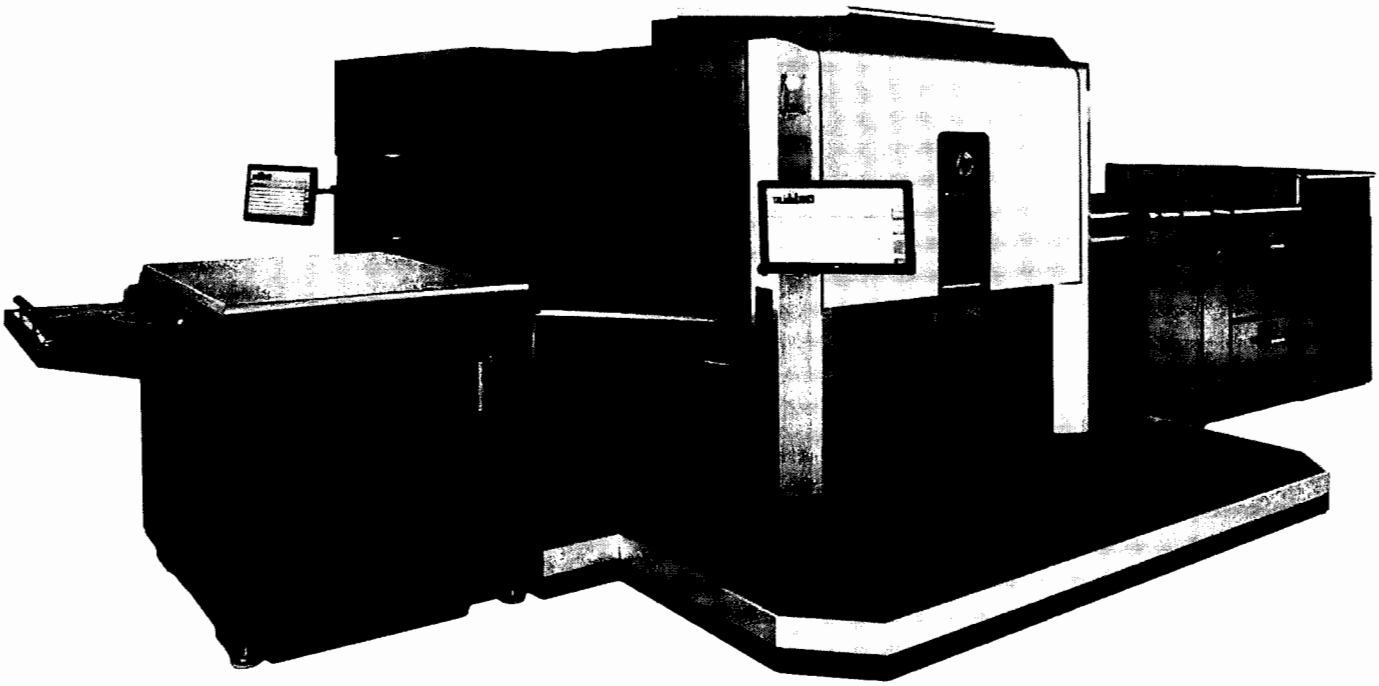
Widest media range
Supporting the largest media range in the industry, the press is compatible with more than 2800 certified substrates—from 50 lb text to 150 lb cover and 3-18 pt. in thickness—including coated, uncoated, and colored papers, and paperboard for folding cartons.

Easy fit for offset printers
The 29 inch format facilitates quick ramp up and easy integration for offset printers. The press is compatible with standard sheet size, offset palette feeding, and conventional finishing devices. Multiple drawers enable on-the-fly changeovers of media and continuous printing.

To learn more, visit hp.com/go/graphic-arts or hp.com/go/hpindigo10000

HP Indigo 10000 Digital Press

Site Preparation Guide - US Edition



Part Number CA494-14481, Revision 00

February 2016

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This English version of the document must be used as the original instructions.

Users must treat all documents received during the training course (whether printed or electronic) as part of the digital press. This material must be retained for the life of the digital press.

Safety Notice

The HP Indigo Digital Press is a Class 1 Laser Product. It contains a Class 3R writing head with an embedded Class 4 red laser with multiple scan beams and a total possible power of 130 milliwatts. There is no danger to persons or equipment when the system is operated in accordance with the directions provided by HP in this and other publications. All laser sources are located behind protective covers. Warning labels are attached to each protective cover. Do not remove covers.

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Table of contents

1 Overview

How to use this document

This document is intended as a guide to assist in preparing the site to receive and install the HP Indigo 10000 Digital Press.

Preparing the site in advance and checking the requirements before the installation starts helps to smooth and shorten the installation.

To ensure a proper installation, all procedures contained herein, unless otherwise specified, must be performed prior to the arrival of the main shipment at the customer's site.

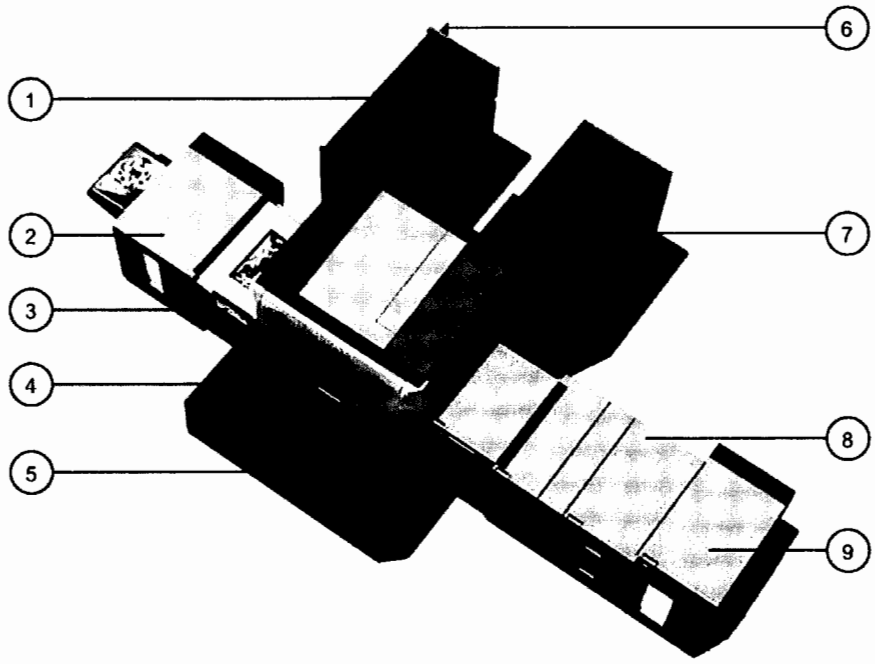
The information provided in this guide covers all aspects of the HP Indigo 10000 Digital Press site preparation, and has been included to assist in the following planning considerations:

- Modifications to the installation area, if required
- Accessibility to the site: providing suitable access through driveways, corridors, doorways, and loading bays
- Provision of suitable emergency exits to which unimpaired access may be maintained at all times
- Planning the print production area with sufficient space around and above the press
- Proper location of the system components to facilitate efficient and smooth workflow.
- Climate and environmental conditions (temperature, humidity, and dissipation) should be controlled
- Ventilation of the print production area and provision of air control extraction system
- Electrical and pneumatic requirements
- Provision for overhead conduits or floor channeling, for cables and air lines running to the press
- Computer and network connectivity
- Preparing the requirements for a professional carrier with a forklift (and heavy duty crane)
- Safety requirements (warning signs, fire and first aid equipment, emergency eyewash station, etc.)
- Storage area for supplies (BID, ink, PIP, blanket, etc.) and substrate that is clean, dry, ventilated, and protected from ultraviolet rays

Overview of the installed press

This figure shows the main components of the installed press.

Figure 1-1 Installed press



1	Electronics-ink cabinet	6	Rear interface
2	Stacker	7	Utility cabinet
3	Front interface	8	Feeder
4	Printing engine	9	Feeder pile
5	Press platform		

Customer site survey checklist

The HP Indigo or channel representative should complete the customer site survey checklist with the customer to confirm the fulfillment of all site preparation requirements.

At least one month before the scheduled date of installation, the customer site survey checklist must be filled in and signed by the customer, and then sent for approval to the:

- HP Indigo local installation manager
- HP Indigo GBU installation manager
- Rigging company manager

The installation cannot begin until site construction is verified and signed by a construction engineer, and site modifications (if applicable) have been fully completed in accordance with the approved plans. All construction work and painting must be finished, and the site should be properly cleaned, prior to installation. In particular, the print production area should be free from dirt and dust.

⚠ **WARNING!** The mains power supply to the installation site, as well as all electrical power outlets, must be checked by a qualified licensed electrician for compliance with national and local authority safety requirements.

2 Dimensions and weights

Transporting the crates

⚠ **WARNING!** The HP Indigo 10000 Digital Press, and its separate units must be lifted or transported only by specially trained and qualified personnel using lifting bars, lifting straps, and other specialized equipment that meet HP Indigo's specifications, and any additional requirements imposed by government regulations. Improper lifting might cause serious personal injury and/or damage to the machine or other property.

NOTE: Once uncrated, the engine may be moved by use of the pusher/puller per HP provided instructions and equipment or alternative means proven to be safe (e.g. by recognized standards organizations, long term use, local professional practices) for the intended use, and compliant with local safety requirements. The pusher/puller or such alternative safe means are for use by local professional rigging companies, taking into account customer site constraints, including the conditions of the surface on which the load is being transported (e.g. slopes, wet or icy surfaces).

NOTE: A manual pallet jack capable of lifting at least 2 tons must be available on-site for moving the crates and press units (after the rigging company has left the site).

A 10 ton forklift is provided by the rigging company to lift the engine.

Crated dimensions

The press consists of crated units whose dimensions and weights (including packaging) are shown below.

Table 2-1 Crated dimensions

Unit	Length	Width	Height	Weight
Feeder pile	1,890 mm (75 in)	1,760 mm (69 in)	1,940 mm (76 in)	770 kg (1,698 lb)
Feeder (two drawers with bridge)	3,125 mm (123 in)	1,755 mm (69 in)	1,900 mm (75 in)	1,500 kg (3,360 lb)
Engine (with covers)	2,620 mm (103 in)	2,130 mm (84 in)	2,572 mm (101 in)	6,000 kg (13,227 lb)
Utility cabinet	2,170 mm (85 in)	1,435 mm (57 in)	2,500 mm (98 in)	1,550 kg (3,417 lb)
Roof top air channel	1,160 mm (46 in)	940 mm (37 in)	350 mm (14 in)	22 kg (49 lb)
Electronics-ink cabinet	2,340 mm (92 in)	1,410 mm (56 in)	2,490 mm (98 in)	1,850 kg (4,076 lb)
Stacker	2,250 mm (89 in)	1,650 mm (65 in)	2,200 mm (87 in)	765 kg (1,687 lb)
Press platform (full)	2,060 mm (81 in)	1,600 mm (63 in)	970 mm (38 in)	160 kg (353 lb)

It may be necessary to coordinate the lifting and moving of units with your local authorities.

Uncrated dimensions

Table 2-2 Uncrated dimensions

Unit	Length	Width	Height	Weight
Feeder (with open bridge)	1,830 mm (72 in)	1,370 mm (54 in)	1,865 mm (73 in)	700 kg (1,544 lb)
Feeder pile	3,010 mm (119 in)	1,710 mm (67 in)	1,750 mm (69 in)	1,250 kg (2,756 lb)
Engine (with covers)	2,500 mm (98 in)	2,050 mm (81 in)[1]	2,538 mm (100 in)	5,700 kg (12,569 lb)
Utility cabinet	2,120 mm (83 in)	1,440 mm (57 in)	2,470 mm (97 in)	1,550 kg (3,418 lb)
Roof top air channel	1,435 mm (56 in)	1,025 mm (40 in)	360 mm (14 in)	44 kg (97 lb)
Electronics-ink cabinet	2,290 mm (90 in)	1,410 mm (56 in)	2,470 mm (97 in)	1,700 kg (3,749 lb)
Stacker (with open bridge)	2,260 mm (89 in)	1,660 mm (65 in)	2,200 mm (87 in)	900 kg (1,985 lb)
Press platform (full) (when assembled)	2,130 mm (84 in)	1,490 mm (59 in)	980 mm (39 in)	300 kg (662 lb)

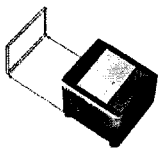
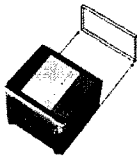
[1] The minimum clearance for moving the engine is 1,900 mm (75 in).

Minimum dimensions of doors and hallways

These dimensions are based on the uncrated dimensions.

NOTE: If you use a forklift instead of the puller/pusher, make sure that the doors and hallways can accommodate the height and width of the forklift in addition to the engine.

Table 2-3 Doors and hallways — minimum dimensions

	Description	Width	Height	Turning radius with press and puller/pusher
	If the engine enters in the input-exit direction (with transportation wheels attached)	2,000 mm (79 in)	2,450 mm (96 in)	3,000 mm (118 in)
	If the engine enters in the front-rear direction (with transportation wheels attached)	2,600 mm (102 in)	2,450 mm (96 in)	N/A

3 Transporting the press

Overview

Transporting the press from the warehouse to customer site will be done by a rigging company that is trained for that job by HP Indigo.

HP Indigo / Channel Partner personnel will be available:

- During the uncrating of the press
- For inspection while moving the press to its installation location
- For inspection while positioning the press

HP Indigo / Channel Partner personnel will also perform the final installation steps.

Unloading area

A suitable unloading area should be designated. The unloading area must be able to easily accommodate three trucks.

The unloading area requires sufficient space for the unloading nine large packages that are shipped with the press, as well as a maneuvering area for a 10 ton forklift:

- The typical turning radius of a 10 ton forklift without a load is 5 m (16.4 ft)
- The typical turning radius of a 10 ton forklift with a load is 7.5 m (24.6 ft)

When you plan the unloading area, take these items into consideration:

- Height and width of the entrance to the unloading area
- Presence of any ramps and slopes
- Height and size of unloading dock (if applicable)
- Floor load (with and without a heavy forklift)

In bad weather conditions, packages may need to be unpacked inside the customer site. Therefore, consider the forklift maneuvering area and floor load necessary for bad weather conditions.

Transportation pathway

An unobstructed pathway is required when moving the uncrated equipment from the unloading area to the press room.

When you plan the transportation path, take these items into consideration:

- Shortest path
- Surface type: asphalt, concrete, wood, etc.
- Slope up to 3%

- Steps, obstructions, or height constraints along the path
- Doors, hallways, elevators, etc., must be of sufficient height and width to allow for easy maneuverability and load

NOTE: The heaviest part of the press is the engine (6 metric tons).

Rolling in the press

Unloading and rolling the engine is performed with a dedicated pusher/puller (electrical trolly) provided by the rigging company.

The floor load capacity must be checked from the unloading area to the press room:

- See "Load distribution"
- Floors that will support heavier items (such as the 10 ton forklift) must have an adequate load capacity, which must be verified by the customer and confirmed by a structural engineer.

Figure 3-1 The engine on the truck

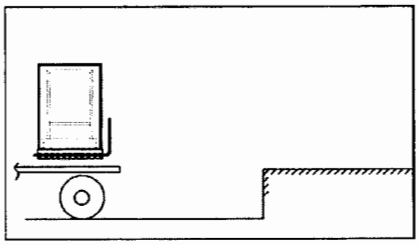


Figure 3-2 Moving the engine from the truck to the floor

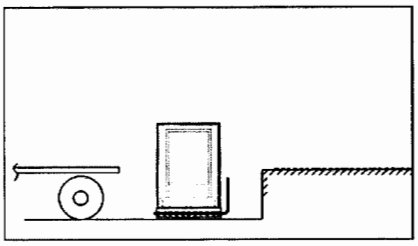
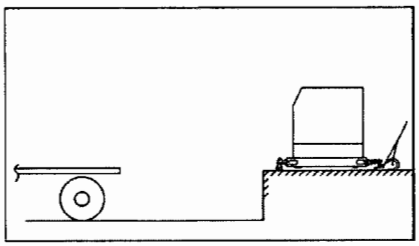


Figure 3-3 Attaching the puller/pusher to the engine



4 Press views

Entire press

Figure 4-1 Entire press (3D view)

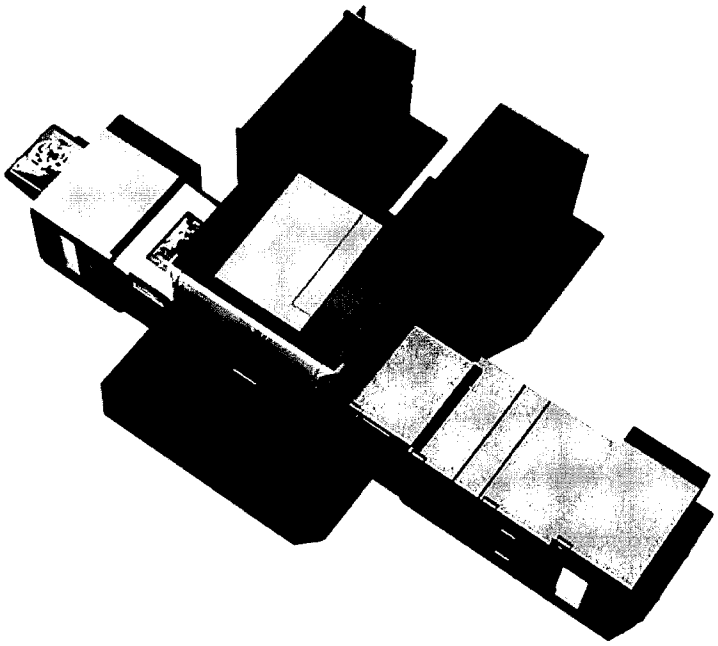


Figure 4-2 Press dimensions

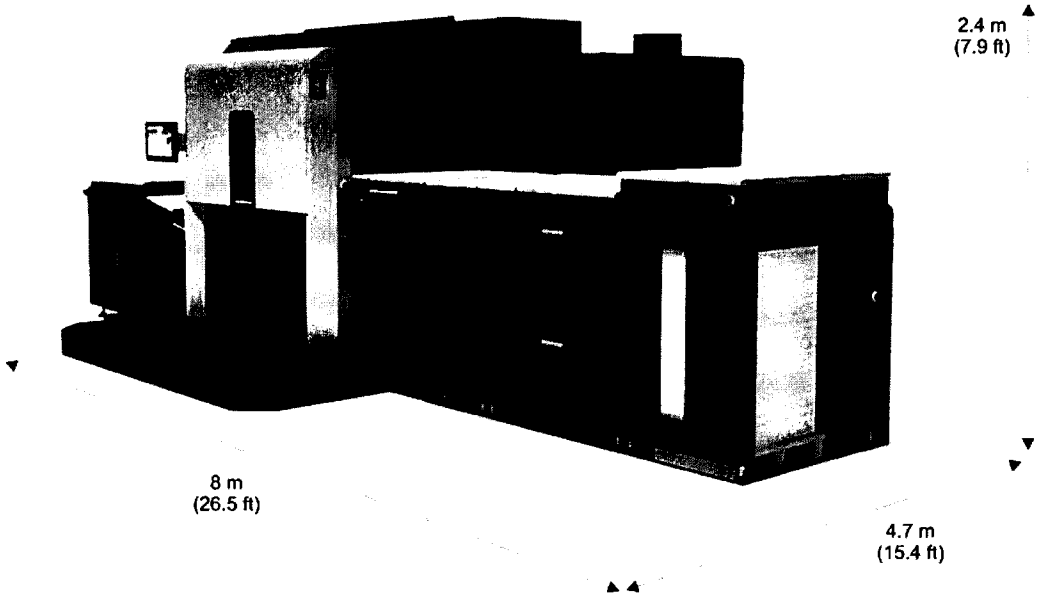


Figure 4-3 Press with covers open (front view)

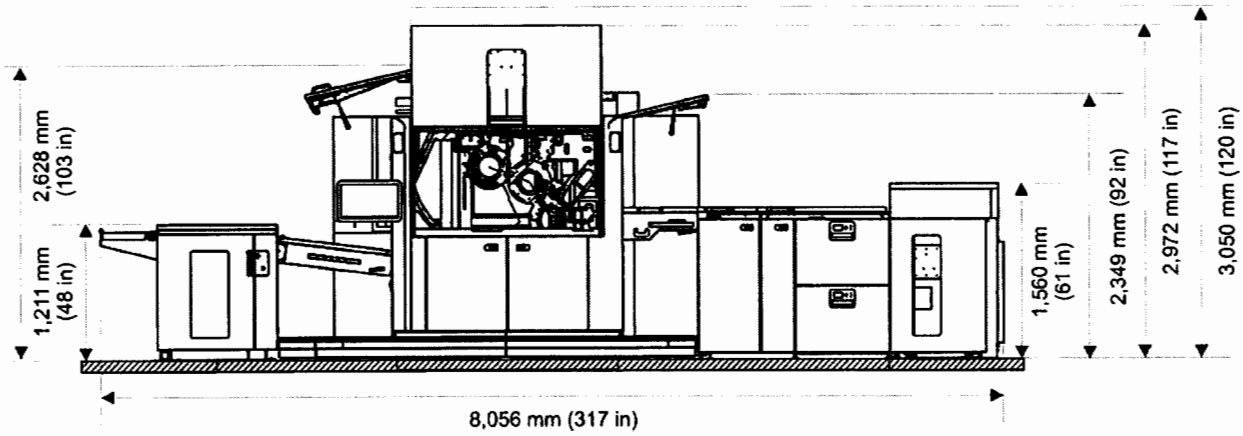


Figure 4-4 Press with covers closed (front view)

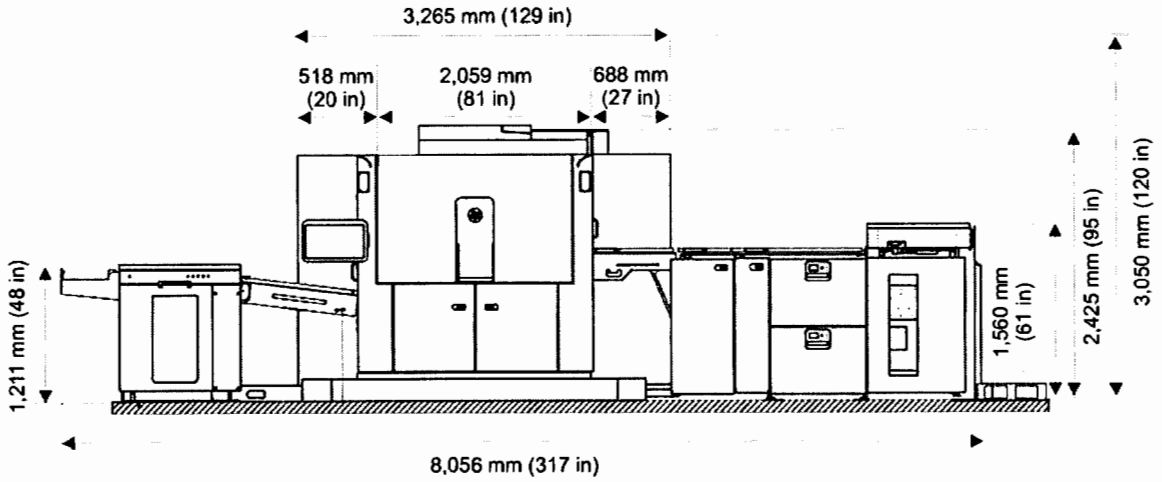


Figure 4-5 Press with full platform (top view)

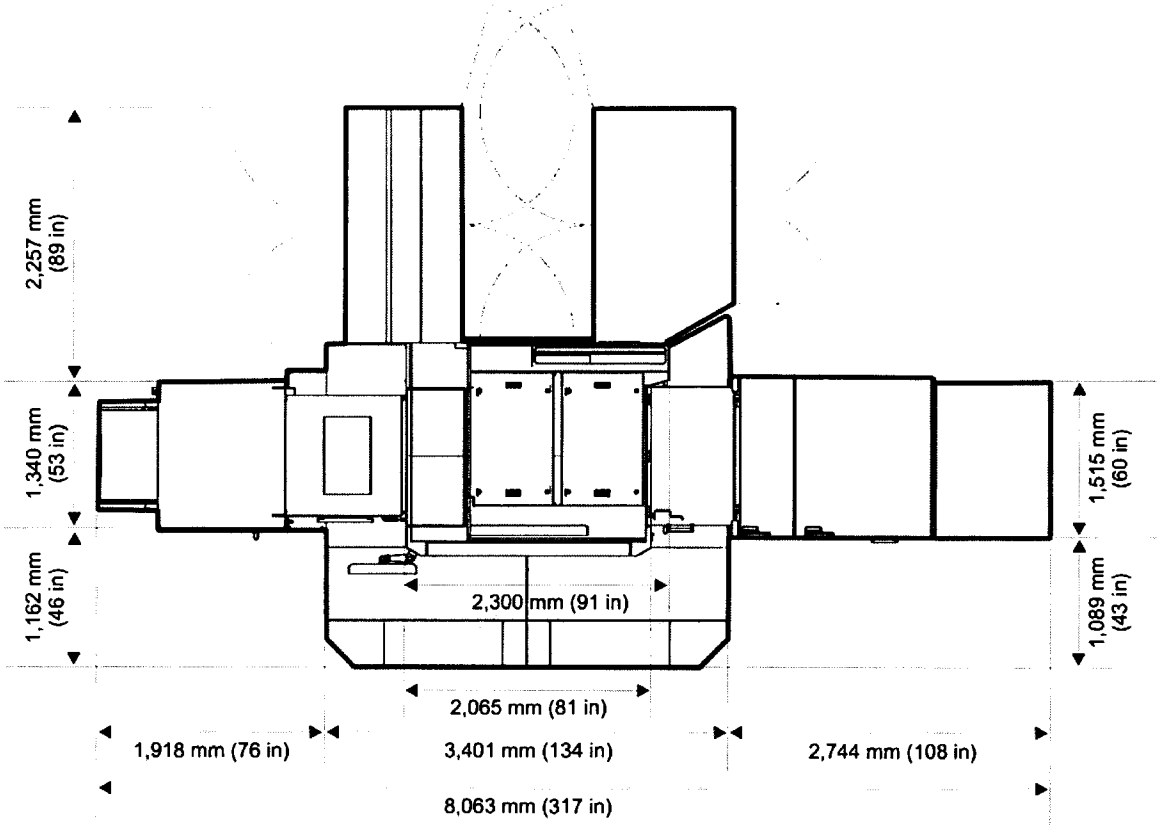


Figure 4-6 Press with half platform (top view)

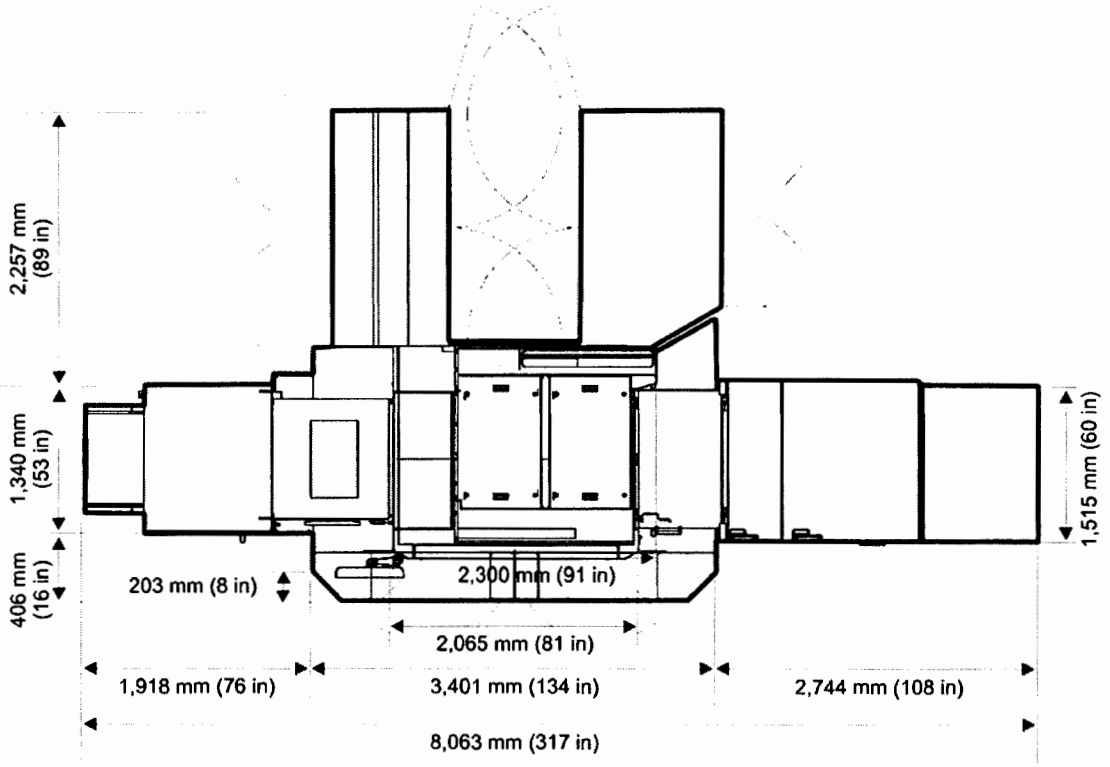
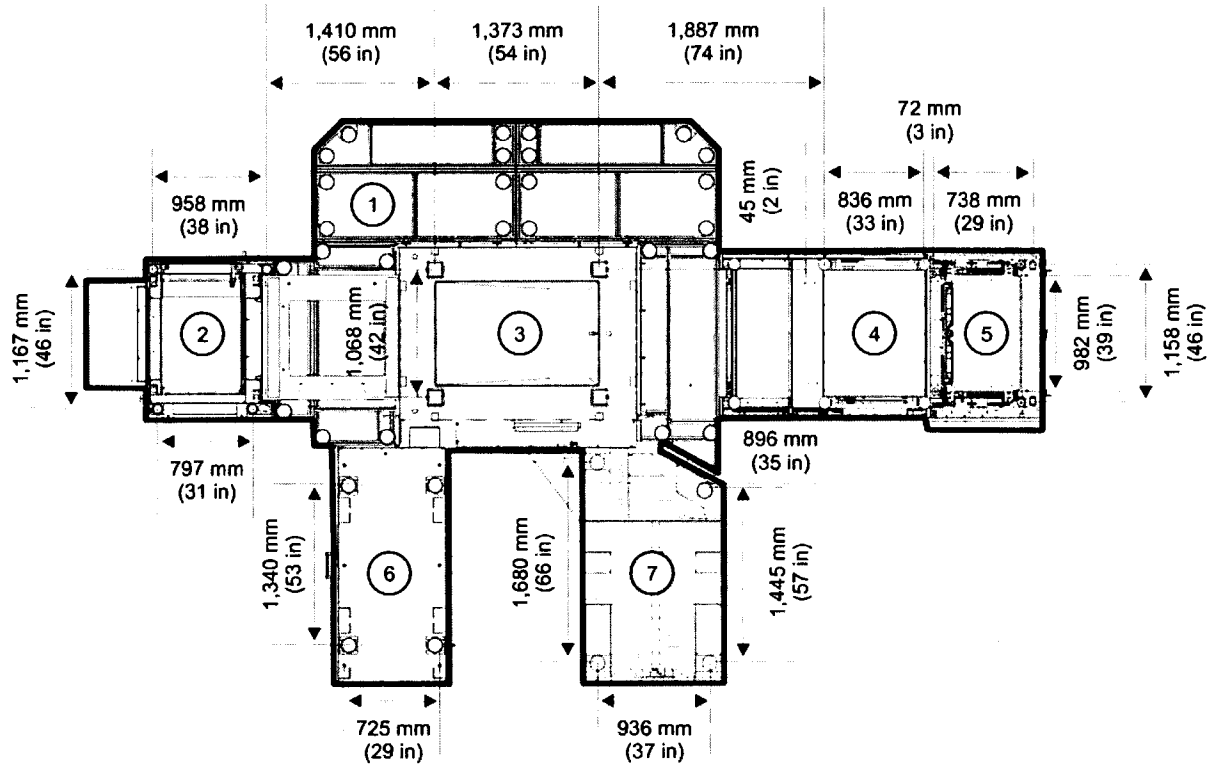


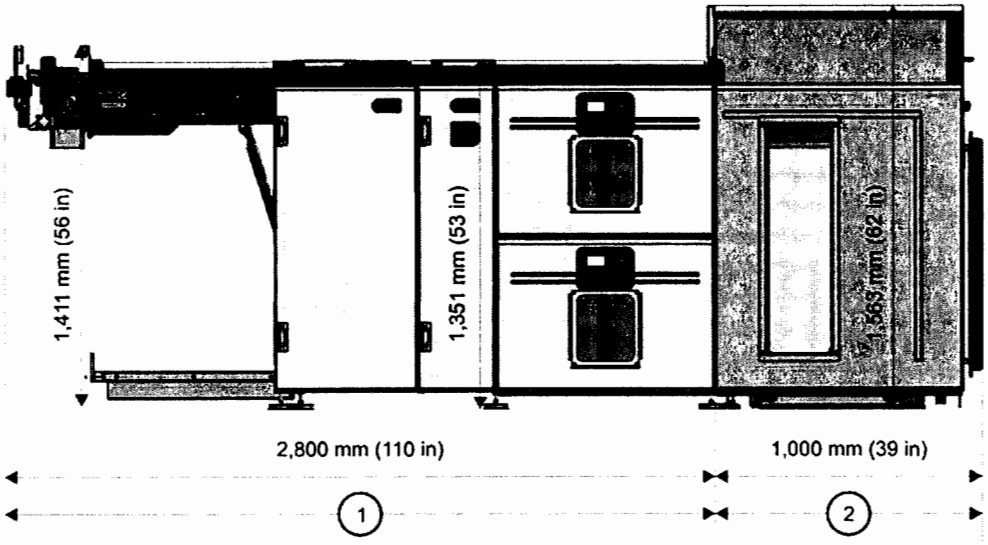
Figure 4-7 Press with full platform (bottom view)



1	Press platform	5	Feeder pile
2	Stacker	6	Electronics-ink cabinet
3	Engine	7	Utility cabinet
4	Feeder		

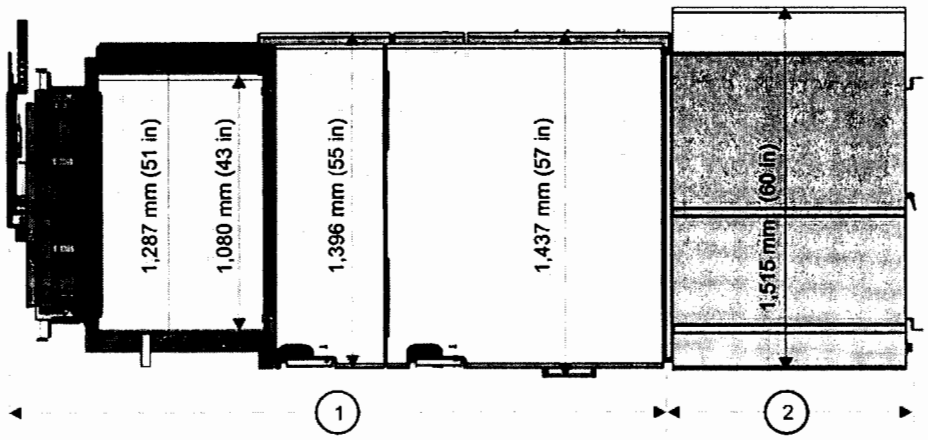
Feeder and feeder pile

Figure 4-8 Feeder and feeder pile (front view)



1	Feeder	2	Feeder pile

Figure 4-9 Feeder and feeder pile (top view)



1	Feeder	2	Feeder pile

Stacker

Figure 4-10 Stacker (front view)

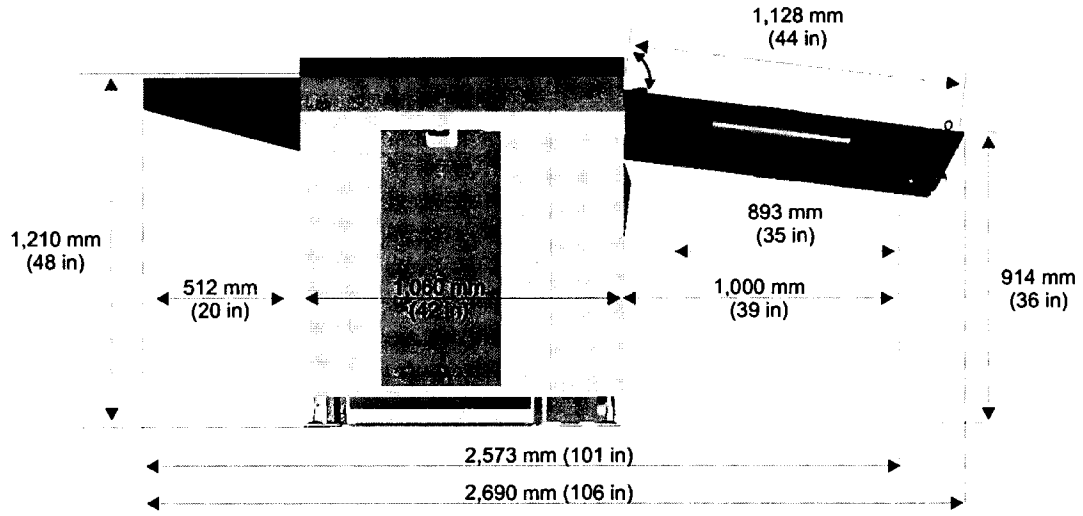
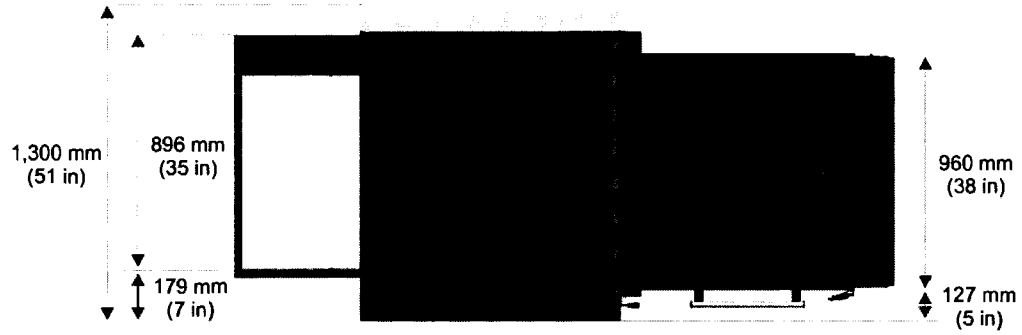


Figure 4-11 Stacker (top view)



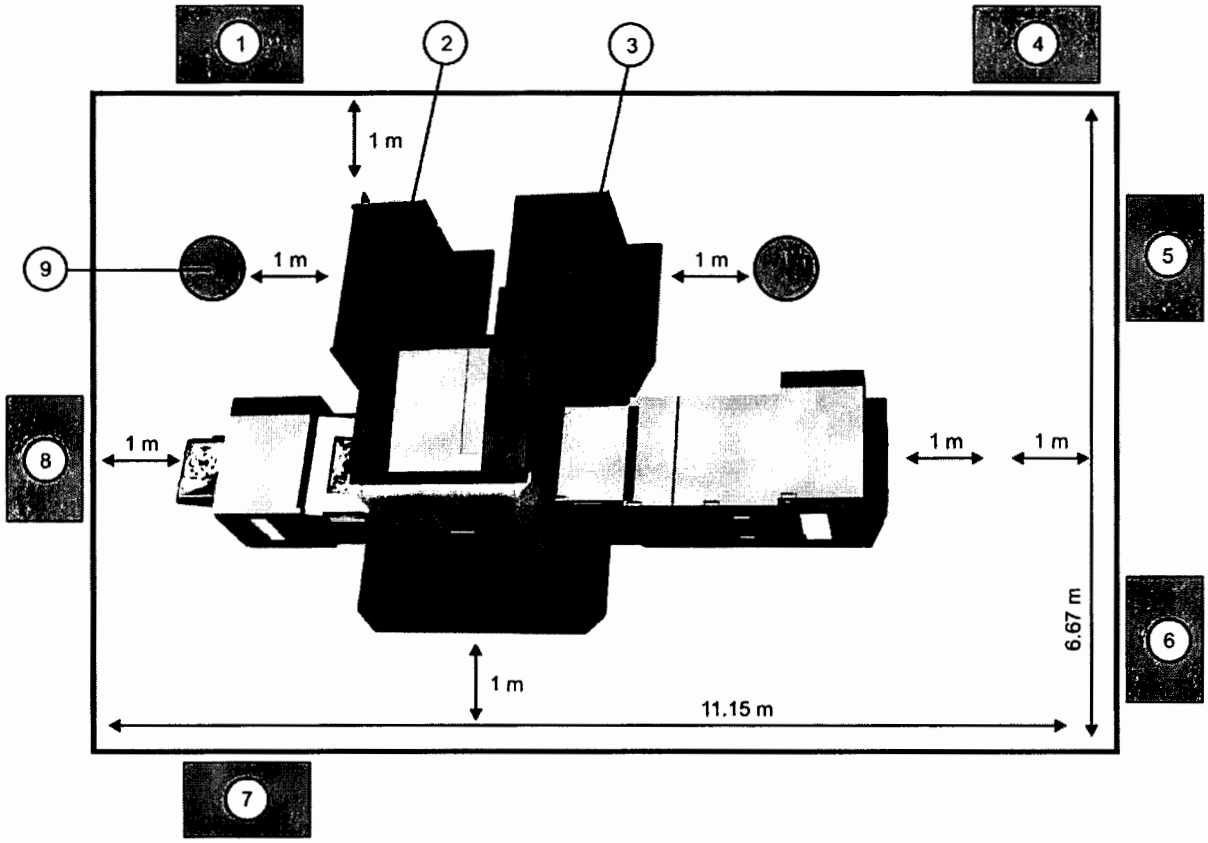
5 Layout

Space requirements

The following space requirements are necessary to ensure proper working conditions:

- The minimum height for installation and maintenance is 3,050 mm (120 in). This includes space for normal maintenance, special maintenance jigs, and a 2.5 ton forklift.
- A free area is required on the sides, front, and rear of the press for service doors and activities:
  - Around the press, rear, and stacker – 1 m (3.3 ft)
  - At the front of the press platform – 1 m (3.3 ft)
  - Around the feeder – 2 m (6.6 ft)
- The minimum room size is 74 m^2 (797 ft^2). This space is only for the press (without working table, supplies, substrates, etc.) but it does include open press doors, press platform, and free areas on the sides of the press.
- The area around the main switch and circuit breaker of the press must be clear of obstacles.
- If more than one press is located at a site, the minimum spacing between the presses is 1,300 mm (51 in).
- Verify that the building's structural columns (if they exist) do not prevent the press doors from opening.
- Storage area: recommended for substrate, supplies, etc.
- DFE room – see the *HP SmartStream Production Pro Print Server Site Preparation Guide* (CA394-10360).

Figure 5-1 Site arrangement (example not to scale)



1	Supplies storage area / Eyewash station	6	Substrate storage area (same climate as press room)
2	Access hole for fiber optics (optional)	7	Work table for servicing components / HP Operator Control Station
3	Access hole for press power, communication, compressed air, cold water, and fiber optics	8	Finisher / Cutter
4	Uptime kit (space to hold spare parts) (see Uptime kit)	9	Structural columns of site building
5	Climate-controlled server room for DFE		

Ceiling clearance

The minimum height for installation and maintenance is 3,050 mm (120 in).

You may need to raise the ceiling above the engine.

Figure 5-2 Ceiling clearance (front view)

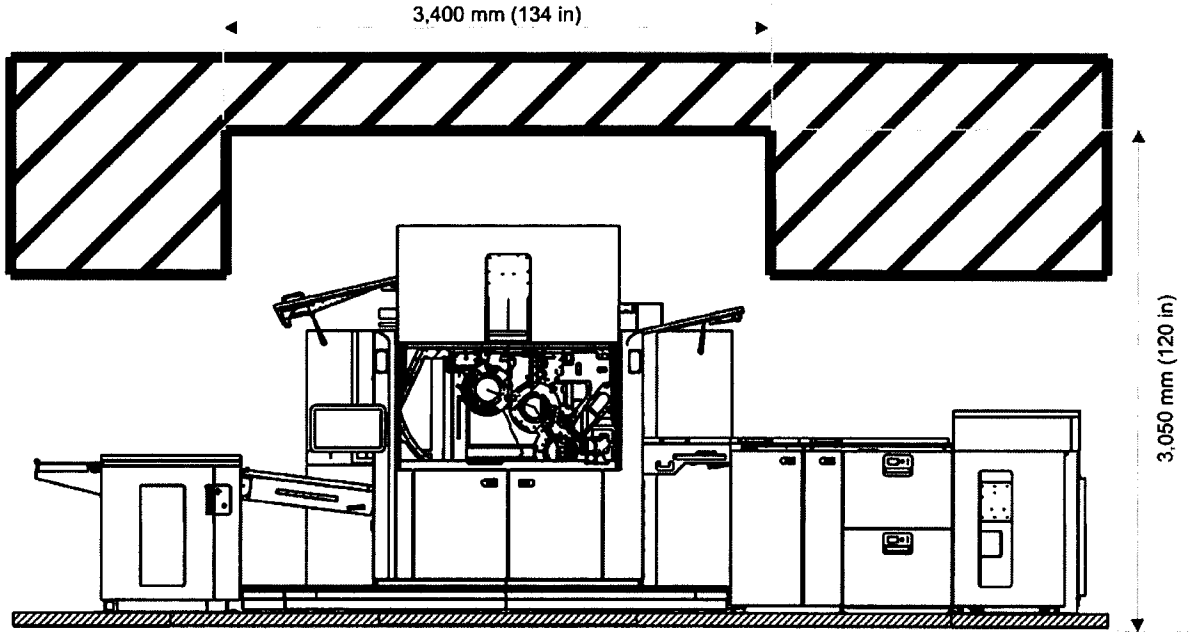
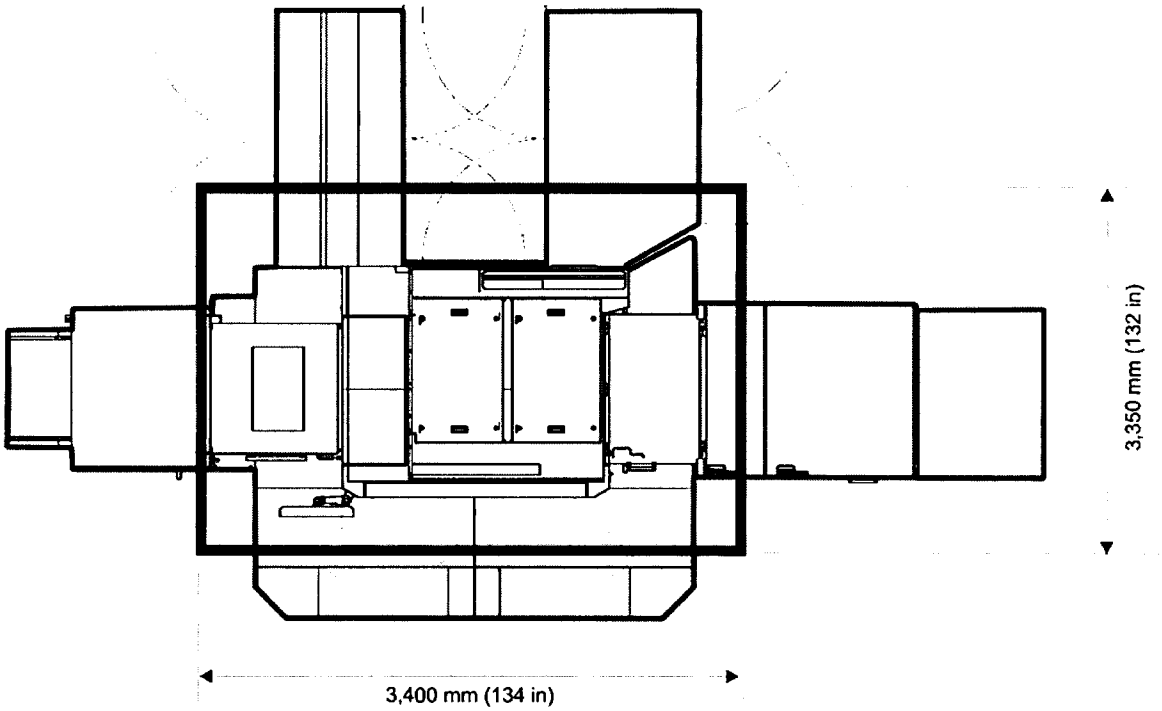


Figure 5-3 Ceiling clearance (top view)



Routing cables along the floor vs. the ceiling

- The customer can choose to route the following cables along the floor or the ceiling. However, it is recommended to route these cables along the floor.
  - Power cables
  - Communication cables
  - Compressed air cables
- Route the water hoses along the floor (not the ceiling).
- The customer is responsible for providing platforms to prevent the cables from being damaged.
- Make sure that the water cables and the electricity cables are housed in separate platforms.

6 Floor

Floor specifications

A structural engineer must check the load capacity of the floor strength of the building that supports the press. (The structural engineer will also check the floor slope.) The structural engineer must approve the site layout. The structural engineer will give a report to the customer, who will forward the report to HP Indigo.

Use the following guidelines for the floor of the press room:

- Smooth floor, level better than 1°
- Free of heavy vibration during operation (Vrms < 0.2 G, Vpk < 0.6 G)
- Covered by an anti-static material, which is resistant to imaging oil, and which can be easily cleaned in case of spills

Load distribution

NOTE: The following specifications refer to the installation of a single press only. If more presses are to be installed (or if one press is added to an already installed press), a locally licensed structural engineer should be consulted.

Floor load capacity must be checked from the unloading area to the press room.

If there are slabs on a grade, the structural essentials are:

- For a jointless concrete floor, the minimum required thickness is 120 mm (5 in) with steel fibers.
- For a saw-cut concrete floor, the minimum required thickness is 150 mm (6 in) with mesh reinforcement or steel fibers.

If there is an elevated floor, a floor that is supported by piles, or a welded second-story mezzanine, the structural essentials are:

- For a live-loaded floor with a design load greater than 0.75 tons/m^2 (0.077 tons/ft^2), this is acceptable.
- For a live-loaded floor with a design load of 0.35 - 0.75 tons/m^2 (0.036 - 0.077 tons/ft^2), a locally licensed structural engineer must perform an engineering study and analysis.

  The engineer must take into consideration an affected area of 65 m^2 (700 ft^2) loaded with 0.55 tons/m^2 (0.056 tons/ft^2) and stablize it in the area where the press will go. The engineer must examine the resulting force and floor depression.

  If the bearing capacity force is more then the resulting force, then this is acceptable.

  If the calculated deflection is less then the deflection that is permitted by local codes, then this is acceptable.

- For a floor with a design load of less than 0.3 tons/m^2 (0.031 tons/ft^2), where the press will be placed on top of or adjacent to a concrete wall or concrete columns, this is acceptable.

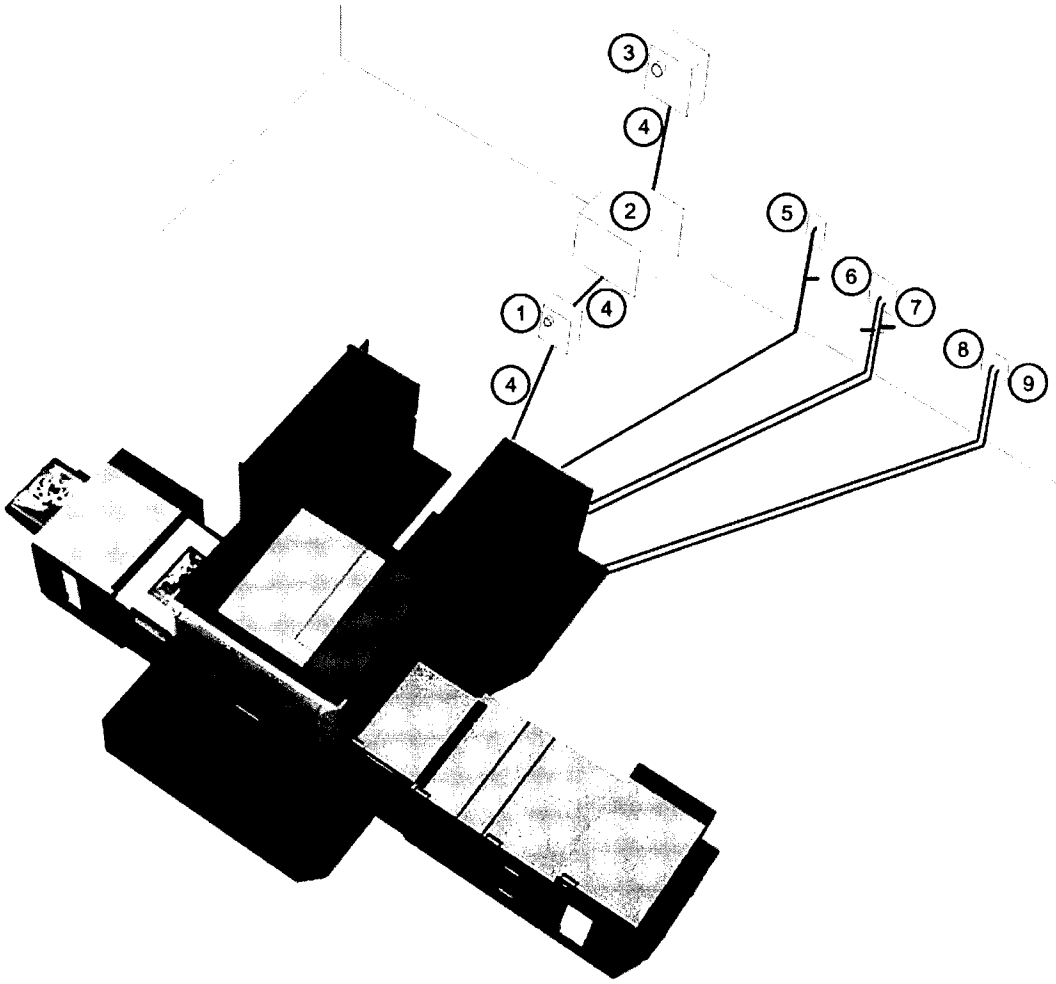
Floors that will support heavier items (such as the 10 ton forklift) must have an adequate load capacity, which must be confirmed by a structural engineer. This is the customer's responsibility.

7 Connections

Utility connections

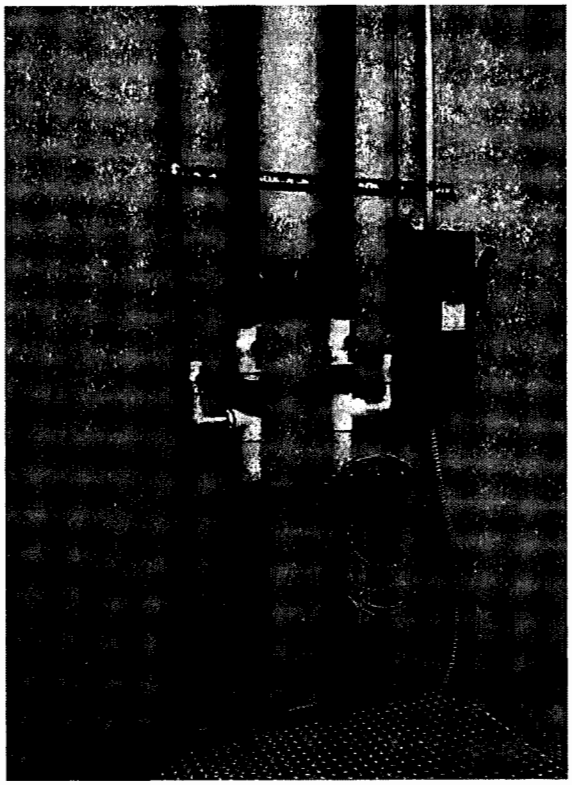
The utility connection points are shown below.

Figure 7-1 Utility connection points



1	Lockable branch circuit protection main power supply (USA and Canada)	6	Cold water
2	Transformer (where local voltage differs from 400 V AC)	7	Hot water
3	Hard connection to branch circuit protection	8	Fiber optics line
4	Conduit (where required)	9	Network line to DFE
5	Compressed air		

Figure 7-2 Recommended utility connections



Compressed air

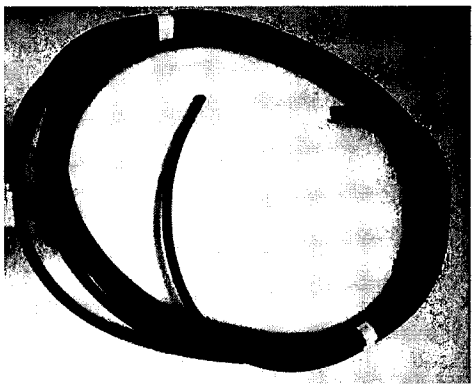
The press uses compressed air. The customer is responsible for purchasing and installing an air compressor that is suitable for press.

Compressed air requirements are:

- Dry air to prevent corrosion
- 6 bar (maximum: 8 bar)
- 25 cubic feet per minute (750 liters per minute)
- System piping - 12 mm (0.47 in) diameter - The air inlet is located in utility cabinet

HP Indigo provides the following connectors:

- **Figure 7-3** 7 meters (23 feet) of 12 mm (0.47 in) pressure hose

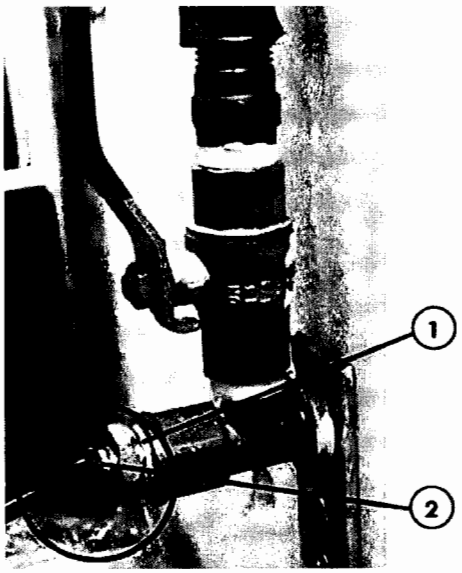


- **Figure 7-4** Air hose thread

1	1/4, 3/8, or 1/2 inch thread for fixed connections	2	12 mm (0.47 in) air hose quick release connector

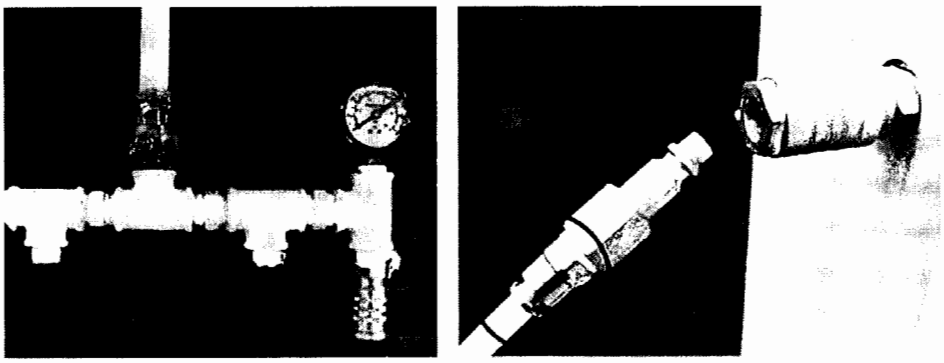
The customer will provide one of the following connectors:

- **Figure 7-5** Customer connector - option 1



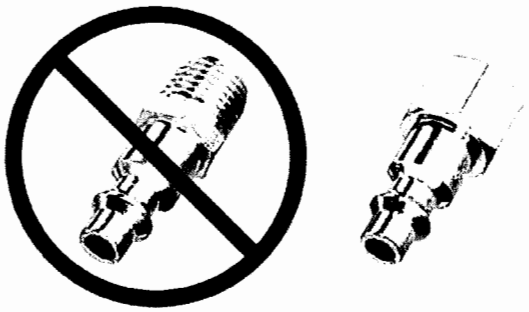
1	1/4, 3/8, or 1/2 inch thread for fixed connections	2	12 mm (0.47 in) air hose quick release connector

- **Figure 7-6** Customer connector - option 2



NOTE: Make sure that the quick release air hose connector ends in a female thread that fits HP Indigo fittings.

Figure 7-7 Quick release air hose connector — female thread



Electrical connections

⚠ **WARNING!** A qualified, licensed local electrician must install all electrical connections in compliance with local regulations. The electrician should verify the electrical aspects of the site preparation.

When preparing the site, contact your local HP representative to coordinate the preparations for electrical connections.

The press will be hardwired to the main electrical power supply. An insulating conduit must protect the cables.

The press is sensitive to phase reversal. Be careful when you connect, change, or repair the power cables. Verify that the phase order is correct. Make sure that the Phase Order LED is on.

NOTE: The qualified, licensed local electrician has to make at least two visits to the site. For example, to do the electrical infrastructure installations at the site preparation stage, and again to make the final connections to the press after installation.

NOTE: The HP Indigo 10000 Digital Press is designed to meet international standards, including European Harmonized standard EN60204. However, additional local regulations or requirements may apply.

The following units are supplied by HP Indigo:

- Transformer for press where local voltage differs from 400 V AC (supplied by HP Indigo only in HP direct service regions)
- UPS

Additional electrical / socket requirements:

- Service electrical connections - see Figure 5-1 Site arrangement (example not to scale)
- Compressor
- Customer chiller power
- DFE - See the *HP SmartStream Production Pro Print Server Site Preparation Guide* (CA394-10360)
- HP Operator Control Station (optional)

Voltage stabilizer (where needed)

The press must have a stable power supply. In regions were the electrical network is not stable, a voltage stabilizer must be installed to obtain a voltage tolerance of up to +/- 6%. Failure to install a suitable electrical voltage stabilizer shall be deemed a failure to comply with the HP Indigo Digital Press Operating Instructions, and may result in damage to the HP Indigo Digital Press which shall be excluded from HP's obligation to provide Warranty and/or Service coverage.

Regions that require installation of an electrical voltage stabilizer:

- APJ - In areas known to have an unstable electrical network.
- LAC - Is also known to have unstable electrical networks.
- EMEA DC - In areas known to have an unstable electrical network.

It is the channel partner's responsibility to guide and supervise the customer to obtain a suitable electrical voltage stabilizer.

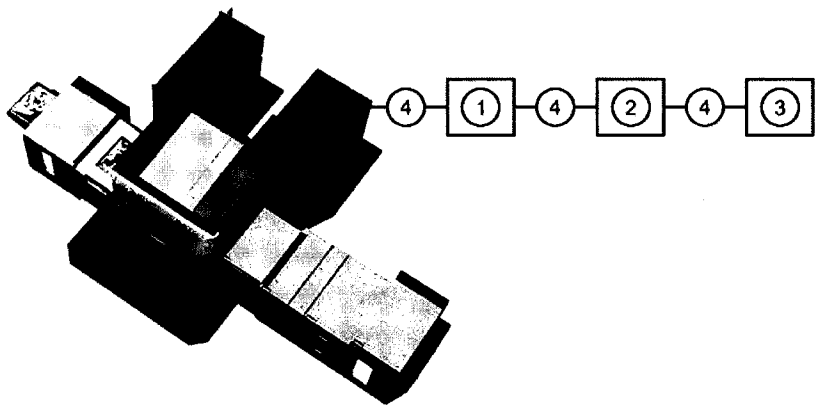
NOTE: If a sale is performed in one of the regions included in the list above directly from HP (not through one of our channel partners), the customer is responsible for providing a suitable electrical voltage stabilizer.

Connecting the press to the main power supply

Main power supply

It is the customer's responsibility to hard wire the HP Indigo Digital Press to the main electrical power supply. The customer must supply the main power supply cable. A conduit must be used to protect the cables.

Figure 7-8 Main power supply



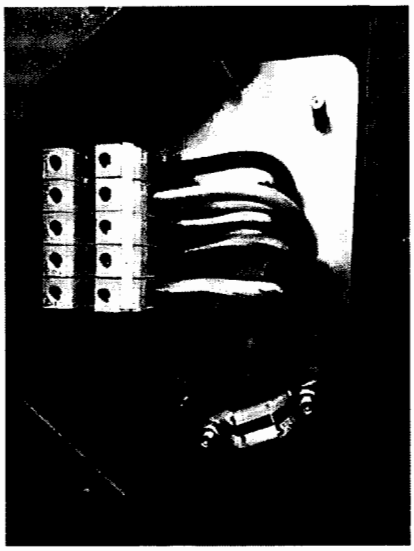
1	Lockable branch circuit protection main power supply (USA and Canada)	3	Hard connection to branch circuit protection
2	Transformer (where local voltage differs from 400 V AC)	4	Conduit (where required)

The customer is responsible for making sure that the cable meets local standards.

It is recommended for the local electrician to do an earth fault loop impedance test (also known as loop test).

The cable connects to terminals in the utility cabinet.

Figure 7-9 Utility cabinet terminals



Electrical compliance and requirements

NOTE: The press requires electrical isolation and lockout during service and maintenance procedures. Mount an isolator box and key on the wall near the press. This key should be conveniently located for the press operator.

NOTE: The neutral line in this product is permanently connected to the supply. It is not switched.

NOTE: To comply with IEEE STD446-1995 and relevant local electrical regulations, do the following: If a UPS, transformer, or voltage stabilizer (isolated) is located between the press and the main power supply, then, at the output side of the UPS, transformer, or voltage stabilizer (isolated), verify that the neutral and grounding points are connected. If they are not connected, have a local licensed electrician make the connection, unless it conflicts with local electrical regulations. In this case, contact the HP Indigo service center for further instructions.

NOTE: The press works with a DFE. See the *HP SmartStream Production Pro Print Server Site Preparation Guide* (CA394-10360) to determine electrical requirements for the DFE.

NOTE: The press contains active electronic filters and drive systems. As such, it has high ground leakage current (up to 1 A) and must be connected to a permanent ground. The press is certified for safety by Intertek (ETL) to standards UL775 and EN60204, and which permit ground leakage current of up to 5% input current, when appropriate precautionary measures are taken.

Subject to compliance with local regulatory requirements, the press may be connected with ground fault detection equipment having the following features:

- Dedicated only to the press
- With delay of at least 0.3 seconds
- Rated 125 Amps or more (depending on press type)
- Set between 0.3 Amps and 1 Amp (adjustable type is preferred)

Electrical specifications

Table 7-1 Electrical power requirements for the press

Input voltage (direct connection to the press)		3-phase Star (Y) 400 VAC (phase-phase), 230 VAC (phase-neutral) +/- 6% 3 x 100 Amp **Note:** Sites with this input voltage do not require a transformer.
Line input frequency		50/60 Hz +/- 1%
Ground wire cross section (minimal)		25 mm^2 (0.039 in^2) (4 AWG)
Maximum power consumption		3 x 80 Amps, 55 KW (average)
Power consumption during printing		3 x 70 Amps, 48 KW (average)
Input voltage using transformer	USA	3–phase Delta (Δ) connection 208 VAC, 240 VAC, 480 VAC, +/- 6%
	Japan	3–phase Delta (Δ) connection 200 VAC +/- 6%
	UK	3–phase Star (Y) connection 415 VAC +/- 6%
Circuit breakers (at sites that do not require transformers)		3-phase circuit breaker, 100 Amps, tripping characteristic type C
Circuit breakers before transformer (at sites with transformer)	USA	3–phase circuit breaker, 5000 AIC that complies with all national, state, and local codes. • For 208 VAC input — 200 Amp breaker • For 240 VAC input — 175 Amp breaker • For 480 VAC input — 100 Amp breaker
	Japan	3–phase circuit breaker, 5000 AIC that complies with all national, state, and local codes. • For 200 VAC input — 200 Amp breaker
	UK	3–phase circuit breaker, tripping characteristic type C, 5000 AIC that complies with all national, state, and local codes. • For 415 VAC input — 100 Amp breaker
Circuit breakers after transformer (where required in addition to circuit breaker before transformer)	USA and Canada	3–phase, 100 Amps
Neutral to ground		Not to exceed 2 V
Distance from transformer to press (where transformer is required)	Maximum distance	20 m (65 ft)

Table 7-2 **Electrical power requirements for the HP Operator Control Station (optional)**

Input voltage (direct connection to the HP Operator Control Station)	Single-phase, 1 P+N 230 VAC (phase-neutral) +/- 6%
Line input frequency	50/60 Hz +/- 1%
Circuit breaker	16 Amp, Type C
Ground wire cross section (minimal)	8.37 mm^2 (0.013 in^2) (8 AWG)
Power cable	PC power cord with a length of 2,000 mm (78.7 in)

Communications

Standard press communication requirements

The following are required for communication:

- Convenient access to a telephone (with a long and portable lead).
- Access to the internet to obtain automatic software updates and connectivity to HP IndigoServe.
- IP address: the press requires that the server have a static IP address, or an IP address assigned through DHCP with a permanent lease.

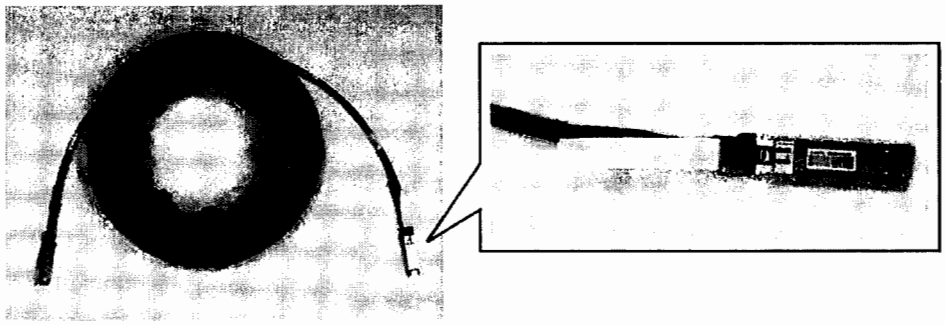
DFE network cable specifications:

The following two cables are required between the press and HP SmartStream Production Pro Print Server:

1. 10 GbE Multi-mode OM3 (50/125 µm) LC/LC optical cable. HP Indigo will provide this 150 m cable.

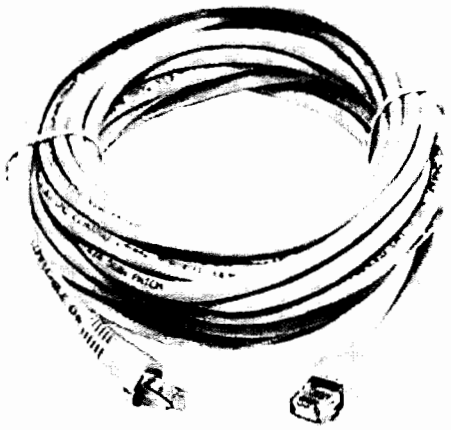
   For cable lengths greater than 50 m, a standard 10GbE aqua fiber (Multi-mode OM3 or OM3+ 50/125 µm) LC/LC) may be used. Cable length must not exceed 300 m (984 ft) including all cables and connectors end to end.

   Figure 7-10 10 GbE Multi-mode OM3 (50/125 µm) LC/LC optical cable

2. 1000 Base-T Cat6 (or above) cable. The customer will provide this cable.
   - 100 m (328 ft) maximum cable length. For connections that exceed 100 meters, it is recommended to use the optional configuration with a 10-Gigabit fiber optic link. For more details, see the *HP SmartStream Production Pro Print Server Site Preparation Guide* (CA394-10360).
   - RJ-45 connections on each end

Figure 7-11 1000 Base-T Cat6 cable



DFE network installation requirements:

- All network cabling must be run through appropriate network drops through ceilings, walls, and floors.
- It is recommenced that the DFE server be located within 100 m (328 ft) of the press.
- Cables must not be on the ground in areas where foot traffic may occur.
- Plenum-rated inner duct conduit for fiber runs is recommended for proper protection.

For additional information, see the *HP SmartStream Production Pro Print Server Site Preparation Guide* (CA394-10360) for:

- DFE electrical requirements
- DFE connections
- DFE communication requirements
- DFE room environment

Firewall requirements

Ask the system administrator to open the following firewall ports:

Table 7-3 Firewall DNS names and ports

Product	Open firewall DNS name and ports (outbound)
HP IndigoServe	Indigoserve-prd.houston.hp.com Port 6065 and port range 40000-40199 TCP
Print Care Service Call	Smtp2go.com Ports 25 and 587 TCP
	Email-smtp.eu-west-1.amazonaws.com Port 587 TCP
	Css-ext-pro.houston.hp.com Ports 80 and 443 TCP
HP Radar	ftp.hp.com

Table 7-3 **Firewall DNS names and ports (continued)**

Product	Open firewall DNS name and ports (outbound)
	Ports 80 and 443 TCP
	h41303.www4.hp.com Ports 80 and 443 TCP
HP MyRoom	myroom.houston.hpe.com Port 443/5228 TCP Port 443/5228 TCP/UDP Port 13400 UDP Ports 13440 -13449 UDP
Indigo Data Collection (IDC)	ftp.usa.hp.com FTP ports
Microsoft updates via Windows Server Update Service (for HP Indigo)	h30272.www3.hp.com Ports 80, 443, and 8530 TCP
Microsoft update servers	http://windowsupdate.microsoft.com http://*.windowsupdate.microsoft.com https://*.windowsupdate.microsoft.com http://*.update.microsoft.com https://*.update.microsoft.com http://*.windowsupdate.com http://download.windowsupdate.com http://download.microsoft.com http://*.download.windowsupdate.com http://test.stats.update.microsoft.com http://ntservicepack.microsoft.com Ports 80 and 443 TCP
Symantec anti virus	symantec.com symantecliveupdate.com omakamai.net Ports 80, 443 TCP and FTP
Go to Assist	Ports 8200, 443 and 80 TCP http://support.citrixonline.com/en_us/meeting/all_files/G2M060010
Parts replacements online movies	cdn.hp-indigo.net Ports 80 TCP and 443 TCP

If the customer is using a proxy server: From Internet Explorer, select **Tools** > **Internet Options** > **Connections** > **LAN Settings.** The *Local Area network (LAN) Settings* window appears. Clear **Automatically**

detect settings. Clear **Use automatic configuration script**. Optional: select **Use a proxy server for your LAN**. Optional: define the parameters of the proxy server.

8 Cooling water specifications

Overview

The customer is responsible for supplying cold water to the HP Indigo 10000 Digital Press according to HP Indigo water specifications.

Chiller options:

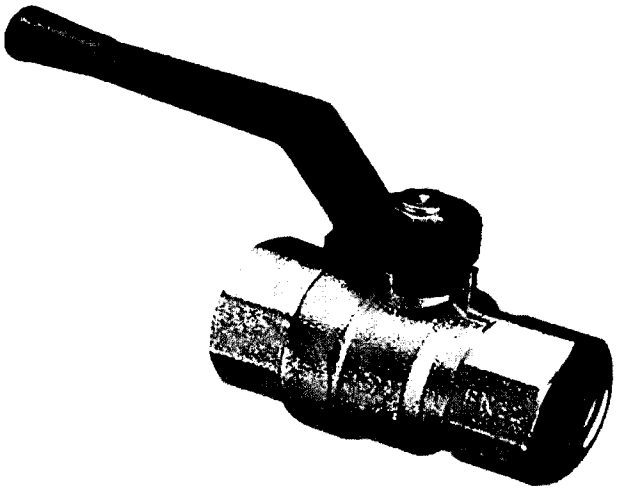
- Use the site's central chiller if it meets all of the HP Indigo water specifications
- Purchase an HP Indigo-recommended chiller from the chiller manufacturer
- Purchase a different chiller that meets all of the HP specifications

Water requirements

Table 8-1 Water requirements

Parameter	Customer chiller
Temperature of water inlet to press	5 – 7° C (42.8 – 46.4° F)
Water flow to the press	At least 120 L/min (31.7 gallons/min) at 5.5 bar
Cooling capacity	At least 40 kW (136,500 BTU/H) **NOTE:** Consult with the chiller vendor to determine the chiller's cooling capacity when the water temperature is 6 °C (44.6° F) and the chiller is at the maximum ambient temperature
Max pressure to the press	8 bar **NOTE:** See Chiller water and pump.
Press pressure drop at above flow rate	4 bar — press only
Water quality	Either tap water or water that has been through reversed osmosis (regarding glycol, consult the chiller manufacture) pH > 7.0 Antifreeze additive = propylene glycol
Anti-bacterial-freeze-corrosive	A corrosion inhibitor / algaecide must be used. It must not affect the following materials when wet: brass, copper, rubber, polypropylene, PVC, stainless steel, or Viton synthetic rubber. For applications that use biocides that contain chloride, make sure that the concentration does not exceed 25 parts per million (ppm).
Water valves (at the customer's wall)	38 mm (1.5 in) BSP female thread

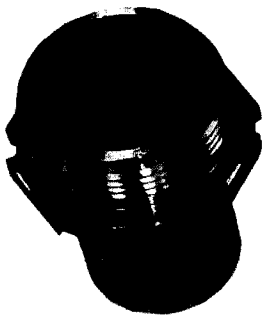
Figure 8-1 Water valve (38 mm (1.5 in)) BSP female thread supplied by customer



Customer chiller connections

- Verify that the input and output water hoses (with valves) are located according to Figure 8-11 Customer chiller connections.
- The customer can provide a chiller communication cable for remotely turning on and off the chiller. This cable can be connected to the press.
- HP Indigo provides 2 x 10 meters (2 x 32.8 feet) (total 20 meters (65.6 feet)) 38 mm (1.5 in) flexible water hose for water circulation between the press and the nearby water connection
- HP Indigo provides two flexible hose adaptors

  Figure 8-2 Flexible hose adaptor supplied by HP Indigo

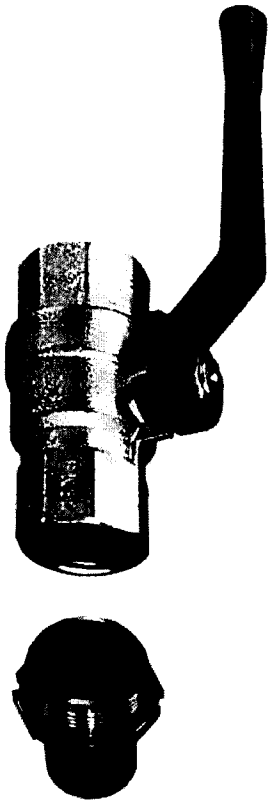
  

  The specifications of the flexible hose adaptors are:

  - 38 ND
  - 1.5 inches
  - For 38 hose
  - G 1.5 (BSP) threading
  - SS material

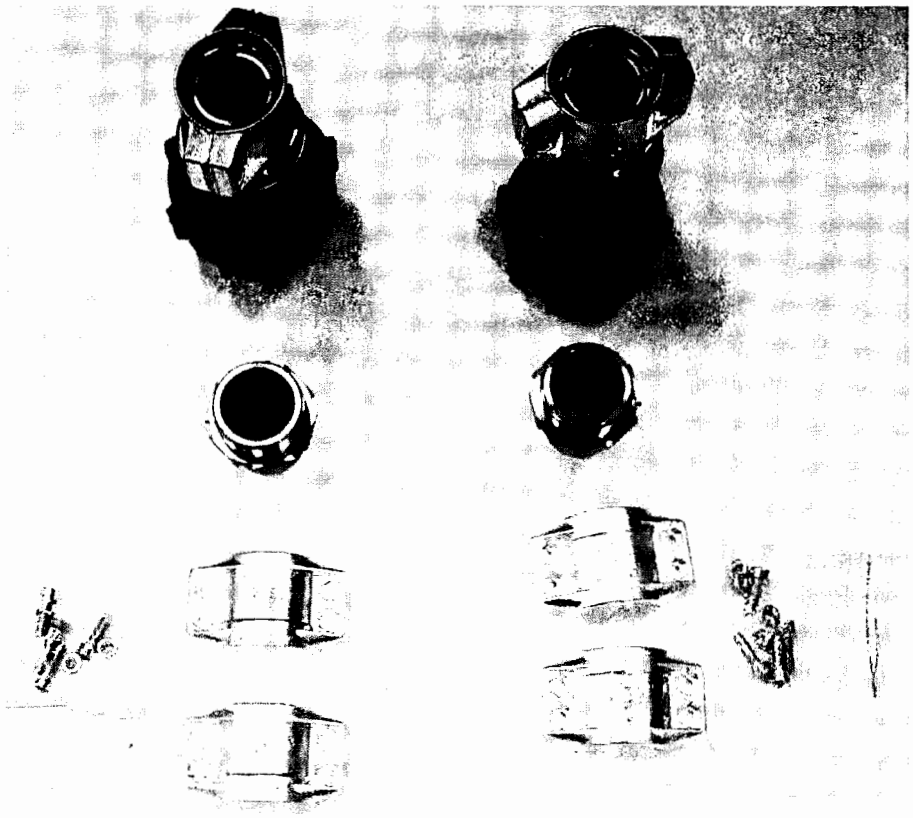
- Make sure that the water valve is perpendicular to the ground. Make sure that the flexible hose adaptor is firmly connected to the water valve.

Figure 8-3 Water valve and flexible hose adaptor



- Clamp the hoses.

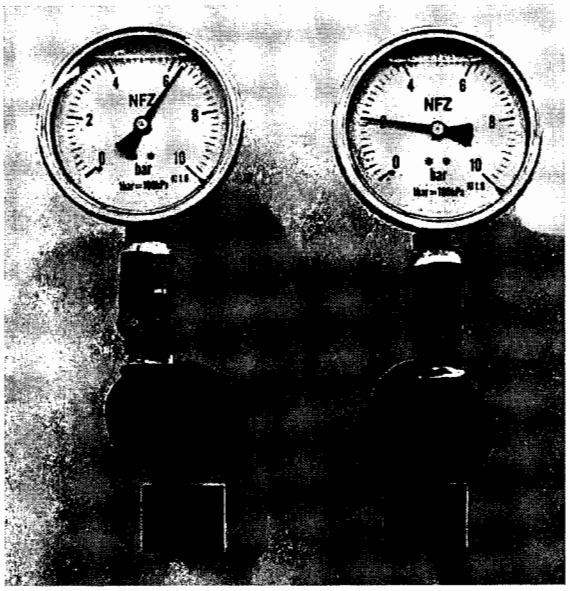
Figure 8-4 Clamps



- It is recommended to replace the chiller water once a year. This ensures that the water quality is good, and removes algae, corrosion, dirt, and contaminated water from the system.

- It is recommended to have a pressure gauge and a thermometer on both the inlet water connection and the outlet water connection.

Figure 8-5 Pressure gauges

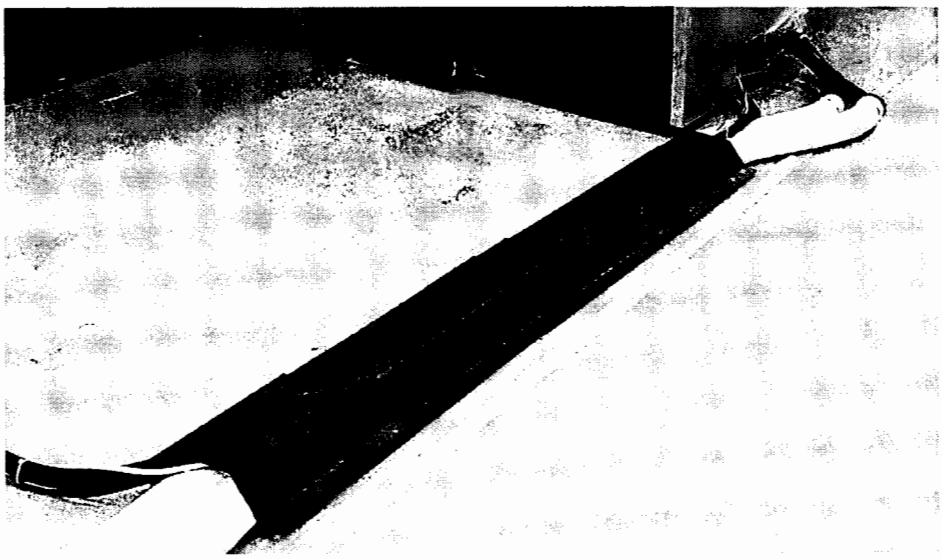


- It is recommended to install a mechanical bypass valve on the chiller lines on the wall next to the press.

Hoses can be routed along the floor or the ceiling:

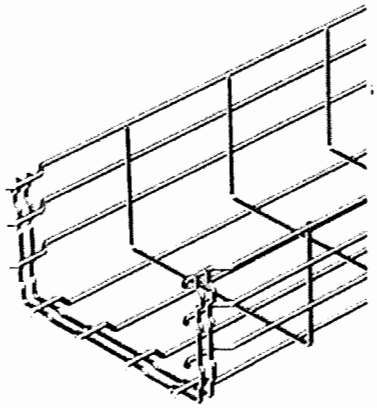
- If hoses are routed along the floor:
  - HP Indigo flexible hoses must be routed along the floor all the way to the press.
  - Do not hang hoses over hooks - this can create pressure that will damage the hoses.
  - The hoses must be located far from moving tools (such as the pallet jack).
  - The customer must protect the hoses with appropriate covers.

Figure 8-6 Hoses protected by covers



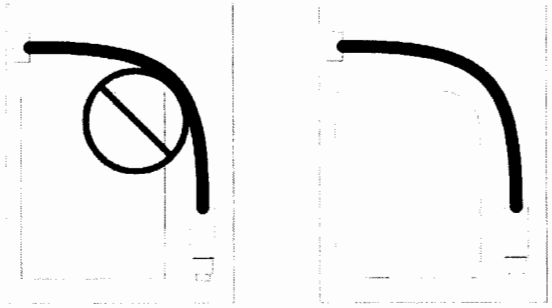
- If hoses are routed along the ceiling:
  - Hoses must be routed through cable racks.

    Figure 8-7 Cable rack

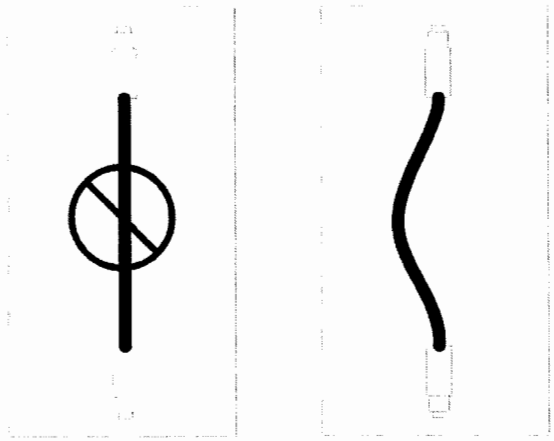
  - The bends in the cable racks must be smooth and rounded.

    Figure 8-8 Bends in cable racks

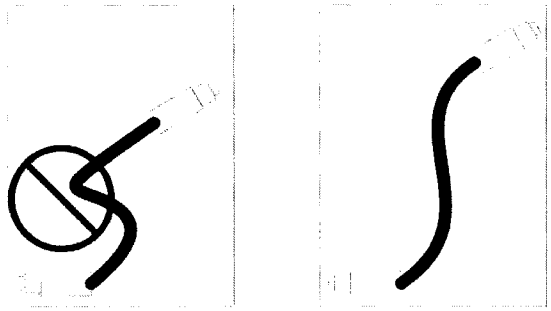
  - Hoses must have enough slack to allow for changes when under pressure.

    Figure 8-9 Hose slack

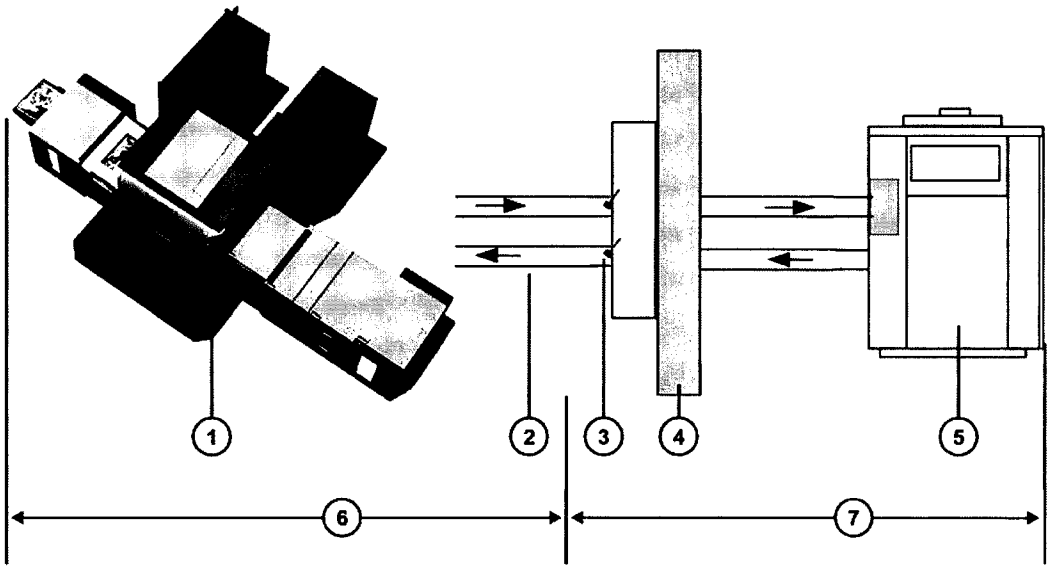
- Make sure the hoses are not folded or bent.

Figure 8-10 Hose not folded or bent



NOTE: Any special piping or other infrastructure changes required for installing the customer chiller in a separate room, or on a different floor, at a distance from the press, are the responsibility of the customer.

Figure 8-11 Customer chiller connections



1	Press	5	Customer chiller
2	10 meter, 38 mm (1.5 in) flexible water hose (not hanging loose in the air)	6	Area of HP Indigo responsibility
3	Open/close valve - 38 mm (1.S in) BSP	7	Area of customer responsibility
4	Wall		

Chiller recommendations

Chiller location

- Make sure the opening of the chiller air heat exchanger is not next to a wall. Use the manufacturer's recommendations for the chiller location.
- If the chiller is located inside a room, use ducts to evacuate the hot air. Make sure that the ducts do not block the air flow. Consult with the chiller vendor.
- If more than 20 m (65.6 ft) of pipes is required, consult with the chiller vendor regarding the required pump and pipe diameters.

Chiller water and pump

- Take into consideration the maximum pump pressure and chiller height. The pressure increases by 1 bar for each additional 10 m (32.8 ft) of height.
    - For example: The chiller is located on the roof 10 m (32.8 ft) above the press. The pump provides 5.5 bar at 120 LPM. The maximum pump pressure is 7 bar (with no water flow).
    - In this example, if the outlet valve is off, the press gets 8 bar of water pressure.
- For non-recommended chillers, use a pressure relief valve (on the wall) set to 8 bar.

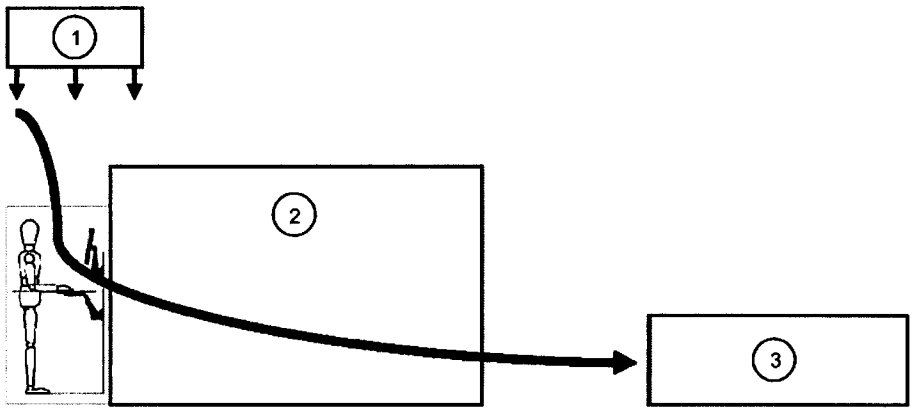
9 Press environment

Environment

Table 9-1 Air conditioning data - main unit

Required ambient temperature	20 to 25° C (68 to 77° F)
Required ambient relative humidity	50% to 70% non-condensing
Required fresh air flow	At least four air changes per hour and 250 cfm • It is recommended that fresh air be supplied close to the ceiling and exhausted close to the floor. • It is recommended to direct the fresh air from the operator station towards the rear of the press.
Heat emission to room	20 KW

Figure 9-1 Recommended air flow



1	Air flow	3	Exhaust
2	Engine		

NOTE: Failure to meet the above environmental requirements can negatively affect print quality and color consistency, and can increase the usage of supplies.

Lighting conditions

Due to the PIP's sensitivity to light, the press must operate under indirect lighting. Cover lighting fixtures with deflecting baffles. Avoid direct sunlight.

With all the covers (doors) closed, use any form of lighting arrangement that is sufficient to allow an operator or maintenance specialist to work on the press. It is recommended that lighting units for each press be independent, and that they be turned off or dimmed for servicing.

With the covers (doors) open, the maximum indirect illumination recommended within the PIP environment is 150 Lux (150 lumens/m^2, 13.95 lumens/ft^2) for less than one-half hour, or 500 to 600 Lux (500 to 600 lumens/m^2, 46.5 to 55.8 lumens/ft^2) above the covers (outside of the PIP environment).

Noise level

The maximum noise level generated by the press, with the service doors closed, and at a distance of 1 m (39 in) from the press is 75 dBA.

NOTE: U.S. Health and safety regulations (29 CFR 1910.95) require that the employer administer a continuing effective hearing conservation program whenever employee noise exposure equals or exceeds an 8-hour time weighted average value of 85 dBA. When employees are subjected to noise levels exceeding 90 dBA over an 8-hour period, personal protective equipment shall be provided and used to reduce the sound level.

In Europe, regulations require employers to take action whenever worker daily exposure to noise reaches 85 dBA (e.g. UK Noise at work regulations, 1989).

10 Facilities and equipment

Storage area

All parts and supplies are large and heavy. Verify that the storage area is big enough.

Make sure you have enough storage space for the following items:

- BID (use a pallet jack when you move BIDs)
- PIP foil (packaged in stacks)
- Blanket (packaged in stacks)
- Impression paper
- Ink tubes (packaged in pairs) and substrates

Uptime kit

Uptime kit requirements:

- Electrical connection - internal 230 W, 90% efficient, active PFC, 100 - 240 V AC
- Internet connection
- Space for two cabinets:
  - Length: 3,000 mm (120 in)
  - Width: 700 mm (28 in)
  - Height: 2,000 mm (80 in)
- Wall space near the cabinets for the 23 inch all-in-one touchscreen computer
- Recommended: dedicated UPS for the all-in-one touchscreen computer

Work area equipment and tools

The following equipment is required:

- 2 ton pallet jack
- Single-phase electrical wall outlet for service instruments
- Two large wastebaskets lined with plastic bags
- Tissue paper rolls, industrial type and size
- Parts cleaning station for cleaning machine parts

The following equipment is recommended:

- Work table for servicing components (recommended type is the industrial, drawer-equipped, metal wheel-table)
- HP Operator Control Station
- 1.5 m (5 ft) foldable ladder for accessing the top of the press

HP Operator Control Station (optional)

The HP Operator Control Station is an optional item for the customer. The HP Operator Control Station includes an inspection unit, an operator console, and a DFE near-press control station.

Figure 10-1 HP Operator Control Station

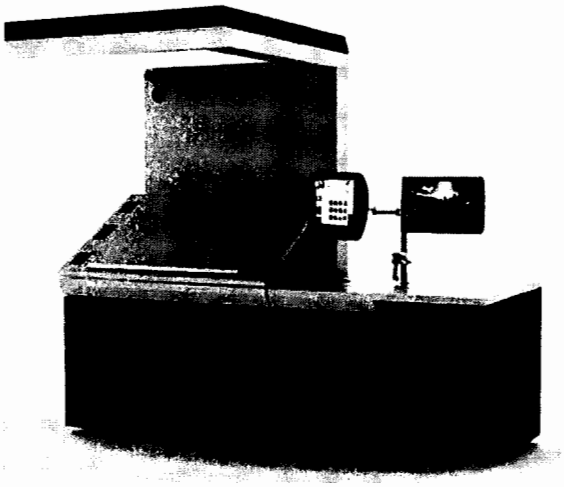


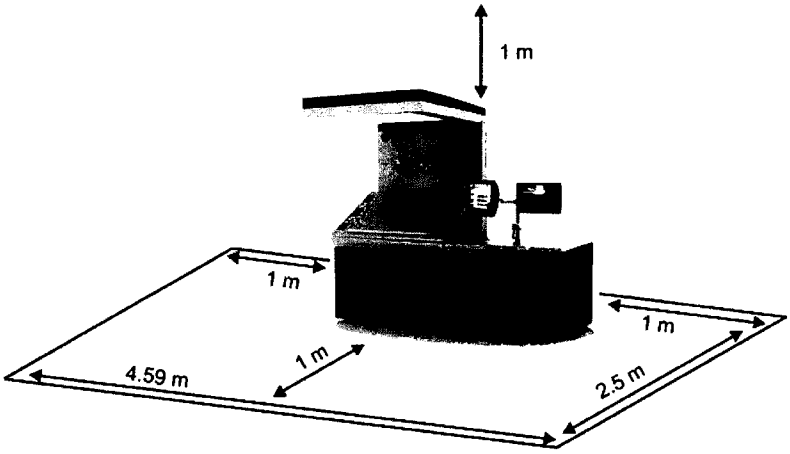
Table 10-1 Dimensions of the entire HP Operator Control Station

Length	Width	Height	Weight
2,590 mm (102 in)	1,550 mm (61 in)	2,290 mm (90 in)	640 kg (1,411 lb)

A free area of 1 m is required on the front, sides, and above the HP Operator Control Station:

- Minimum length: 4.59 m (180.7 in)
- Minimum width: 3.5 m (137.8 in)
- Minimum area: 15.75 m^2 (24,412.6 in^2)

Figure 10-2 Free areas around HP Operator Control Station



The HP Operator Control Station must be intstalled in front of the press.

Figure 10-3 HP Operator Control Station intstalled in front of press

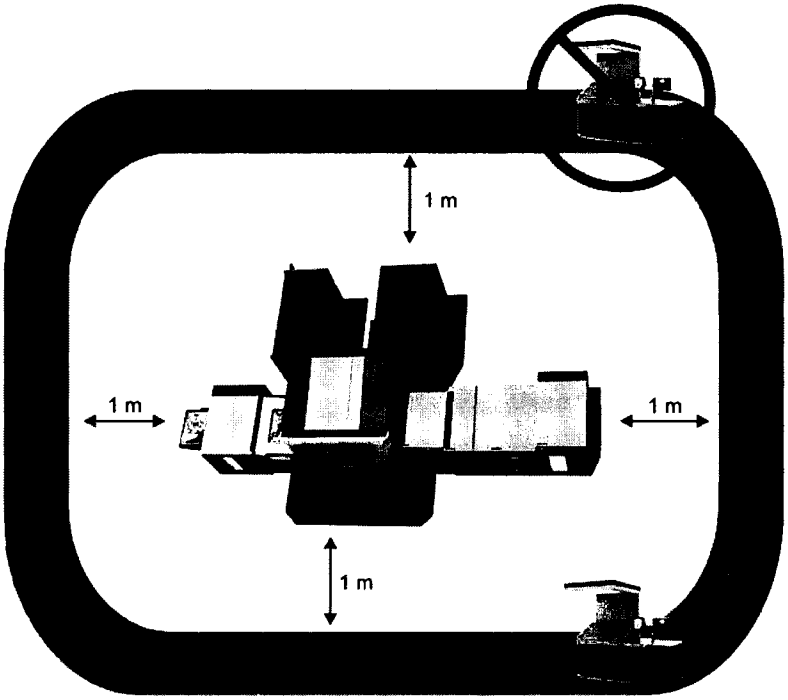
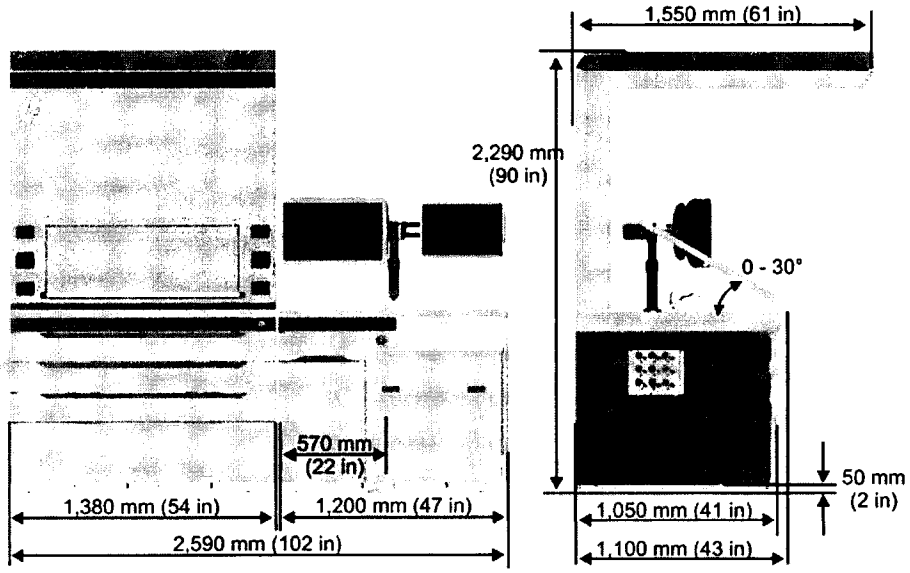


Figure 10-4 Dimensions of HP Operator Control Station



The HP Operator Control Station has three connections to the press:

- DFE Ethernet connection to press computer
- Emergency stop button cable
- Grounding cable

The maximum recommended distance from the HP Operator Control Station to the stacker is 15 m (49 ft).

Optical densitometer — X-Rite 508G

The X-Rite 508G densitometer or an equivalent model is recommended.

The X-Rite 508G is equipped with G-response, a 3-mm aperture, and no polarization filter. The recommended density values in the user guide are based on readings generated by the X-Rite 508G densitometer. The Model 508 can be purchased from:

X-Rite, Incorporated

3100 44th St. SW

Grandville, Michigan, USA 49418

http://www.xrite.com

NOTE: To use another model, please contact an HP Indigo customer engineer for details.

Parts cleaning station

A cleaning station used to clean machine parts with imaging oil. The cleaning station has to have a wash basin fit to press parts with a circulating pump, a brush attached to a flexible hose, and drainage. The cleaning area must be well-ventilated, isolated, and placed away from potential sources of water contamination.

If you are in the California South Coast Air Quality Management District, verify the use of the device with regards to Solvent Cleaning Operations District Rule 1171.

If you are in the Sacramento Metropolitan Air Quality Management District, verify the use of the device with regards to Solvent Cleaning Operations District Rule 466.

11 Safety equipment

Safety and warning signs

Post safety signs on walls in the printing area to warn of fire hazard, for example:

WARNING! NO SMOKING, NO SPARKS, NO OPEN FLAMES

Post warning signs that clearly emphasize the dangers involved in operating and maintaining the press.

The following warnings are recommended:

- This machine is to be operated by properly trained and qualified operators only.
- Do not wear ties, other loose clothing, or loose jewelry when operating and maintaining the unit.
- Keep the water line away from the main power line.
- Flammable vapors from heated imaging oil may be present!
- No smoking, open flame, or sources of ignition allowed!
- Make sure that the room is properly ventilated at all times.
- Danger of pinching and crushing from moving machine parts!
- Keep hands away from moving machine parts.
- Clear access to main circuit breaker must be maintained at all times.
- Do not operate the press with doors open.
- Ink and imaging oil are irritating to eyes and skin. Use rubber gloves.
- ITM drum and blanket are hot. Use insulated gloves.

NOTE: For more safety data, see the Material Safety Data Sheets (MSDS).

Material safety data sheets (MSDS)

MSDS are provided for supplies, including the different HP ElectroInks, imaging oil and imaging agent, adhesion promoters, and adhesion promoter test fluids. Keep the MSDS readily available in the work area. Read and consult them for your personal protection. Keep the MSDS in a protective plastic cover.

MSDS are also available online at:

http://www.hp.com/hpinfo/globalcitizenship/environment/productdata/iimsdseng.html

Fire and first aid equipment

Imaging oil used in the press are materials based on petroleum hydrocarbons.

You must take the following precautions:

- Do not locate open flames or hot-spot equipment within 7.6 m (25 ft) of the press.
- Place portable fire extinguishers in visible locations where imaging oil and HP ElectroInk are used or stored. The fire extinguishers are of the clean agent type, suitable for use on Fire Classes B and C. The use of powder and foam agents is not recommended.

NOTE: If you use a powder or foam extinguisher, the press may require significantly more time to become completely functional after a fire.

Eyewash station

The HP Indigo 10000 Digital Press uses inks and imaging oil that may be irritating to skin and eyes.

WARNING! In extreme cases, eye contact with the ink or imaging oil may cause blindness.

Provide the following items as a precaution:

- Have safety glasses available for performing maintenance operations.
- Install eyewash stations within 7.6 m (25 ft) of areas where the HP ElectroInk and imaging oil are handled, dispensed, or stored.
- Provide eyewash liquid at the eyewash stations to comply with ANSI Standard Z358.1-1990 and EN 15154-2 and 4 (available from most safety supply companies).
- Supply rubber gloves for handling HP ElectroInk and imaging oil (nitrile disposable gloves are recommended).

12 Waste disposal

Dispose of the supplies and cleaning materials in accordance with applicable regulations.

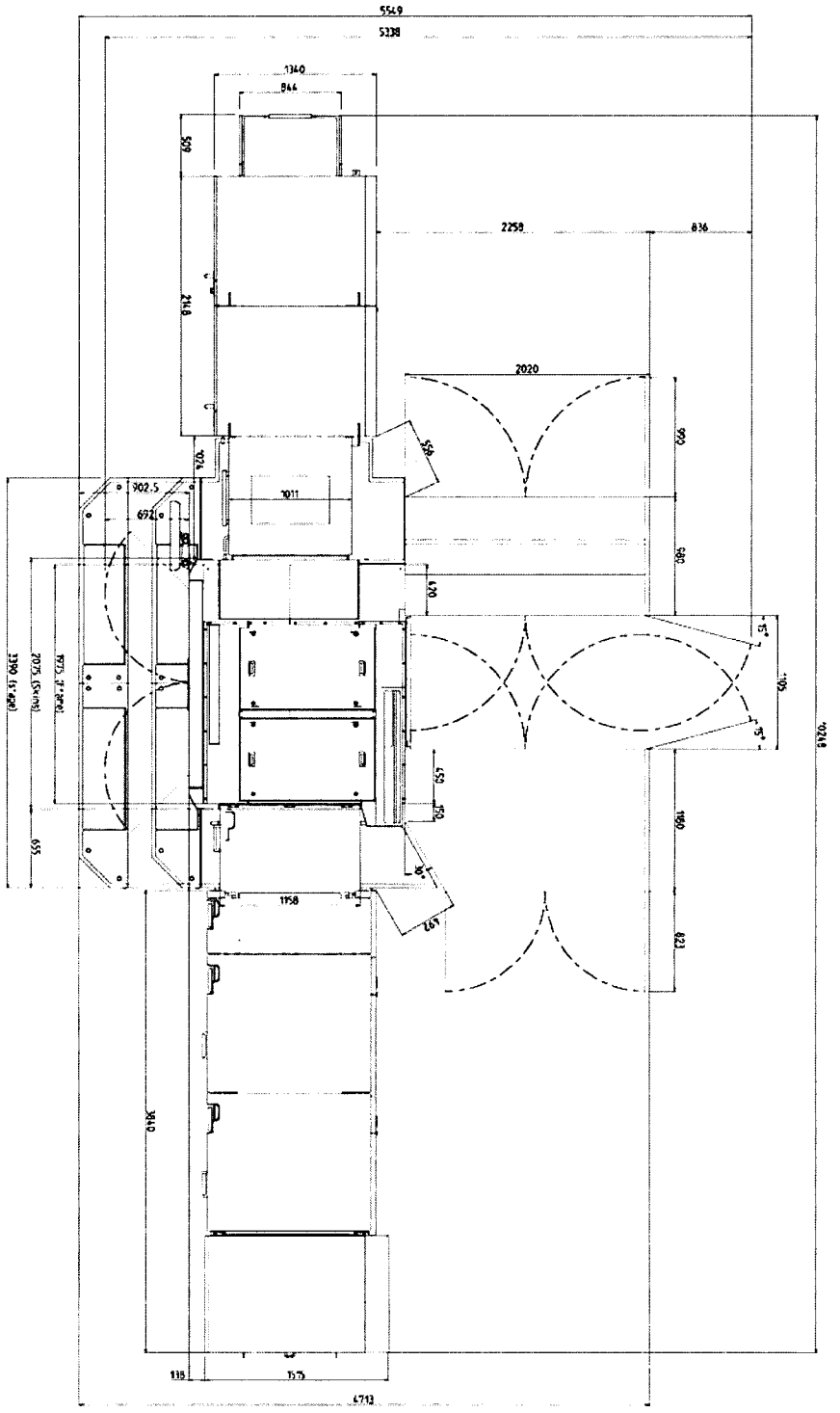
Consult with your local authorities to determine the correct manner in which to dispose of waste, including the following:

- Discarded blankets
- PIPs
- Filter cartridges
- Cooler drain liquid
- Used imaging oil filters
- Used imaging oil
- HP ElectroInk
- Cotton swabs or rags with imaging oil
- Empty ink tubes
- Empty imaging oil containers

NOTE: HP ElectroInk tubes are not pressurized.

A Layouts

Figure A-1 Press layout (with feeder pile, gang feeder, and gang stacker)



B HP Indigo-recommended chillers

HP Indigo recommends chillers that have open systems that show superior performance and better reliability, to supply cold water to the press.

When the site is being prepared, it is the customer's responsibility to install the chiller and connect it to the power.

- Lauda UC-0650
- EF cooling SC 45-WKL 390

Figure B-1 Lauda UC-0650

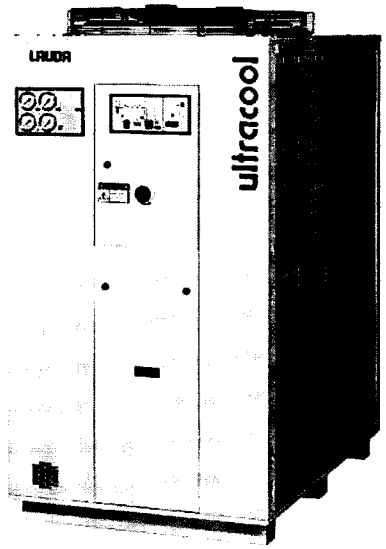


Figure B-2 EF cooling SC 45-WKL 390

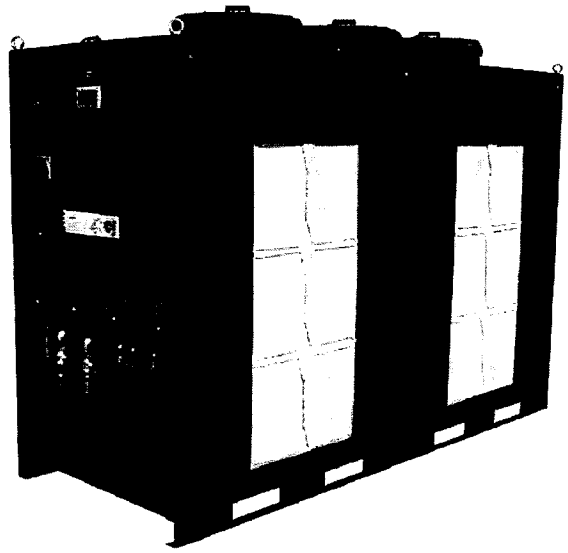


Table B-1 Cooling specifications

	Lauda UC-0650	EF cooling SC 45-WKL 390
Length	1,565 mm (62 in)	2,550 mm (100 in)
Width	1,005 mm (40 in)	1,000 mm (39 in)
Height	1,964 mm (77 in)	1,970 mm (78 in)
Supply pressure	6 bar	5.5 bar
Chilled water flow rate [LPM]	180 LPM	120 LPM
Cooling capacity	47 kW	45 kW

C Volatile organic compounds (VOCs) capture, control, and recycling

Digital presses differ substantially from conventional analog printing technologies such as lithography, flexography, gravure, and letterpress. Digital technologies have revolutionized printing because they allow print on demand. Print shops can now print only exactly what they need, when they need it, thus significantly reducing waste paper, and effecting substantial savings of energy, raw materials and make-ready.

HP Indigo Liquid Electrophotographic presses use developers that are suspensions of very small (micron-sized) pigmented resin particles in a dielectric liquid. The liquid must have a volume resistivity greater than approximately 1,010 ohm/cm, and a dielectric constant less than 2.5. Certain liquid hydrocarbons, notably petroleum fractions meet these electrical requirements. Thus, HP Indigo presses operate by using a proprietary ink HP ElectroInk, which contains pigmented resins and additives suspended in a non-polar hydrocarbon oil called imaging oil. Imaging oil is a volatile organic compound (VOC), which acts as a carrier to transfer ink particles to the PIP drum. The press produces images by laying down impressions of each color. An impression is defined as one lay-down of each color.

Although the VOC content of the imaging oil is high (approximately 770 grams/liter), most of the VOC is not emitted to the atmosphere. The press is housed within an enclosure, and contains an on-board VOC capture, control, and recycling system. This system serves the triple functions of capturing imaging oil for reuse in the press, reducing VOC emissions to the atmosphere, and regenerating the imaging oil back to its original constitution. As an example, mass balance tests show that as much as 84% of the liquid VOCs in the press are recovered and are not emitted to the air. Instead, they are captured and processed for reuse in liquid form to dilute concentrated inks introduced to the press. In addition, where permitted by local solvent cleaning rules, which is the case in most areas, the recovered imaging oil can also be used as a cleaning agent. All of this capture, control and recycling occurs inside the enclosed press. At 84% collection efficiency, only 16% of the VOCs in the imaging oil are actually emitted to the external atmosphere during periods of operation.

After condensing, the recaptured liquids are internally routed to an on-board oil-water separator. The oil-water separator separates the two liquids via gravitation, with the water settling to the bottom of the container and the imaging oil settling on the water. Reclaimed imaging oil is returned to the reservoir and reused within the press to dilute inks, in a continuous recycling and reuse process. The portion of the imaging oil that cannot be reclaimed for reuse overflows from the reservoir and is collected in liquid form in a container inside the press, and is sent off-site to a solvent recycler.

Because the VOCs in the imaging oil used in the press have low volatilities, and because the majority is captured by the on-board recycling system within the press, or sent off-site as liquid waste to a solvent recycler, emissions of VOCs from the press are relatively low.

The press uses a number of materials as inputs that contain liquid VOCs, including:

- Ink cartridges or tubes containing VOC carrier material (imaging oil) as well as non-volatile HP ElectroInk particles and various non-volatile additives required for the printing process
- Imaging oil included in an internal reservoir and added as necessary
- Imaging agent, consisting primarily of imaging oil, used to provide an electrical charge to the ink for the digital printing process
- Recycling agent, consisting primarily of imaging oil, added to the recovered oil to supply needed additives for the imaging oil in the imaging oil reservoir

The press recovers a number of liquid VOC-containing output streams, including:

- Imaging oil flashed off during printing, cooled, and returned to liquid phase
- Excess recovered imaging oil that cannot be used by the press and overflows from the imaging oil reservoir
- Oil and water condensed within an internal condenser
- Other internal transfers that cannot be collected by the recycling system

With up to 84% of the VOC input captured and controlled as liquid, it is clear that regulation that only considers the VOC content of the input streams rather than the actual emissions is not representative of actual press functionality. The ink has a significant VOC content but that does not necessarily equate to high emissions.

In the United States, California and many other states' outdoor air quality regulatory agencies have introduced particularly strict measure to regulate VOC emissions. One of the most established and leading agencies, the Bay Area Air Quality Management District, has recognized the HP Indigo VOC control and capture system as Best Available Control Technology (BACT). As a result, the press has been pre-certified for air permitting in the Bay Area, serving as a reference for other air quality management districts. Pre-certified equipment normally qualifies for accelerated permitting. HP Indigo plans to submit additional presses for pre-certification as well.

Finally, it should be noted that HP Indigo ElectroInk contains no air pollutants listed on the federal list of Hazardous Air Pollutants (HAP), no California Toxic Air Contaminants, and does not give rise to particulate matter emissions. Furthermore, HP Indigo supplies, including HP ElectroInk do not require California Proposition 65 warnings.

D Customer site survey checklist

Overview

Use this check list during the site preparation to make sure that all requirements are met before the press installation begins.

HP Indigo provides two on-site visits to guide the customer and to verify that everything is ready.

Press installation starts only after of all requirements are checked as "Ready".

Use the following items:

- 10 m (33 ft) tape rule for measurements
- Digital camera for pictures

Customer preparations

Table D-1 Customer preparations

Item	Details	Ready status	Responsible party	Remarks
Pallet jack	• Verify that a manual pallet jack (capable of lifting at least 2 tons) is available on-site	❑	Customer	
Unloading area at customer site	• Description and pictures transportation path from unloading area to press room • Unloading surface area capable of using a 10 ton forklift for loading and uncrating • Free area for three trucks	❑	HP Indigo / Channel Representative	
Transportation path (at customer site) from unloading area to press room	Rolling the press from the unloading area to the press room is always done on 5 mm (0.2 in) thick aluminum plates, regardless of the surface type Define the transportation path: • Define the shortest path • Define the surface type: asphalt, concrete, wood, etc. • Define the slope (up to 3%) • Define and verify the door dimensions • Define the floor level (if not on a loading floor, define the elevator size and load capacity) • Define any steps, obstructions, or height constraints along the path	❑	HP Indigo / Channel Representative	
Rigging company report	• Verify that you have the details (name, phone, and email) of the contact person from the rigging company • Verify that a detailed written report is handed to the rigging company contact before the press is transported to the site	❑	HP Indigo / Channel Representative	
Room size	• Provide pictures and details of the press room • Describe the room dimensions (length, width, and height) • Lay down the press mat, verify that there is enough room, and mark the position for each unit • Determine the correct order for the units to enter the customer site (based on where each unit will be positioned)	❑	HP Indigo / Channel Representative	
Floor requirements	• Provide the written approval of a locally licensed structural engineer for the floor load capacity of the unloading area, transportation route, and press room • See "Load distribution" • Verify that the press room is covered by an anti-static material, which is resistant to imaging oil, and which can be easily cleaned in case of spills	❑	Customer	
Lighting conditions	• Verify the indirect lighting, according to Lighting conditions	❑	Customer	

Table D-1 Customer preparations (continued)

Item	Details	Ready status	Responsible party	Remarks
Cold water and customer chiller requirements	• Verify that the chiller is installed and meets HP Indigo specifications, according to Cooling water specifications • With customer, mark water taps and hose locations (verify that they are not above the press and that they are away from electricity according to local regulations) • Verify that the 2 x 10 m hoses are long enough to reach from the press to the customer's chiller connections • Verify that the flexible hose adaptor fits into the customer water valve (see Figure 8-3 Water valve and flexible hose adaptor) • Verify the customer chiller communication cable route from chiller to press (optional)	❑	Customer and HP Indigo / Channel Representative	
Compressed air	• With the customer, mark air taps and hose locations • Determine whether the customer will use an existing compressed air system or buy a dedicated compressor • Define the compressor location • Verify the availability of quick fitting connections	❑	Customer and HP Indigo / Channel Representative	
Electrical requirements	• Verify that the mains power supply and all electrical power outlets meet HP Indigo specifications (see Connecting the press to the main power supply) and have been checked by a qualified licensed electrician. • Together with the customer, check the socket locations.	❑	Customer and HP Indigo / Channel Representative	
Voltage stabilizer (where needed)	• Verify that a voltage stabilizer is available (where needed)	❑	Customer	
Communications	• With customer, define communication socket location • Verify that the correct fiber optic and Cat6 cables (see DFE network cable specifications:) are installed and ready to be connected to the press and HP SmartStream Production Pro Print Server	❑	Customer and HP Indigo / Channel Representative	
Press environment	• Verify the temperature and humidity in press room and supplies storage area according to Environment	❑	Customer	
Safety	• Verify that Material Safety Data Sheets (MSDS) are available • Verify that fire and first aid equipment are available • Verify that an eyewash station is available • Verify that waste disposal is in accordance with locally applicable regulations • Verify that safety and warning signs are available	❑	Customer	
Digital Front End (DFE) — HP SmartStream Production Pro Print Server	• If the DFE is stored in a DFE room, verify that the DFE room is prepared according to the *HP SmartStream Production Pro Print Server Site Preparation Guide* (CA394-10360), including power connections, climate control, and network cabling	❑	Customer	

Table D-1 **Customer preparations (continued)**

Item	Details	Ready status	Responsible party	Remarks
Parts cleaning station	• Verify that the parts cleaning station is available	❑	Customer	
Storage area	• Verify that the storage area is big enough for the press supplies	❑	Customer	

Completion

Table D-2 **Completion**

Item	Details	Ready status	Responsible party	Remarks
Customer site survey checklist	Mail the entire customer site survey checklist to: • Regional installation manager • Rigging company contact • GBU installation manager	❑	HP Indigo / Channel Representative	
Contact regional logistics	• Contact local logistics to discuss and close all gaps • Check what is on the shipping list • Confirm the contents with customer	❑	HP Indigo / Channel Representative	

E Service and support

To obtain service, please contact the customer care center within your country/region:

Europe:	
Belgium:	+32 (0)2 626 4803
France:	+33 (0)1 57 32 41 07
Germany:	+49 (0)69 38 07 89 193
Ireland:	+353 (0)1 656 9760
Italy:	+39 02 69430637
Luxembourg:	+352 (0)24 87 13 98
Netherlands:	+31 (0)20 547 6870
Spain:	+34 9 12757781
UK:	+44 (0)84 5604 7435
APJ:	
Japan:	+81 (0)1 2085 5536
Singapore:	+65 9891 1753
Distribution Channels (DC):	+31 (0)20 654 5543
North America:	1-800-204-6344
Israel:	+972 (0)8 938 1818

North America and Latin America	**International**	**Israel**	**APJ**
HP	HP	HP	HP
Indigo Division	Indigo Division	Indigo Division	Asia Pacific Pte Ltd
5555 Windward Parkway	Startbaan 16	Kiryat Weizmann	No.3 Tuas Link 4 #02-01
Alpharetta, GA 30004	1187XR Amstelveen	P.O. Box 150	Singapore 637016
USA	The Netherlands	Rehovot 76101	
		Israel	

F Printing instructions

NOTE: To ensure a high quality print, use the "CAxxx-xxxxx_**PRINT**.pdf" version of this document.

COVER	
Paper weight	250 g
Page size	8.27 x 11.00 in (21 x 27.94 cm)
Printing	HP Indigo digital press
Simplex/duplex	Front cover - duplex Rear cover - simplex
Color	Full color - high resolution
Coating	Lamination - shiny front and rear covers
INSIDE PAGES	
Paper weight	80 g
Page size	8.27 x 11.00 in (21 x 27.94 cm)
Printing	HP Indigo digital press
Simplex/duplex	Duplex
Color	Full color - high resolution
Coating	None
FINISHING	
Spiral binding	Left side

This is an HP Indigo digital print.

www.hp.com/go/indigo

PN: CA494-14481

ATTACHMENT H

TRESU AMERICAS CHILLER INFORMATION

Process Chiller

This document applies to models:
TRESU Americas DPC4 v2015 Chiller

8410364 v0.2
Added IDMS wiring information
Added update to flow switch at evaporator (Electrical schematic)

Operation Manual

TRESU
GROUP

CHILLER OPERATION MANUAL

Introduction-

This manual is intended to provide operation and care instructions for the DPC4 Chiller.

Safety

General safety

Should an internal pressure leak develop, disconnect power from the equipment and allow pressure to relax before opening the cabinet doors.

Always exercise care when tending water and fluids inside the equipment cabinetry. Be careful not to spill water or fluids, especially on items marked with the ⚡ label.

High Voltage:

The Chiller contains high voltage in several locations.
Accesses which have high voltage internally are marked with a ⚡ warning label.

Only qualified personnel should open enclosures or accesses that are marked with the ⚡ warning label.

Keep cabinet doors closed except when doing water maintenance or servicing.

Disconnect electrical power from the equipment before servicing.

Drive components can store energy for up to 2 minutes time. Always allow a 2 minute safety time after disconnecting power for safe discharge before servicing.

Tampering with or defeating controls and safeties can result in dangers including explosion, fire and death.

Mechanical safety:

The operation and maintenance of any printing equipment may expose the individual to potentially hazardous situations.

The potential of a hazard leading to an accident or injury is increased by improper operating practices, lack of attention and care, or insufficient training.

Failure to follow the safety practices and precaution can lead to serious injury.

Defeating pressure safety devices electrical or mechanical can result in danger not limited to explosion, fire and death.

Warnings:

WARNING: This equipment is intended to circulate chill and press chemistry process solutions which may contain harmful chemicals.

Be sure to read and understand all safety information related to the chemicals used.

WARNING: Service or repair must only be performed by qualified personnel.

WARNING: Chill water quality must be monitored and maintained. Water must be flushed when it's properties indicate need for a flush, otherwise annually. Neglected chill water can result in the creation of a bio-hazard.

WARNING: Use of de-ionized water in the equipment will cause damage and contaminate the water. Use of an isolating heat exchanger device is required for de-ionized water use.

Disclaimer:

Pictures and diagrams included in this manual refer to equipment construction at the time of edition. It is possible parts and placements may change.

This manual is not intended for service use. Refer to the correct service manual for this equipment when effecting service.

Information included in this manual is intended for operation of the equipment in a way commonly found in the Industry. The Manufacturer assumes no liability for the manual content information relative to unusual operating situations outside of those considered normal at the time of edition.

General information:

The equipment contains a refrigeration set that cools a main chill water reservoir. Water from this reservoir is used to effect control of the process chilling zone temperature.

Controls are provided allowing operation of the chiller. A user control touch screen provides much text assisting operation and set-up.

The chiller main tank water is intended to be chilled to a temperature + / - the set temperature band value.

A capacity control valve is included and can be used to attain a smaller temperature band.

Chill water must have maintenance, including additives to prevent corrosion and biological growth.

Alarms are provided when parameters are outside of normal requiring attention.
Actions associated with the alarm are various, depending on the alarm.
All alarms alert the operator with an audible alarm sounder, and information provided on the control screen.

Process temperature control:

The Chiller provides circulation of temperature controlled water intended for the i30000 and other inking system temperature control features.

Chill water is provided leaving the Chiller in the desired temperature band. The temperature is set at the user control screen. Water from the main chill tank is filtered at the canister filter above the tank.

Remote condenser:
Heat removed by the Chiller is expelled outdoors at the condensing unit. The condensing unit is controlled by the equipment controls to provide reliable, efficient operation. Installing the condenser on the facility rooftop assures heat will not be trapped in the building. No condenser air filters are needed with this arrangement.

Self-contained condenser:
Heat removed by the Chiller is transferred to air which is expelled at the top of the condenser module of the Chiller. Heat is expelled in the pressroom. Condenser air filters are used to prevent press offset spray and other contaminants from fouling the condenser surfaces.

Terminologies:
Zone = Circuit of water circulation, out from and returning to the equipment, which is controlled by the settings.

Chill water = A mixture of water and additives found in the chill tank and also supplied to the ink roller chilling zone(s).

Before use check:
Before starting the chiller equipment, first check:

- Chill water tank is full to fill level.
- If there has been extreme weather, make sure the condenser is clear of ice or snow.
- Electrical power is on.
- Filters are in place – replace if necessary.
- Top cover is set in place on the chill water solution tank.
- Condenser filters are in operable condition. [applies to self-contained models]

Starting the system:
Turn on the front door mounted power disconnect switch.
The system will boot and the start screen will build. When ready, the operating screen will be displayed.

Check the setpoint temperature displays the desired setting. If not, change it by touching the temperature setting and entering the desired setting on the pop-up data entry pad. When the desired value shows, press enter.
.The temporizing zone is now set to provide the desired temperature solution.

NOTE: The Chiller is now ready for operation. When press power is applied and the Press is energized, a signal sent to the Chiller will initiate the start of circulations. See note below.

NOTE: It is made possible to operate the Chiller when it is not connected to the Press signal initiating circulation. On the operating screen, a selector switch is provided which permits the operator to force circulation on.

Once circulating, observe that the system temperatures come into compliance. Once temperatures are within the set band production can begin. During operation the system will cycle the compressor and operate the capacity control valve, maintain the desired temperatures within the adjusted band of tolerance.

Restoring the chill solution level

Always close the lid properly on the chill tank so as not to promote rapid evaporation of solution and potential condensation and corrosion of the chiller components.

Chill solution level needs to be maintained by the operator. A small addition to chill solution may be needed from 1 to 4 times per year. When chill solution in the reservoir drops to the alarm level, or 5 Inches down from the top of the reservoir sides, the operator needs to restore the chill solution level by making up and adding additional chill solution.

Chill water solution is made up by adding the correct amount of "Chill Guard" and Propylene Glycol to water. When topping off, mix an appropriate amount of Chill Guard and standard tap water in a clean container, and add to the chiller water reservoir until the level is satisfied.

Besides the level indication on the control screen, the proper full level is 3 inches down from the top of the reservoir.

How to flush the chiller.

NOTE: Before flushing the chiller it is necessary to determine how the waste can be disposed of. Chill solution containing unauthorized additives and or dangerous growth or contaminations may require treatment before disposal, or hazardous waste removal.

The chill solution will accumulate bacterial and algae growth, debris and contamination from internal press parts and plumbing. Chill Guard will help suppress rampant growth but may weaken with time.

A flush should be performed periodically to promote long life of the Press rollers, evaporator and heat exchanger, as well as rotary unions and other costly and sensitive parts.

First prepare for the flush by procuring an adequate amount of "Chill Guard" for making up the replacement solution, flush concentrate, and a replacement filter cartridge. Plan for the proper disposal of the old chill solution, following all environmental laws in force at the time.

1. Drain the chiller by attaching a hose to the drain fitting and opening the valve.
2. Remove and clean the evaporator chill plate screen, replace.
3. Connect the Chiller to a clean water supply for flushing.
4. Select the "chiller flush" button on the touch screen. This disables refrigeration and starts the chill pump. The chill tank will fill to the set level.
5. Once the tank has completed filling, add "Clean-n-Flush" additive while the flush process continues.
6. After three hours of flush, open the drain. As water drains the system will begin filling.
7. Allow the system to simultaneously fill and drain for one hour, then close the drain valve.
8. Discontinue the supply water source and drain completely.
9. Stop the flush process and add the needed amount of additives Propylene Glycol and "ChillGuard", first to attain a mix of 30% Propylene Glycol to 70% water, then adding the prescribed amount of "ChillGuard" inhibitor.

NOTE: Do NOT operate the compressor when the Chiller is filled with flush water, this will cause water to freeze and damage the Chiller!
NOTE: Do NOT add more water without the needed amount of Propylene Glycol. Operate the chiller within 24 hours after the flush in order to circulate the Chill Guard throughout the system.
NOTE: Addition of a biocide product is necessary when the Chiller will sit at room temperature for an extended time.

Section II

1. Operator panel navigation.
2. Electrical and controls.
3. Refrigeration section
4. Chill water section.
5. Electrical diagrams.

Operator panel navigation

Chillers are equipped with an operator panel which provides a touch screen interface with the control system. Navigation from screen to screen is accomplished through the use of on-screen buttons. It is recommended to display the operation screen during operation.

User screen area

The user screen area is accessible without password protection and includes all settings needed for effecting normal operation and maintenance.

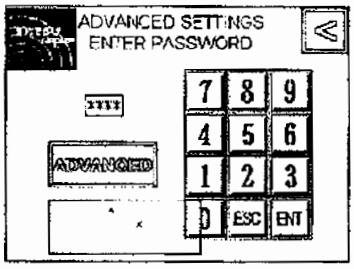
The operating screen provides data and access to settings for temperatures for press chilling supply temperature.

Password protected area

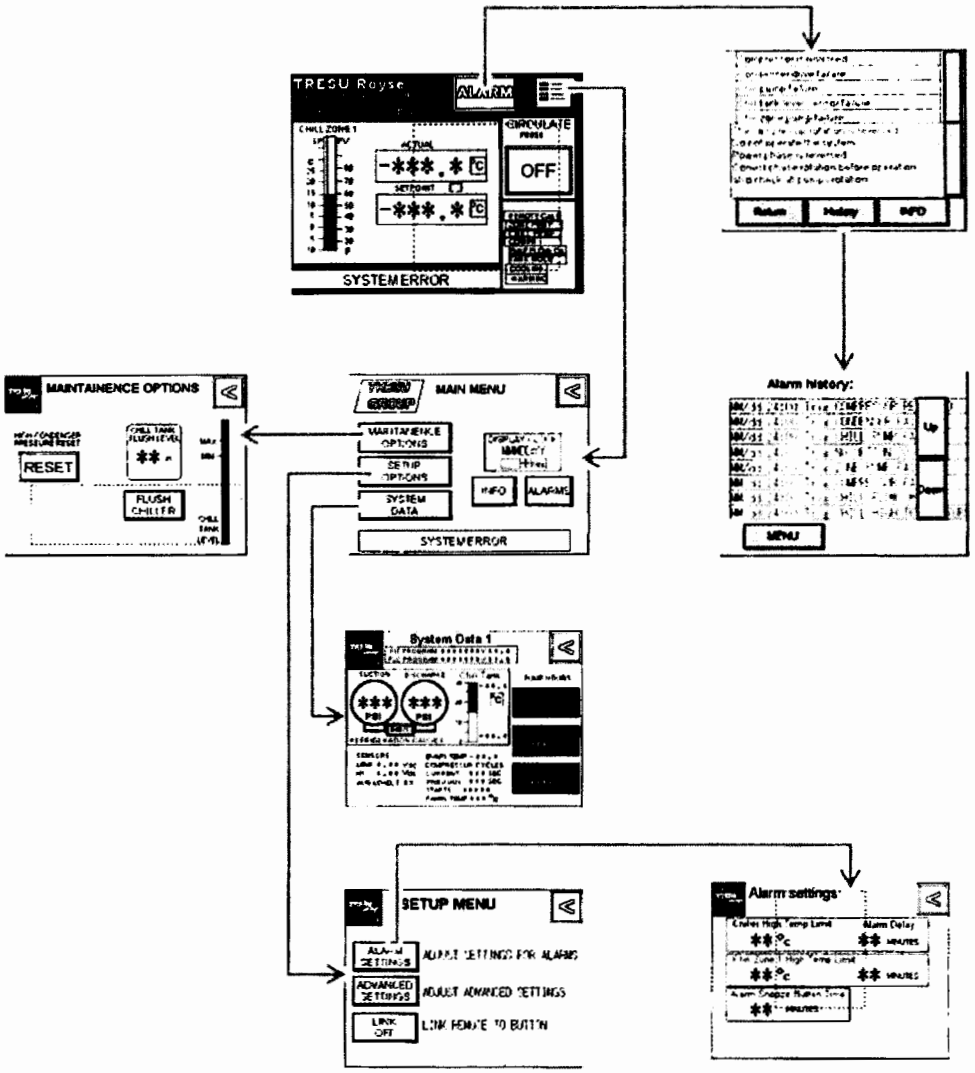
An area of screens is locked and requires a password for access. These are for use only by qualified Technicians or Personnel. Incorrect settings can in some cases damage or destroy your Chiller.

Screens in the password protected area give access to settings needed to configure and service the Chiller but are not used during normal operation.

Password protected screen navigation is covered in the Technical Service Manual.

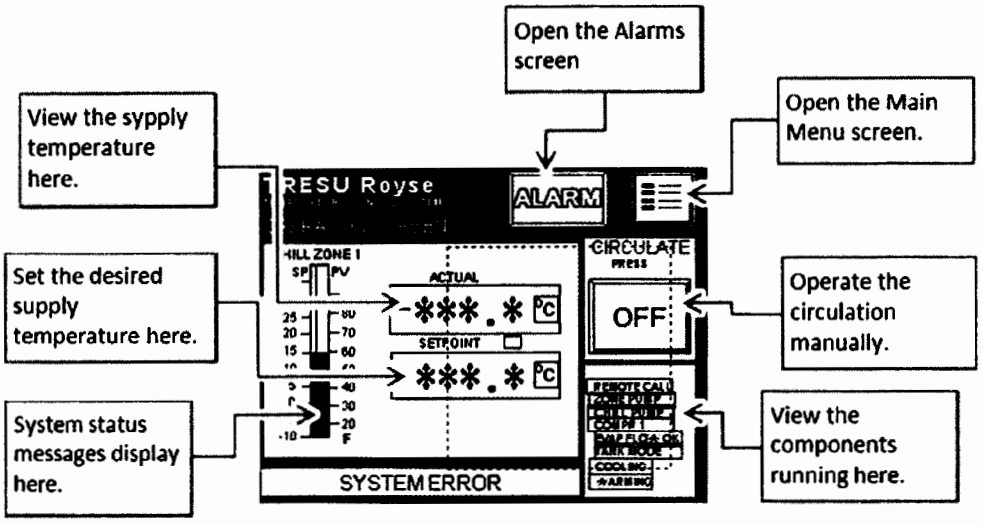


Screen Navigation:



Navigation between screens is made following the flow diagram above. Arrow left return buttons return the previous screen or the operation screen.

Operation Screen:



The operation screen allows access to functions required during operation of the Chiller.

Set the desired chill solution supply temperature at this screen. The resulting actual temperature is displayed below the setpoint, and a side-by-side bar graph shows the relative comparison.

When an alarm sounds the alarm button can be used to navigate to the Alarms screen where details of the alarm are visible.

An alarm silence button is provided which will prevent the horn from sounding for a time. The time is set in the alarm settings screen.

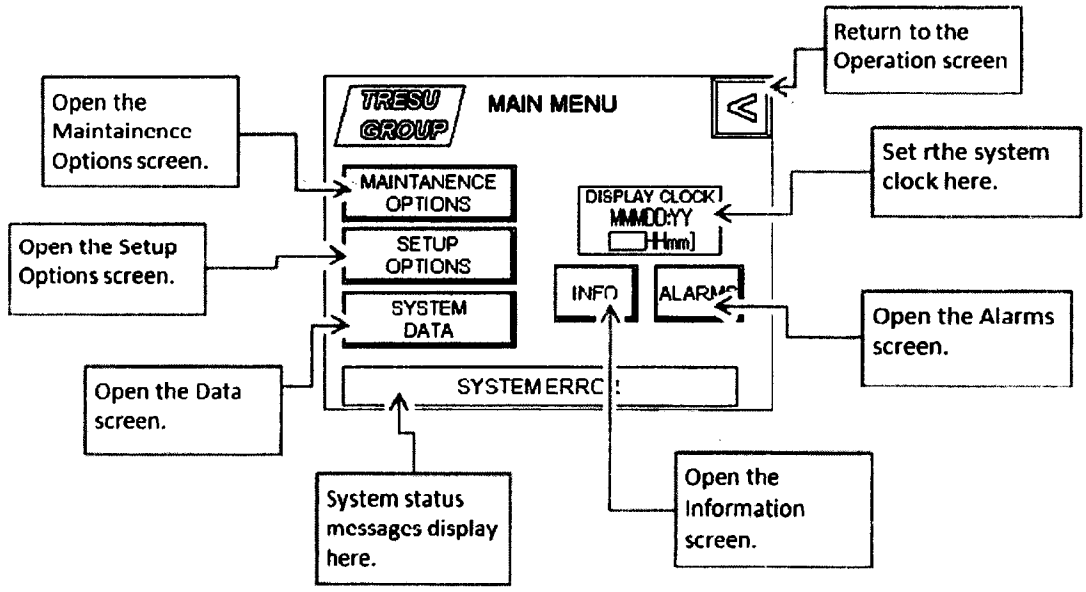
The MENU button will navigate to the main menu.

The Circulation selector allows the Chiller to be operated locally or from a remote signal.

System status display shows the current system activity.

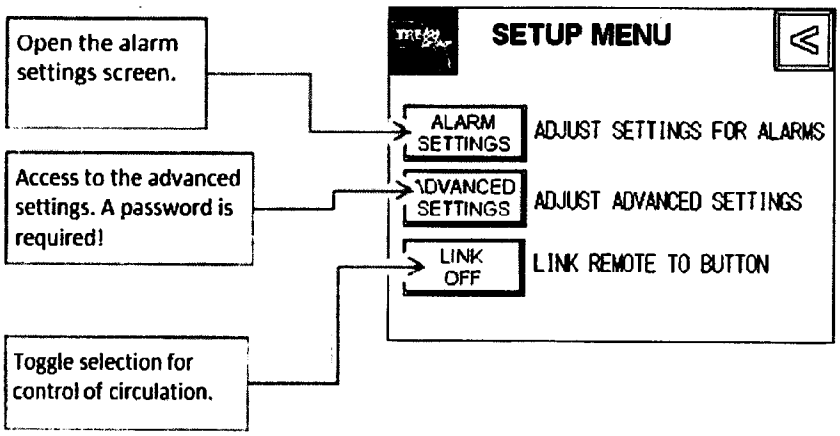
Components which are engaged and running are displayed in the text area beneath the circulation selector.

Main Menu:



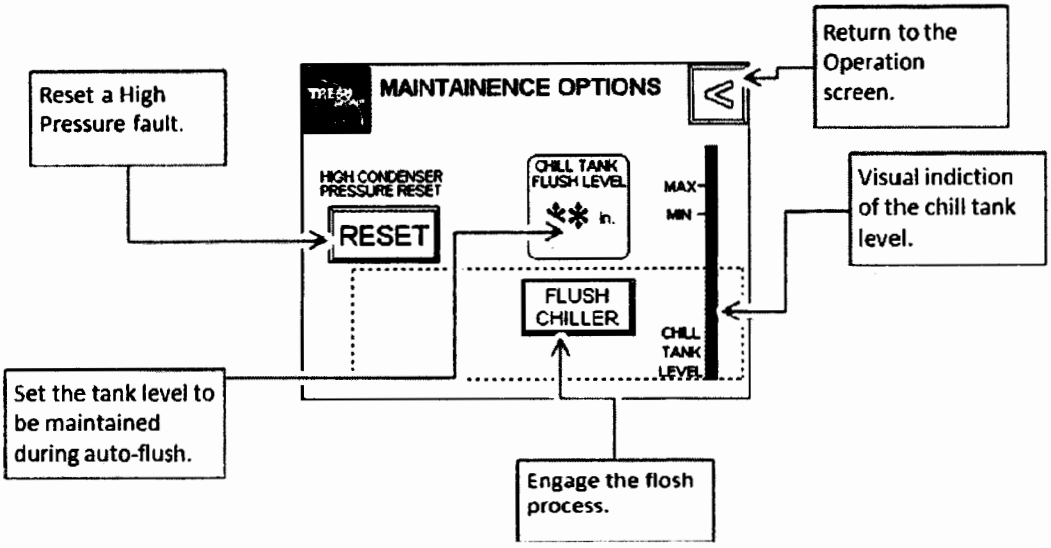
The main menu provides navigation paths to other areas of the control scheme.

The Setup Menu screen:



The setup menu screen provides access to alarm settings, advanced settings, and the Link button. When it is necessary to prevent local control, turning the remote link OFF will disable the manual circulation selection. Only circulation from the machine connected signal is then possible.

Maintenance options screen:



The Maintenance Options screen provides access to some Maintenance functions.

A high pressure fault is reset by touching the reset button.

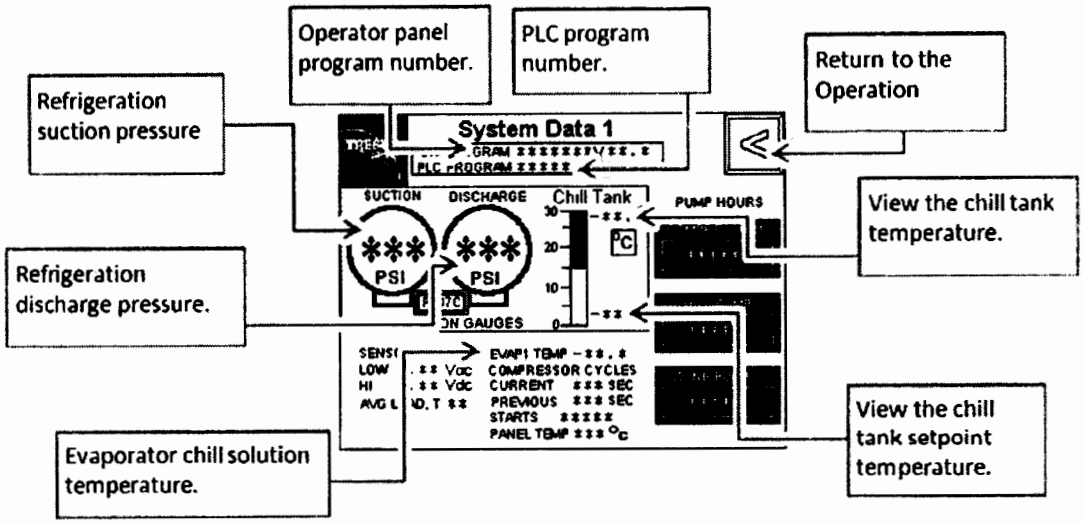
Chill tank flush level is set here. This is the level at which the chill tank will begin filling when performing a flush or refill.

Selecting the Flush Chiller button starts the flush process. Pumps engage provided adequate water level exists, and refrigeration is not used.

A visual tank level gauge provides a quick indication of the status of the main chill tank chill solution level.

Exit this screen using the top arrow button back which will return to the Operation screen.

System Data screen



System Data screen is used to view the operating status of the Chiller components and systems.

Refrigeration pressure gauges display the condensing and discharge pressures. These will vary with the climate but stay within the following limits while the compressor runs:

Normal discharge pressure = 180-280psi
Normal suction pressure = 45-70psi

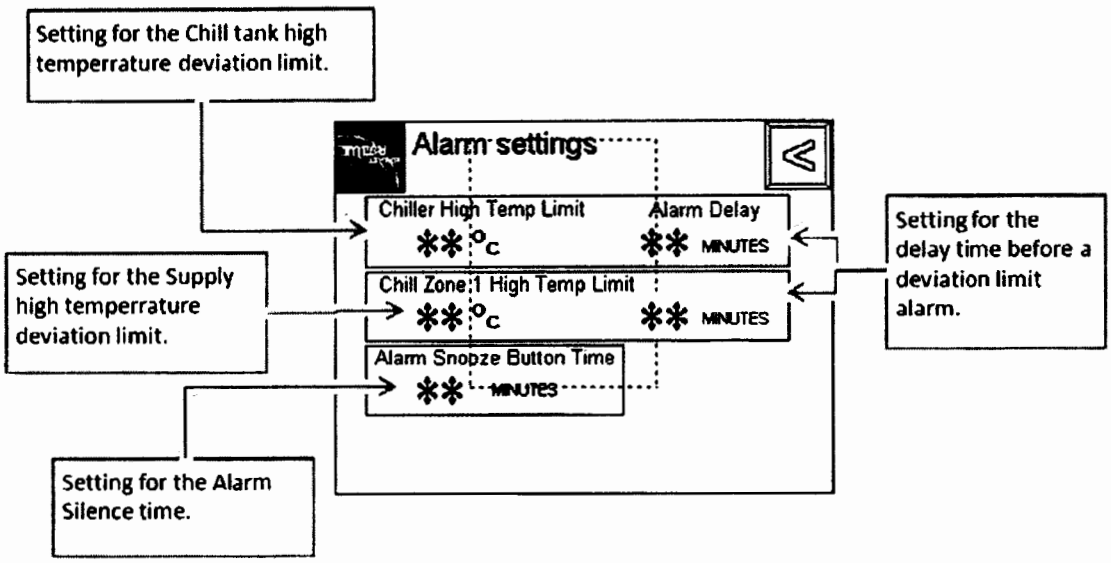
The Evaporator temperature shows the temperature at which the solution is exiting the evaporator. This is normally 8-12 degrees F lower than the chill tank temperature. Water has to be treated so as not to freeze at least to the lowest evaporator temperature experienced, which is the reason for adding at least 30% propylene glycol to the solution.

The chill tank temperature is viewed along with the setpoint below. This temperature is fixed automatically according to the requested supply temperature.

Programs installed are identified at the top of the screen.

Exit this screen using the top arrow back button.

Alarm settings screen:



User alarm settings are adjusted at this screen.

High temperature deviation limit adjustments are provided for the Chiller and Zone. These are normally adjusted at 5 - 10 Degrees F deviation.

Delay time adjustment is provided in minutes for the deviation alarms. This is the method of avoiding alarm when the System is first engaged and has not had time to cool the chill water. The normal time setting is 5 minutes.

Alarm snooze time setting provided controls the length of time after touching the Alarm Snooze button for which the horn will not sound.

Exit this screen using the top arrow back button.

Electrical controls

Controls are enclosed inside the electrical enclosures located inside the doors of the chiller. A second door has to be opened to gain access to the controls besides the large main doors.

Motor protection

Chiller control components include motor protection for the pump and compressor. Should the motor protection trip and stop one of the motors, which produces an alarm, it is possible to make a manual reset of the motor control. Locate the control which has it's indicating knob in the "tripped" position. Rotate the knob to the fully CCW position and torque further against the spring load to reset it. Restore it to the on position, where the handle points up.

In the event of a change to the electrical power source it is sometimes necessary to change the protection setting, should trips occur. In this case a qualified Electrical Technician should make the adjustment to the trip level.

PLC

The PLC located in the main electrical enclosure runs the operational program for the Chiller. When connected to the IDMS Web Server the program can be updated or restored from a remote source.

IDMS is the Internet based Diagnostic and Control monitoring System. This requires a dedicated IP address and access from the outside over internet.

IDMS adds the ability to control the Chiller from the host Machine or other control PC.

On the front of the PLC status lights indicate if the PLC is in RUN mode and if there is an error processing. When an error light shows it is often because a sensor has failed or a setting has been entered that is out of range for the application.

PLC faults can be cleared remotely when the IDMS is connected.

The PLC contains a seven year lithium battery that must be maintained in order to preserve certain configuration settings. Should the battery become weak an alarm will call attention. In the case the system is laid up and not used when the battery fails, restoration is possible through installing a pre-loaded PLC or on-site re-initialization.

Replace the lithium battery only with one purchased at the time of need as the use life is approximately equal to the shelf life.

Refrigeration

The refrigeration system employed in the Chiller uses a highly efficient Copeland Scroll compressor, and condenser fitted with a variable speed three phase fan motor. The system will mostly run with the Electrical load well below the stated maximum.

The compressor is hermetically sealed and quite trouble-free. The remote style condenser is often the subject of care, due to it's being mounted outdoors in the elements.

The remote condenser fan is controlled by a three phase inverter-duty motor which is speed controlled through a variable frequency drive to attain system pressure control. The condenser fan will not operate until a minimum pressure is present in the condenser. As condenser pressure increases, fans speed increases to where full fan speed is reached before 280psi.

When fans start an electric brake is first applied to stop "wind-milling' This prevents trips of the fan motor protection that would otherwise occur should wind be spinning fans backwards.

As the system ends a cycle fans continue to run until pressure falls below 180psi in preparation for the next cycle. The fans are not in any way electrically connected to the compressor wiring circuit and are pressure controlled only.

In colder climates, additional refrigerant is added allowing operation to lower outdoor or "ambient" temperatures. In this case during low temperartures the charge concentrates mostly in the condenser as liquid while the liquid receiver maintains sufficient liquid for the system to start.

Chill Water

The system chill water requires proper make-up for reliable use and performance. The chill water flows directly through Press rollers and will collect rust and other contaminants if it is not properly treated. Additionally living organisms can foul or "sour" the water.

TRESU Royse requires the additive "Chill Guard", a molybdate inhibitor, to be installed to the Chill water at a ratio that provides the needed "free p alkalinity" value. Chill Guard is formulated in the concentration where typically one gallon is needed per 100 gallons chill water. It is acceptable have more than the 1:100 ratio but not less. Remember to take into account the specifications for the volume of water in the press and remote plumbing when mixing. The Chiller will contain approximately 60 gallons when the tank, pumps and lines are filled. Test results for inhibitor should show in the range 200 – 300ppm or greater.

PH of chill water also needs to be maintained. Water samples should be sent to TRESU Royse periodically for analysis. It is recommended to check chill water qualities quarterly.
ph range for basic chilling: 9 - 10.5
ph for UV and other equipment where aluminium parts exist: Target 8.2 Range 8.0 - 8.8

A filter located above the main chill tank filters the chill water. When the filter resistance becomes too great an alarm is sounded and the filter needs to be replaced. The optimum filter would be 20-30u and the standard filter is 50u. These are available from TRESU Royse.

Pumps used inside the Chiller can be fitted with replacement seal kits when needed.

Chill water make-up summary:
30% propylene glycol, as antifreeze.
1-1/2% Preferred (1.% minimum) "Chill Guard" molybdate inhibitor.
The remainder, "tap water".

Chiller system Troubleshooting:

The control program is designed to detect and indicate almost any possible fault. Faults that are detected by the system's sensors and other information input are reported on the screen as alarms.

Usually when there is a difficulty the system is posting an alarm. The first step in troubleshooting is to look for alarm(s) and take actions to remedy the related condition(s) Some failed control components however cannot be detected in this way.

Troubleshooting chart:

Indication	Model	Probable cause	Remedy
No sign of life.	All	Check for power at the main disconnect.	
		Check that the main disconnect is turned to the "on" position.	Rotate the main disconnect handle so that the indicator points to the ON position.
		Touch the control screen and see if it "wakes up".	None, the system has gone to "sleep".
		Check that circuit breakers are on: CB1,2 Transformer primary; CB3 120V Transformer secondary; CB4 24VDC Power.	Check for faults, re-set the affected circuit breaker.
		Check for PLC "RUN" indicator.	Switch PLC into "RUN" position
High pressure alarm	All	Check that condenser fan drive does not display a fault. Check that condenser fans are running by viewing speed setting on the drive display. Check that condenser disconnect switch is not open [off] on the roof.	Press the high pressure reset button on the touch screen to try operating again.
Low pressure alarm	All	Check the refrigeration solenoid is operating.	Replace if failed.
		Check the pressures displayed on the control screen to determine if gas charge has leaked off.	Contract for professional HVAC personnel to service any leak.
Low pressure alarm in extreme cold weather	All	Possible insufficient charge for cold climate. Possible incorrect setting of low ambient timer and / or low pressure alarm.	It may be possible to operate by lowering the low pressure alarm setpoint.
		Possible leaking check valve at the return line causing refrigerant to migrate out to the condenser.	If the unit is new, the check valve will seat after some time when it seats.
Condenser drive alarm	All	Note and record the alarm. Consult the condenser alarm code table in the publication from Yaskawa model V1000.	Contact TRESU Royse for assistance.

One or more unexplained issues	All	Check for error light at the PLC control	Clear the error to restore normal operation.
Compressor failed alarm	All	The compressor motor protection has tripped. This can be caused by low voltage or the compressor may have failed.	Try to re-set the compressor at the motor starter located in the electrical control panel.
A pump has failed	All	The pump motor protection has tripped. This can be caused by debris lodged in the pump.	Open and inspect the pump impellor.

Condenser servicing:

The condenser contains only a fan motors and fan blades as moving parts. When failed, replacement motors are available from TRESU Royse. Please contact TRESU Royse with the model number from the condenser nameplate for the correct part number.

It is possible after many years of operation to develop an oxide coating on the condenser exterior transfer surfaces requiring cleaning with special chemicals available to HVAC service personnel.

Note: Two models exist, 50Hz and 60Hz. Be sure to connect to the correct power source according to the machine serial data label. The installation document provided in this manual indicates the Electrical requirement.

Notes on replacement parts:

Note: Two different VFD Drives are used. Both are shown on the replacement parts list. When replacing check the drive brand agrees with the selected replacement part.

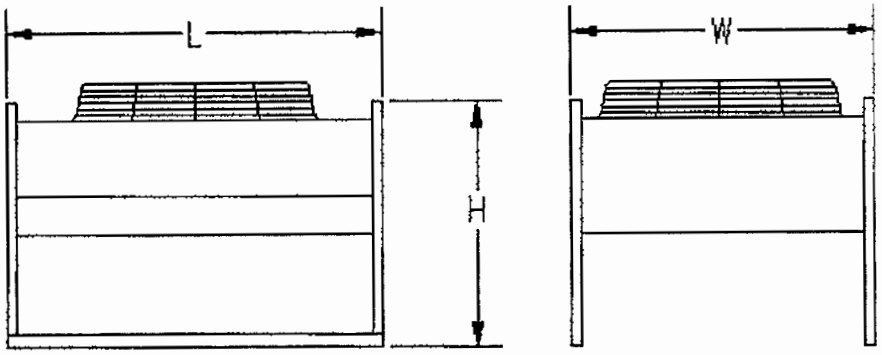
Note: When replacing the compressor select the compressor model shown on the unit agrees with the selected replacement to assure correct fit.

Replacement parts:

Description	Reference	Part number
Foot, levelling		8310460
Dryer, refrigerant		7322500027
Solenoid coil, refrigerant	SOL1	7322500065
Pump 50HZ		8310950
Pump 60Hz		8310952
Gauge, pressure 0-100 liq		7332501480
Strainer, brass		8310569
Valve, solenoid AF	SOL2	8330073
Level sensor assembly		8511671
Switch, flow, evaporator		8311042
Compressor 50Hz ZB114*		8310402
Compressor 50Hz ZR190		8310973
Compressor 60Hz ZB95*		8310819
Compressor 60Hz ZR144		8310819
Vibrasorb, discharge		7322504204
Vibrasorb, suction		7322504205
Mounting pad kit, compressor		742750502
Evaporator		8310818
Expansion valve		7322500045
Switch, flow, filter		7332502653
Battery, PLC		9450012040
Motor control, compressor	MS1	8511317
Motor control, chill pump	MS2	8511316
Relay, control	CR1,2	8320064
Fuse Class T 10A (JLLS10)*	F1-3	8311098
Module, level sensor	LSI1	8511647
Thermocouple, evaporator	TC1	8310318
Thermocouple, tank	TC2	8310409
Pressure transducer	TRP1,2	8511127
Operator panel GT05	OPNL	8310947
Fitting, for 8310318		8310476
Cable, operator panel		8310069
Drive, VFD, condenser ABB*	VFD1	8310960
Drive, VFD, condenser Eaton	VFD1	8311046
Cable, HP interface		8511809
Filter, chill water	F1	7332500034
Wrench, filter		7332500930
Bottle, water sample		8310757

*Obsoleted however available as replacement part.

Equipment dimensions and installation specifications:



L = 1458 W = 1232 H = 1086

Maintenance

Filters

Chiller

Chill water filter atop the chill tank	Replace quarterly
Chill water sample	Quarterly
Check water level	Weekly
Flush	Annually

Electrical

PLC Battery	9450012040	Replace every 5 years
MS1 Contactor	8511317	Replace every 50,000 cycles or Every 5 years

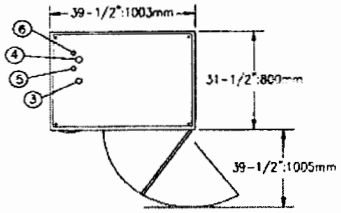
Specifications (@ 30% propylene glycol):

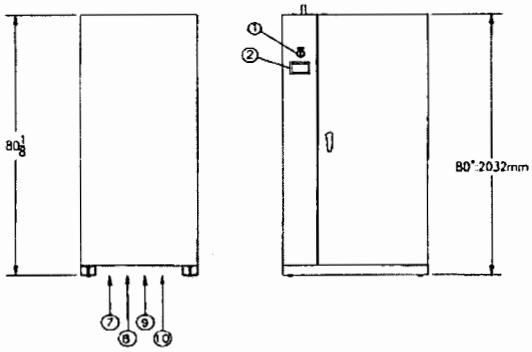
Compressor type	Copeland Scroll
Refrigerant	R407C
Initial charge weight	56# / 25kG
Refrigeration oil type	POE
Range of chill water setting	35-75°F / 1.6-22c
Chill tank capacity nom.	55 USg / 208l
Zone supply, cooling mode (CM10-3 @ 60Hz)	32gpm @ 88psi, 2lps @ 6bar, typ.
Capacity, cooling	42kW

i30000 v2015 PROCESS CHILLER
SITE MECHANICAL INSTALLATION DATA
SYSTEM WITH ROOF-TOP CONDENSER

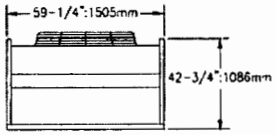
1 Main power switch
2 Touch screen
3 Discharge line 1-1/8" ACR
4 Liquid line 7/8" ACR
5 Condenser Electrical connection
6 Main Electrical connection
7 System drain 1" hose
8 Return from Press 1-1/2" hose
9 Supply to Press 1-1/2" hose
10 Auto-flush water supply
11 Safety disconnect at Condenser

CHILLER:
INSTALLED WEIGHT 1440# / 655KG

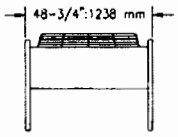




CONDENSER:
INSTALLED WEIGHT 440# / 200KG



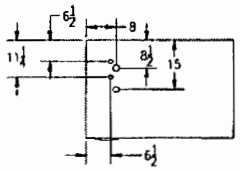
SIDE VIEW



FRONT VIEW

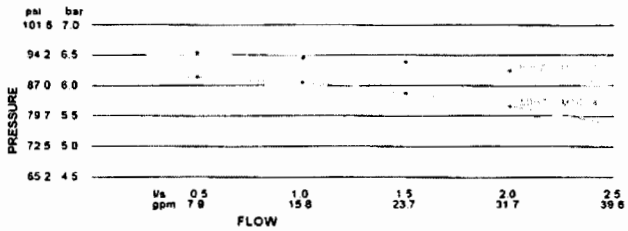
ELECTRICAL WIRING RUN
CHILLER TO CONDENSER
BY CUSTOMER
480V 3PHASE 8A

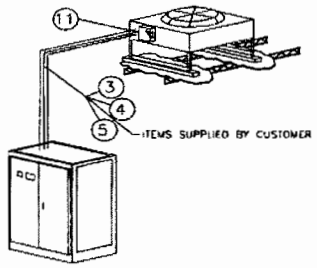
TOPSIDE LINES LOCATIONS



SPECIFICATIONS:	400V 50HZ MODEL	480V 60HZ MODEL
POWER REQUIREMENT	38.4 AMPERES	36.0 AMPERES
COOLING CAPACITY	143KBTUH / 42KW	136KBTUH / 40.4KW
CHILL SOLUTION CAPACITY	50USG / 190L (approx. system)	50USG / 190L (approx. system)
SUPPLY PRESSURE	87PSI / 6BAR	87PSI / 6BAR
TEMPERATURE RANGE	32-60 DEG F / 0-15 DEG C	32-60 DEG F / 0-15 DEG C
ACCURACY	+/-4 DEG. F / 1.1 DEG C	+/-4 DEG. F / 1.1 DEG. C
REFRIGERANT	R407C 65lbs [29.5kG]	R407C 65lbs [29.5kG]

NOTES: Condenser is powered from the Chiller variable to 480V 60Hz.
Consider water source and drain for maintanenece operations.
System coolant capacity will depend on line runs + machine capacity



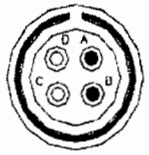


ROOF-TOP CONDENSER ARRANGEMENT

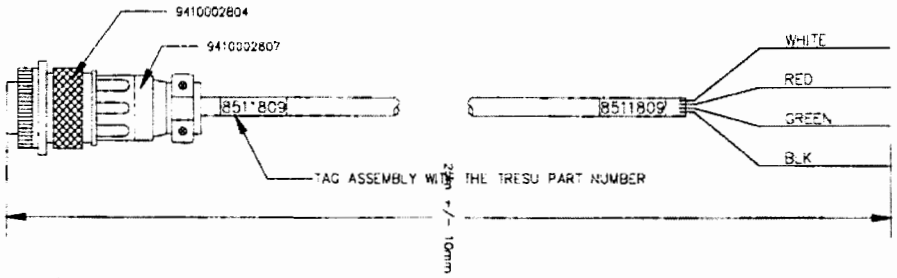
TRESU Royse Inc. 8517 Directors Row Royse, TX 75247 USA	Scale	NONE	Drawing No. 8610357
NOTICE PROPRIETY RIGHTS INVOLVED THIS DOCUMENT AND ALL ACCOMPANYING INFORMATION AND DATA ARE AND REMAIN THE PROPERTY OF TRESU Royse Inc AND ARE NOT TO BE COPIED, RECORDED, REPRODUCED, NOR TRANSMITTED OR DISCLOSED TO OTHERS WITHOUT EXPRESS WRITTEN PERMISSION AND ARE TO BE RETURNED UPON REQUEST THEREFORE, ALL RIGHTS IN PROPRIETY AND NOVEL FEATHERS OF THE SUBJECT MATTER ARE EXPRESSLY RESERVED BY TRESU Royse Inc. RECIPIENTS AGREEMENT TO THE FOLLOWING IS INDICATED BY ACCEPTANCE OF THIS DOCUMENT 2015 TRESU Royse Incorporated	Date	05 2014	SAP No.
	Drawn	RLO	Material
	Rev.	0	Weight (kg) Sheet 1 of 1

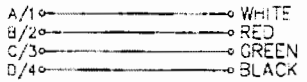
REVISIONS				
SYM	DESCRIPTION	DATE	BY	APPROVED
A	LENGTH INCREASED 10M TO 25M	170914	RLO	

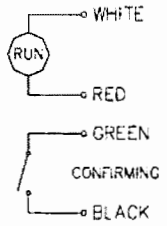
4 POS. "AMPHENOL" SERIES 97 CONNECTOR
(AMPHENOL NO. 97-4106A-14S-2P)



PIN A - WHITE
PIN B - RED
PIN C - GREEN
PIN D - BLACK







ASSEMBLY NOTES:

1. SEE BILL OF MATERIALS FOR CORRECT PARTS CALLOUT, NO PARTS TO BE CHANGED WITHOUT ENGINEERING APPROVAL.
2. ALL CABLE LENGTHS SHOWN ARE +6"/-0" TOLERANCE, UNLESS NOTED OTHERWISE.
3. RECHECK ALL CONNECTIONS AND CRIMPS AFTER ASSEMBLY.
4. ALL CONNECTORS ARE "AMPHENOL" SERIES 97, 14S-2 & 18-15, "UL" AND "CSA" RATED: 200 VAC/13 AMPS. MAX.
5. ALL AMPHENOL CONNECTORS TO USE "CRIMP" PINS, SIZE 16, NO. 16-22 AWG (1.5 mm²-0.34 mm²).
6. ALL CRIMPS MUST BE MADE WITH THE "AMPHENOL" NO. 357-578 HAND TOOL. USE AMPHENOL INSERTION/EXTRACTION TOOL NO. M81969/14-3.

UNLESS OTHERWISE NOTED
ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
DECIMALS: .XX = ±.01 .XXX = ±.005
FRACTIONS: ± 1/32
ANGLES: ± 30'
BREAK ALL SHARP EDGES
MACHINE SURFACE FINISH IN RMS
125
FINISH

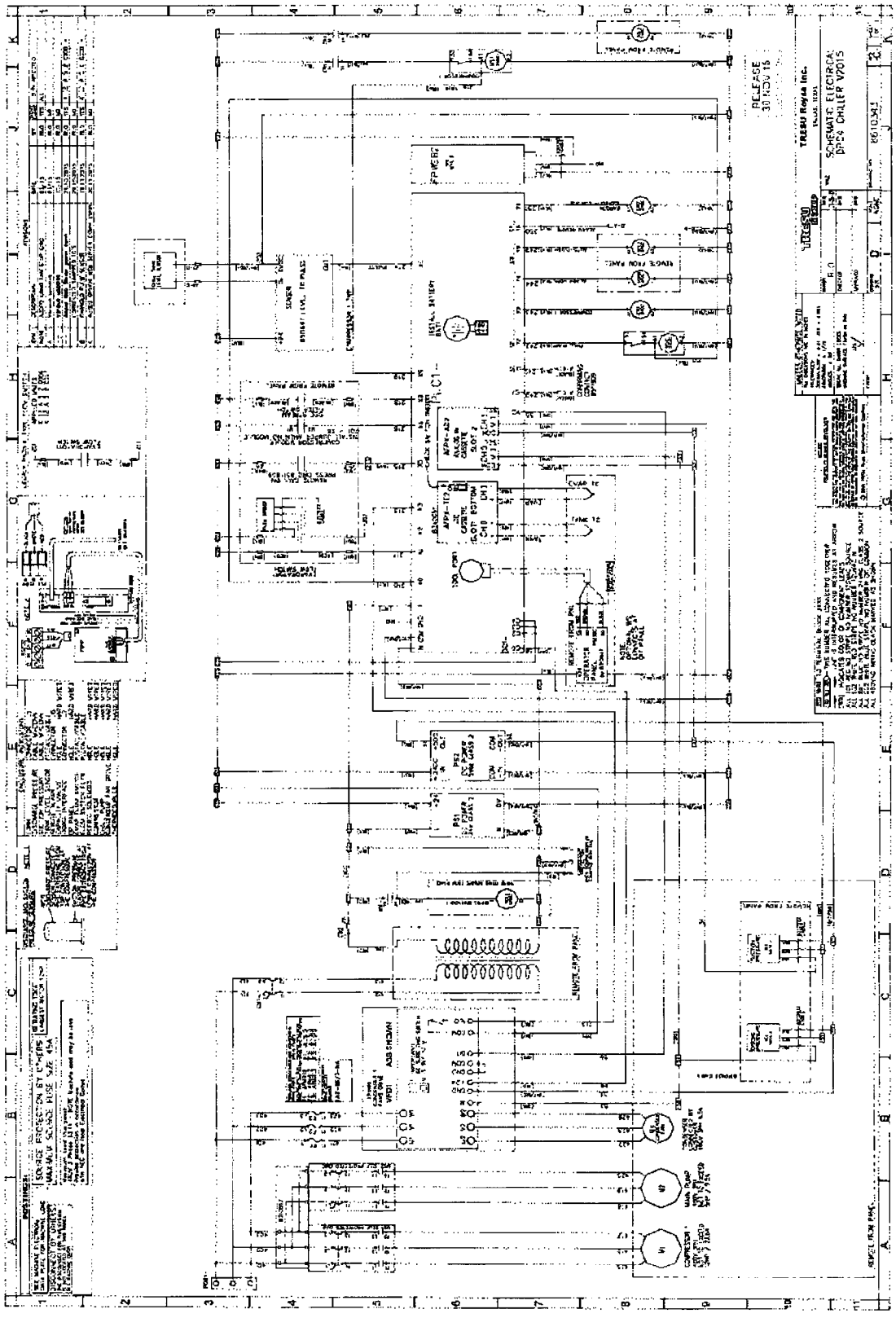
TRESU GROUP

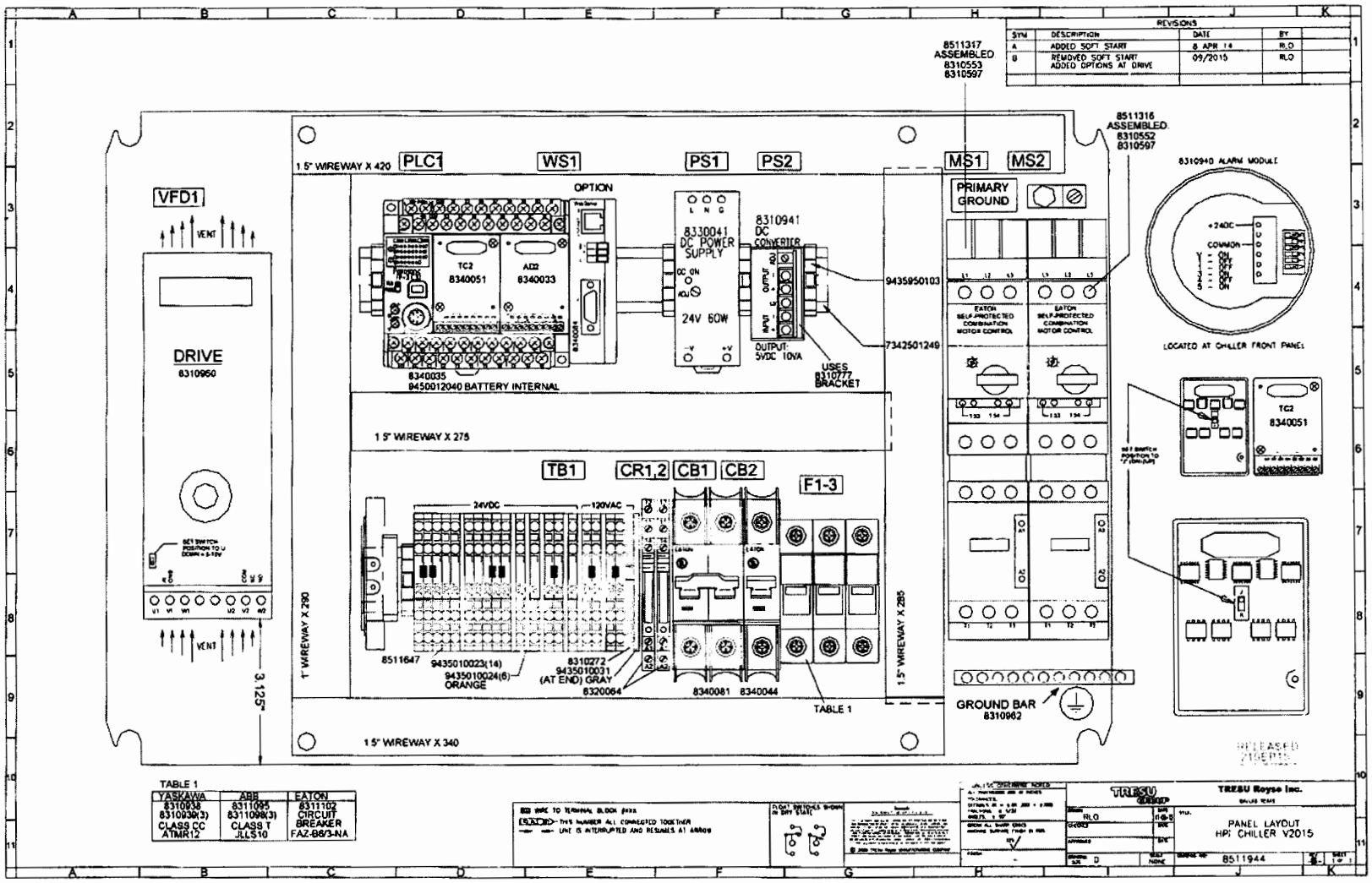
TRESU Royse Inc.
DALLAS, TEXAS

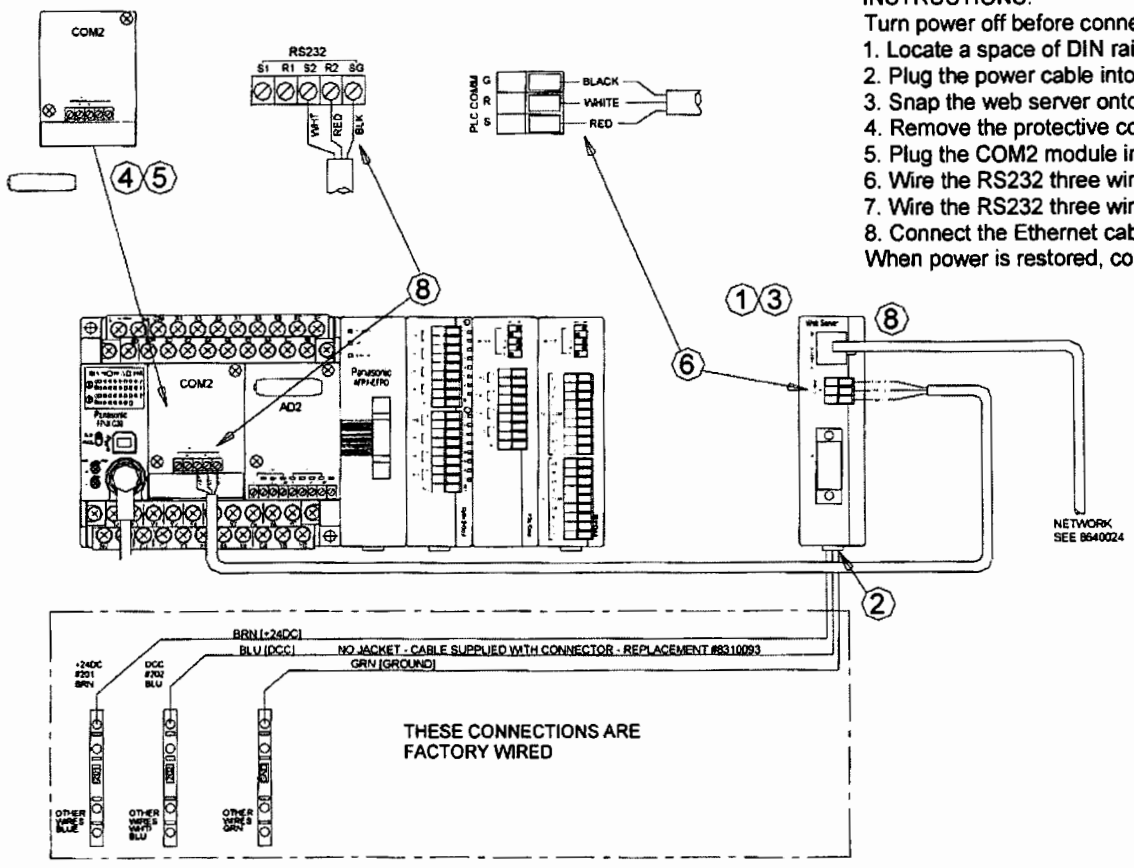
DRAWN	RLO	DATE	06-25-14
CHECKED		DATE	
APPROVED		DATE	

TITLE: CABLE ASSEMBLY INTERLOCK CHILLER – HP i30000

DRAWING SIZE	SCALE	DRAWING NO:	REV.	SHEET
B	NONE	8510329		1 OF 1




REVISIONS
SYM DESCRIPTION DATE BY
A ADDED SOFT START 8 APR 14 RLO
B REMOVED SOFT START ADDED OPTIONS AT DRIVE 09/2015 RLO
8511317 ASSEMBLED 8310553 8310597
8511316 ASSEMBLED 8310552 8310597
1.5" WIREWAY X 420
PLC1
WS1
PS1
PS2
MS1
MS2
OPTION
VFD1
DRIVE
8310950
VENT
8330041 DC POWER SUPPLY
24V 60W
8310941 DC CONVERTER
TC2 8340051
AI22 8340033
8340035
9450012040 BATTERY INTERNAL
9435950103
7342501249
OUTPUT: 5VDC 10VA
USES 8310777 BRACKET
PRIMARY GROUND
8310940 ALARM MODULE
+24DC
COMMON
LOCATED AT CHILLER FRONT PANEL
1.5" WIREWAY X 275
TB1
CR1,2
CB1
CB2
F1-3
24VDC
120VAC
1" WIREWAY X 290
1.5" WIREWAY X 285
8511647
9435010023(14)
9435010024(6) ORANGE
8310272
9435010031 (AT END) GRAY
8320064
8340081
8340044
TABLE 1
GROUND BAR 8310962
1.5" WIREWAY X 340
3.125"
TABLE 1
YASKAWA 8310938 8310930(3) CLASS CC ATMR12
ABB 8311095 8311098(3) CLASS T JLLS10
EATON 8311102 CIRCUIT BREAKER FAZ-B6/3-NA
TRESU Royse Inc.
PANEL LAYOUT HPI CHILLER V2015
8511944

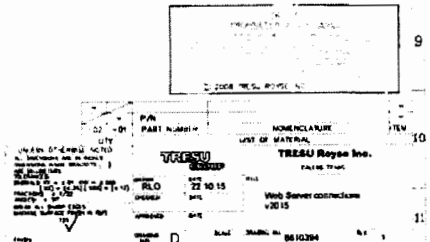


INSTRUCTIONS:

Turn power off before connecting.

1. Locate a space of DIN rail where the Web Server can be attached.
2. Plug the power cable into the web server lower side.
3. Snap the web server onto the DIN rail.
4. Remove the protective cover from the PLC Cassette.
5. Plug the COM2 module into the PLC Cassette LEFT HAND slot.
6. Wire the RS232 three wire connection to green connector.
7. Wire the RS232 three wire connection to the PLC COM2 PORT 2.
8. Connect the Ethernet cable to the network public side.

When power is restored, communications will establish.



Process Chiller
TECHNICAL SERVICE MANUAL

This document applies to models:
TRESU Americas DPC4 v2015 Chiller

8410368 v0.1
Use with 8410364 Operation Manual

Technical Manual

TRESU GROUP

CHILLER TECHNICAL MANUAL

Introduction-

This manual is intended to provide service and advanced instructions for the DPC4 Chiller in addition to the 8410317 Operation Manual.

Safety

General safety

Should an internal pressure leak develop, disconnect power from the equipment and allow pressure to relax before opening the cabinet doors.

Always exercise care when tending water and fluids inside the equipment cabinetry. Be careful not to spill water or fluids, especially on items marked with the ⚡ label.

High Voltage:

The Chiller contains high voltage in several locations.
Accesses which have high voltage internally are marked with a ⚡ warning label.

Only qualified personnel should open enclosures or accesses that are marked with the ⚡ warning label.

Keep cabinet doors closed except when doing water maintenance or servicing.

Disconnect electrical power from the equipment before servicing.

Drive components can store energy for up to 2 minutes time. Always allow a 2 minute safety time after disconnecting power for safe discharge before servicing.

Tampering with or defeating controls and safeties can result in dangers including explosion, fire and death.

Mechanical safety:

The operation and maintenance of any printing equipment may expose the individual to potentially hazardous situations.

The potential of a hazard leading to an accident or injury is increased by improper operating practices, lack of attention and care, or insufficient training.

Failure to follow the safety practices and precaution can lead to serious injury.

Defeating pressure safety devices electrical or mechanical can result in danger not limited to explosion, fire and death.

Warnings:

WARNING: This equipment is intended to circulate chill and press chemistry process solutions which may contain harmful chemicals.

Be sure to read and understand all safety information related to the chemicals used.

WARNING: Service or repair must only be performed by qualified personnel.

WARNING: Chill water quality must be monitored and maintained. Water must be flushed when it's properties indicate need for a flush, otherwise annually. Neglected chill water can result in the creation of a bio-hazard.

WARNING: Use of de-ionized water in the equipment will cause damage and contaminate the water. Use of an isolating heat exchanger device is required for de-ionized water use.

Disclaimer:

Pictures and diagrams included in this manual refer to equipment construction at the time of edition. It is possible parts and placements may change.

This manual is not intended for service use. Refer to the correct service manual for this equipment when effecting service.

Information included in this manual is intended for operation of the equipment in a way commonly found in the Industry. The Manufacturer assumes no liability for the manual content information relative to unusual operating situations outside of those considered normal at the time of edition.

General information:

The equipment contains a refrigeration set that cools a main chill water reservoir. Water from this reservoir is used to effect control of the process chilling zone temperature.

The chiller main tank water is intended to be chilled to a temperature 5˚F (2.78˚C) lower than the lowest desired temperature for press use. Chill water must have maintenance, including additives to prevent corrosion and biological growth.

A mixing valve is provided which makes the correct temperature water available by mixing in only the needed amount of chilled water to produce the requested result.

Controls are provided allowing operation of the chiller. A user control touch screen provides much text assisting operation and set-up.

Alarms are provided when parameters are outside of normal requiring attention.
Actions associated with the alarm are various, depending on the alarm.
All alarms alert the operator with an audible alarm sounder, and information provided on the control screen.

Process temperature control:

The Chiller provides circulation of temperature controlled water intended for the i30000 and other inking system temperature control features.

Chill water is provided leaving the equipment at the desired temperature. The temperature is set at the user control screen. Water from the main chill tank is filtered at the canister filter above the tank.

Remote condenser:

Heat removed by the Chiller is expelled outdoors at the condensing unit. The condensing unit is controlled by the equipment controls to provide reliable, efficient operation. Installing the condenser on the facility rooftop assures heat will not be trapped in the building. No condenser air filters are needed with this arrangement.

Self-contained condenser:

Heat removed by the Chiller is transferred to air which is expelled at the top of the condenser module of the Chiller. Heat is expelled in the pressroom. Condenser air filters are used to prevent press offset spray and other contaminants from fouling the condenser surfaces.

Terminologies:

Zone = Circuit of water circulation, out from and returning to the equipment, which is independent of the chill tank temperature.

Chill water = A mixture of water and additives found in the chill tank and also supplied to the ink roller chilling zone(s).

Before use check:
Before starting the chiller equipment, first check:

- Chill water tank is full to fill level.
- If there has been extreme weather, make sure the condenser is clear of ice or snow.
- Electrical power is on.
- Filters are in place – replace if necessary.
- Top cover is set in place on the chill water solution tank.
- Condenser filters are in operable condition. [applies to self-contained models]

Section III

1. Operator panel navigation – advanced settings.
2. Electrical and controls.
3. Refrigeration section.
4. Chill water section.
5. Electrical diagrams.

Operator panel navigation

Chillers are equipped with an operator panel which provides a touch screen interface with the control system. Navigation from screen to screen is accomplished through the use of on-screen buttons. It is recommended to display the operation screen during operation.

User screen area

The user screen area is accessible without password protection and includes all settings needed for effecting normal operation and maintenance.

The operating screen provides data and access to settings for temperatures for press ink roller chilling water supply temperature.

Password protected area

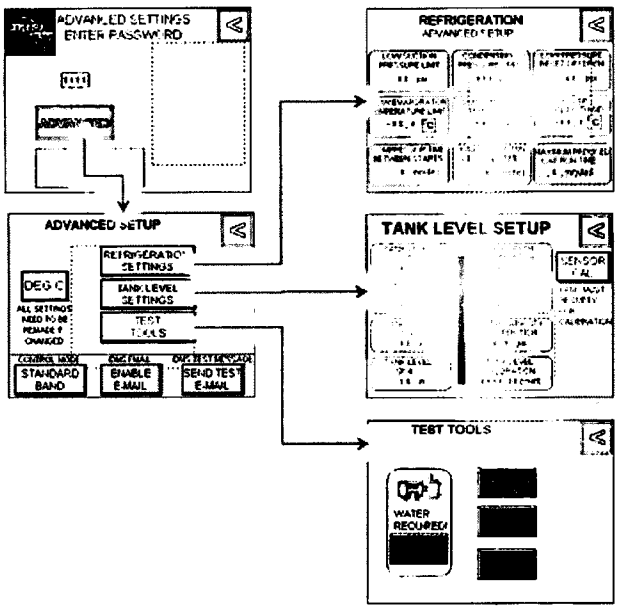
An area of screens is locked and requires a password for access. These are for use only by qualified Technicians or Personnel. Incorrect settings can in some cases damage or destroy your Chiller.

Screens in the password protected area give access to settings needed to configure and service the Chiller but are not used during normal operation.

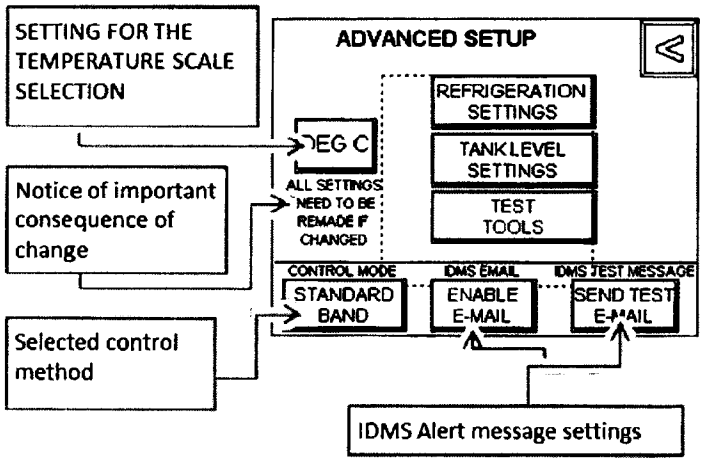
Password protected screen navigation is covered in the Technical Service Manual.

Screen Navigation:

Navigation between screens is made following the flow diagram above. Arrow left return buttons return the previous screen or the operation screen.



Advanced setup:



Setting for temperature scale: This selects between Degrees C and Degrees F.

Advisory of consequences of change: This warns that when the scale of temperature is changed many settings need to be updated.

Method of temperature control: Select the standard band for simple compressor cyclical control or narrow band reduced capacity control. The selected method is displayed. Standard band means the system simply cycles the compressor on and off as needed. Narrow band trims refrigeration capacity before temperature is satisfied allowing closer control of temperature.

IDMS E-mail enable allows the unit to send e-mail alarm messages to Technicians.
Send test E-mail sends a test message to check the system is communicating.

Capacity control valve:

Temperature of the supply water leaving the Chiller is controlled by cycling the refrigeration runs. When tank water temperature rises in excess of the setpoint (SP) + the cooling band, the refrigeration process starts. Water temperature will fall until it reaches the opposite side of the band, setpoint – the cooling band setting.

Since each time chilling is required the Compressor must run in order to maintain suction pressure, and must stop when refrigeration is stopped, the cycle times of the compressor are a concern. Ideally a minimum of 2 minutes resting time after the cycle stops are provided before a re-start and a limitation is also placed on the number of starts in an hour of use. The time before a re-start is controlled by the resting time setting while the number of starts per hour are protected by the time between starts setting.

When the load provides a reasonable amount of heat to the Chiller, it is possible for the system to provide temperature control within the band settings without interference by the cycle protection timers.

In many cases Chillers are installed to applications where the heat load is not constantly ample to provide work for the chiller. The result in these cases, the Chiller may run only a very short time, and then rest. The Chiller then is not allowed a re-start for some time as the number of starts per hour will intervene in order to protect the components.

In order to facilitate temperature control within the band without interference from the protection timers, a feature is added called "capacity control". When this feature is enabled by selecting "narrow band", the Chiller will operate as normal between setpoint and the + band (setpoint + band to setpoint) and will operate at a reduced capacity from setpoint to the – band, thus extending the run time.

The objective is to extend run time when the system is loaded between 30-100% to where the time between starts required is satisfied with normal cycling, enabling the system to continue to provide water inside the requested temperature band.

When loaded between 30-70% the feature will extend the run time before the system rests to a time longer than required to meet the starts per hour specification.

When loaded between 70-100% the feature will cause the Chiller to run continuously, cycling between full and reduced capacity, where none of the concerns of the restart timers are encountered.

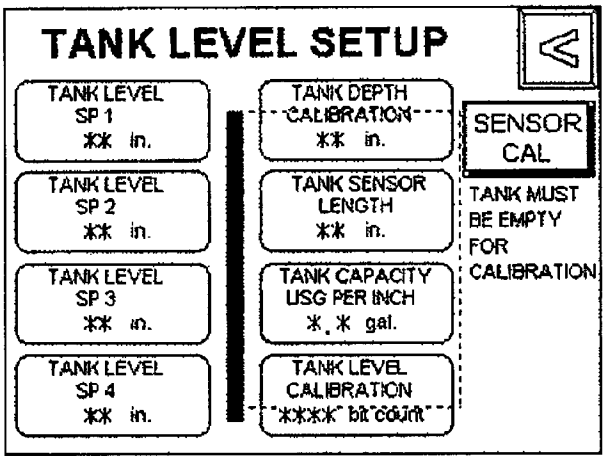
How the valve functions:

Capacity is controlled by sending a precisely measured amount of heat that is intended to be disposed at the Compressor to the Evaporator. This provides a fixed load of 50% of the systems cooling capacity leaving only 50% for cooling water. As a result the water temperature does not drop rapidly, extending the run time.

The heat is provided by hot gas from the compressor discharge port. This hot gas flow is controlled by a refrigeration control valve, and is further metered by a complex valve which assures it always offers the same heat load to the evaporator.

The system control will use this valve only when the narrow band is selected.

Tank level setup:



Tank level setpoints are made in the software so that actions can be triggered when tank levels change. Four levels exist in the software. These are not always all used.

The column of tank level setpoints are explained here:

Tank level SP 4: Value here is the low level in inches at which the alarm is sounded for low water and the pumps stopped. The value is expressed in inches.

Tank level is measured with a resistance probe and translated into a bitcount.
This is further translated to meaningful inches of depth using constants input at the above screen.

The column of constants are explained here:

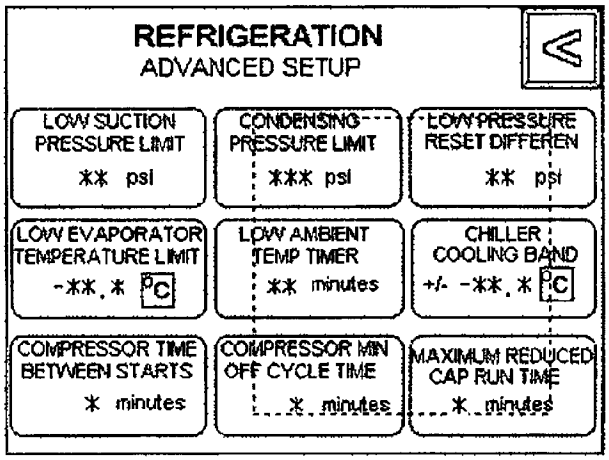
Tank depth calibration: Value is the approximate depth of the tank inside from the bottom to the absolute top. This value will be used as the "range" from 0-100% of the entire tank, in calculations. . The value is expressed in inches.

Tank sensor length: Value is the range of travel of the sensor used. This is used as the expected range of input from minimum to maximum data according to where the sensor reports the water level. The system can only measure water depth in this range. The value is expressed in inches.

Tank capacity, USG per Inch: Value is the number of gallons of water existing in each inch of depth of the tank. This is later used for calculations. The value is expressed in gallons but other volumetric measure can be substituted without consequence. (1 gallon = 3.79 liters; 1 in = 25.4mm; 1g/in = 0.149l/mm)

Tank level calibration: Value is an integer slightly higher than the bitcount when the sensor is dry. This information together with the tank depth is used to account for the level sensor length not being as long as the tank is deep. Since it is difficult to make this adjustment unaided, an automation makes the adkustment when the Sensor Cal button is pressed. This must be done with the sensor at the lowest level.

Refrigeration advanced setup:



Settings above are of critical importance providing protection for the refrigeration system.

Low suction pressure: This is the suction pressure provided at the evaporator so that liquid refrigerant will vaporize causing the chilling effect. When insufficient refrigerant is experienced, suction pressure will become low. The low condition indicates danger to the Compressor and Evaporator. The setpoint is the pressure at which the system is stopped. When the suction pressure falls below the limit the system will continue to run for the time set at the low ambient timer setting before stopping. An alarm is generated.

Condensing pressure limit: Condensing pressure rises when the equipment is under heavy load. It rises additionally according to higher ambient air temperature at the condenser. When an unsafe pressure is reached the system is stopped immediately should pressure reach or exceed this value. An alarm is sounded and interaction required to re-set the safety condition. A reset button placed on the maintenance screen is pressed to release the safety.

Low pressure reset differential: After a low pressure event, the safety condition will automatically reset after suction pressure rises to this amount in psi above the setting.

Low evaporator temperature: Evaporator temperature reading is the temperature of water leaving the evaporator. This temperature is usually 10F lower than the tank temperature while the refrigeration is running. Should the temperature become lower than the low evaporator temperature safe limit value the refrigeration run will be discontinued and the alarm will sound.

Important! Evaporator temperature should never be allowed to become colder than the chill solution freeze temperature + a 5F (2.78˚C) safety factor. When the temperature must be lower than the freeze temperature, an antifreeze must be added to protect against freezing.

Low ambient temperature timer: The amount of time a low pressure condition is allowed before refrigeration is stopped and alarm sounded.

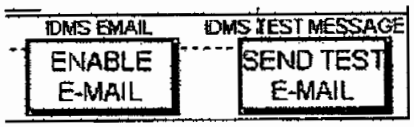
Chiller cooling band: The range of temperature above and below the setpoint at which chilling is started and stopped. A smaller band means more accurate control while too small leads to excessive short cycling.

Compressor time between starts: On starting, a tremendous amount of heat is imbedded in the compressor motor windings. After each start, this timer runs and locks out any additional starts until the timer is done. In this way time is provided for heat in the windings to dissipate.

Compressor min off cycle time: When the compressor stops it is kept off for this amount of time before re-starting. This is intended to allow stabilization of pressures and some cooling to the compressor before re-starting.

Maximum reduced capacity run time: When operating in the narrow band mode the system sometimes runs at reduced capacity which lowers efficiency. Setting a time limit to how long the unit is allowed to run in reduced capacity can improve efficiency.

E-mail selections:



When the system is connected through IDMS the e-mail function will be live.

Above settings:

Enable e-mail: On alarms, the System will send alert messages to the Manufacturer. This will result in actions to help remedy any problem. The manufacturer may contact the Customer to alert and assist with the problem.

Send test e-mail: The System will send a test e-mail to the email server. This is used to test for proper connection of the diagnostic server.

Electrical controls

Controls are enclosed inside the electrical enclosures located inside the doors of the chiller. A second door has to be opened to gain access to the controls besides the large main doors.

Motor protection

Chiller control components include motor protection for the pumps and compressor. Should the motor protection trip and stop one of the motors, which produces an alarm, it is possible to make a manual reset of the motor control. Locate the control which has it's indicating knob in the "tripped" position. Rotate the knob to the fully CCW position and torque further against the spring load to reset it. Restore it to the on position, where the handle points up.

In the event of a change to the electrical power source it is sometimes necessary to change the protection setting, should trips occur. In this case a qualified Electrical Technician should make the adjustment to the trip level.

PLC

The PLC located in the main electrical enclosure runs the operational program for the Chiller. When connected to the IDMS Web Server the program can be updated or restored from a remote source.

IDMS is the Internet based Diagnostic and Control monitoring System. This requires a dedicated IP address and access from the outside over internet.

IDMS adds the ability to control the Chiller from the host Machine or other control PC.

On the front of the PLC status lights indicate if the PLC is in RUN mode and if there is an error processing. When an error light shows it is often because a sensor has failed or a setting has been entered that is out of range for the application.

PLC faults can be cleared remotely when the IDMS is connected.

The PLC contains a seven year lithium battery that must be maintained in order to preserve certain configuration settings. Should the battery become weak an alarm will call attention. In the case the system is laid up and not used when the battery fails, restoration is possible through installing a pre-loaded PLC or on-site re-initialization.

Replace the lithium battery only with one purchased at the time of need as the use life is approximately equal to the shelf life.

Refrigeration

The refrigeration system employed in the Chiller uses a highly efficient Copeland Scroll compressor, and condenser fitted with a variable speed three phase fan motor. The system will mostly run with the Electrical load well below the stated maximum.

The compressor is hermetically sealed and quite trouble-free. The remote style condenser is often the subject of care, due to it's being mounted outdoors in the elements.

The remote condenser fan is controlled by a three phase inverter-duty motor which is speed controlled through a variable frequency drive to attain system pressure control. Fans will not operate until a minimum pressure is present in the condenser. As condenser pressure increases, fans speed increases to where full fan speed is reached before 280psi (19.3bar).

When fans start an electric brake is first applied to stop 'wind-milling' This prevents trips of the fan motor protection that would otherwise occur should wind be spinning fans backwards.

As the system ends a cycle fans continue to run until pressure falls below 180psi in preparation for the next cycle. The fans are not in any way electrically connected to the compressor wiring circuit and are pressure controlled only.

In colder climates, additional refrigerant is added allowing operation to lower outdoor or "ambient" temperatures. In this case the charge is considered to be "flooded" as part of the condenser is filled with some liquid.

Chill Water

The system chill water requires proper make-up for reliable use and performance. The chill water flows directly through Press rollers and will collect rust and other contaminants if it is not properly treated. Additionally living organisms can foul or "sour" the water.

Important! Proper care needs to be taken so that chill water can not freeze. Should it freeze it can destroy costly parts and lead to significant down time and repair costs, outside of warranty.

When the chiller setpoint is to be lower than 50°F (10°C) it becomes necessary to adjust the chill water mixture so as to avoid freezing. The system is intended to have propylene glycol added as antifreeze, in addition to an inhibitor.

Important! Propylene glycol additive is a nutrient when used without adequate inhibitor and will lead to souring of the chill water.

Important! Automotive antifreezes typically contain silicates, which are not compatible with the Chiller equipment. Lower efficiency and shortened pump seal life will result.

Use the following as a guide when your supplier has not provided information.

Propylene Glycol and Water:

Glycol	Freeze temp
20%	20°F / -7°C
25%	15°F / -10°C
30%	10°F / -12°C
35%	3°F / -16°C

Chill water make-up summary: (for 42°F / 5°c setpoint)
30% propylene glycol, as antifreeze.
Minimum 1% Maximum 1.5% "Chill Guard" molybdate inhibitor.
The remainder of 69% approx. "tap water"

TRESU Americas requires the additive "Chill Guard", a molybdate inhibitor, to be installed to the Chill water at a ratio that provides the needed "free p alkalinity" value. Chill Guard is formulated in the concentration where typically one gallon is needed per 100 gallons chill water. It is acceptable have more than the 1:100 ratio but not

less. Remember to take into account the specifications for the volume of water in the press and remote plumbing when mixing. The Chiller will contain approximately 60 gallons (227 L) when the tank, pumps and lines are filled. Test results for inhibitor should show in the range 200 – 300ppm or greater.

PH of chill water also needs to be maintained. Water samples should be sent to TRESU Americas periodically for analysis. It is recommended to check chill water qualities quarterly.
ph range for basic chilling: 9 - 10.5
ph for UV and other equipment where aluminium parts exist: Target 8.2 Range 8.0 - 8.8

A filter located above the main chill tank filters the chill water. When the filter resistance becomes too great an alarm is sounded and the filter needs to be replaced. The optimum filter would be 20-30u and the standard filter is 50u. These are available from TRESU Americas.

Pumps used inside the Chiller and Chiller units can be fitted with replacement seal kits when needed.

Condenser drive program for ABB drive:

Group	Function	Setting	Units	Explained:
11	03	01	Selection	Local or remote speed instruction
	05	U	Selection	Speed at max input level
13	01	14	%	Pressure of speed ramp start
	02	26	%	Pressure full speed occurs

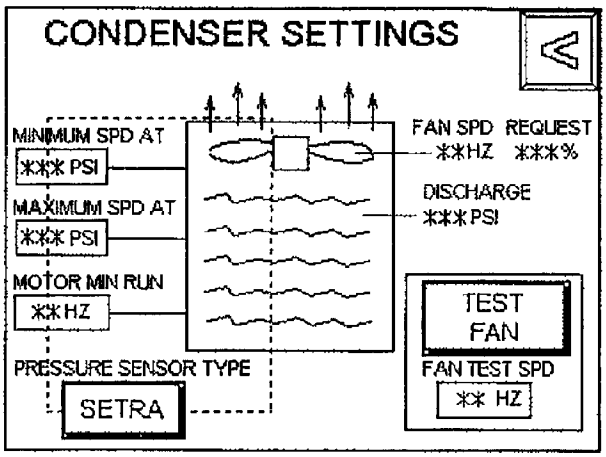
Note 1: Single 3 hp or dual 1-1/2 hp fan motor(s), 480Vac line voltage.

EATON drive option exists for future use. When the Chiller is provided with the EATON drive the following information applies:

The drive is to be configured for condenser fan use before installing. This can only be done using EATON drive connect software and communications cable set.

Operation of the refrigeration control system differs when the EATON drive is installed. The drive becomes a slave and the PLC controls the fan in order to accomplish refrigeration pressure stability.

An additional screen is presented accessed through a button on the top border of the Refrigeration Advanced Settings screen, showing the following settings:



Defining the features of the condenser setting screen used with the EATON condenser fan drive:

Minimum speed at: This sets the slope of control point of lowest fan operating pressure, the point which when reached by rising pressure begins fan operation.

Maximum speed at: This sets the upper point of the fan speed control slope where the fan reaches maximum speed. At pressures above this point the fan can not further increase speed but stays at the maximum speed.

Motor run min RPM: In order to protect the motor, when speed requested is too slow for self-cooling of the motor the fan will not run. Pressure will eventually increase to where a safe fan operating speed can be applied at which point the fan will start and run.

Fan speed HZ: This is the approximate fan speed according to the slope of control and the current pressure.

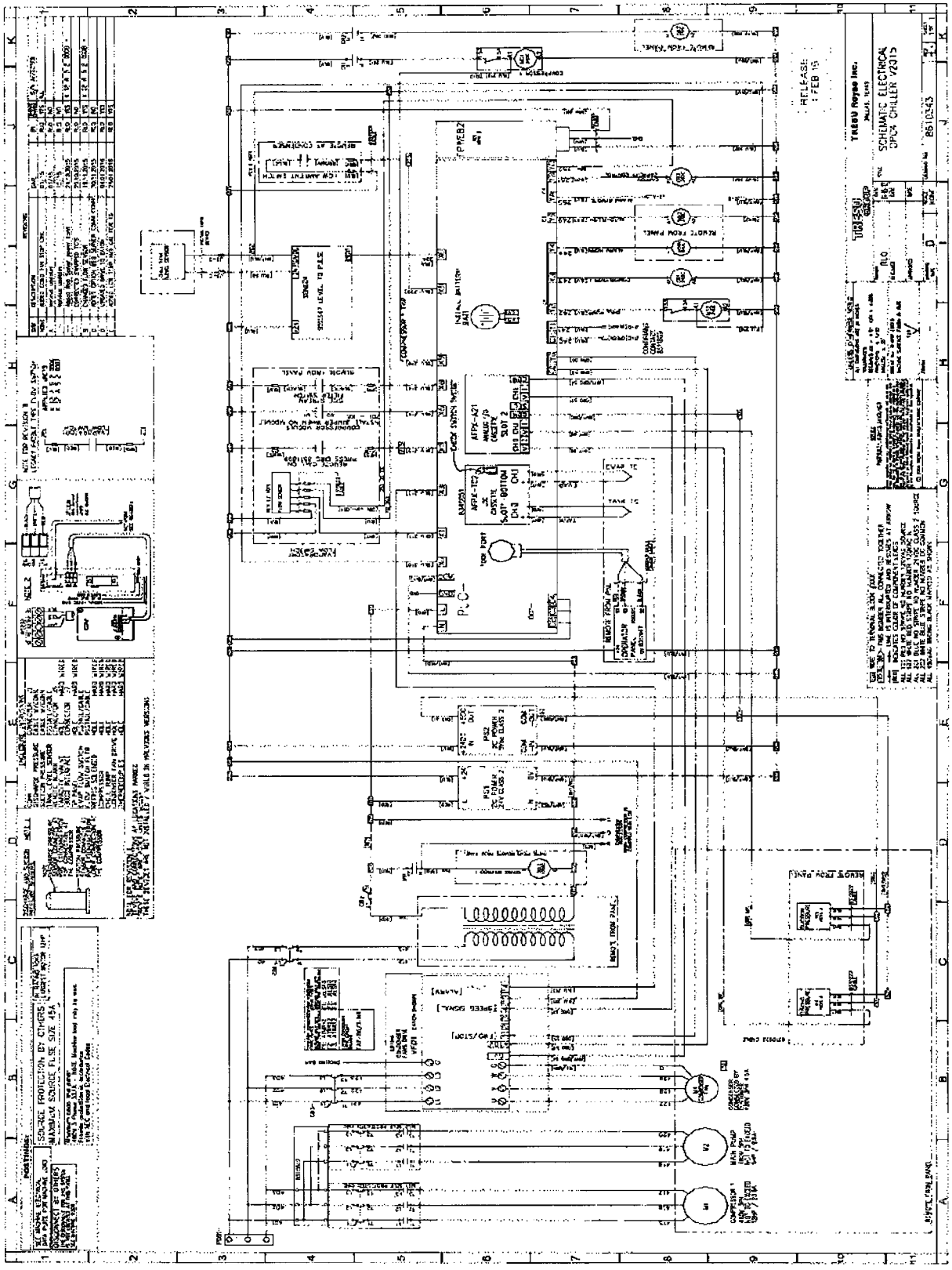
Request: This shows the actual result from the slope of control from 0-100% according to the applied pressure. It does not mean the fan is actually running when the pressure is calling for a speed below minimum run speed allowed.

Discharge PSI: This is the pressure asserted against the condenser inlet, which is the purpose of the control. Viewing this pressure helps in diagnostics while adjusting settings.

Pressure sensor type: Select the type of sensor installed. The primary sensor used at the time of this manual is "SENSATA". An alternative sensor is available from "SETRA". The ranges of reading are different therefore the selector is provided. It is dangerous to incorrectly select the sensor.

Test fan: This selector allows a Technician to control the condenser fan manually when installing or servicing. This makes it easy to check fan rotation when first installed. It also allows a Technician to run the fan in a situation where a sensor has failed for temporary operation until the sensor can be replaced.

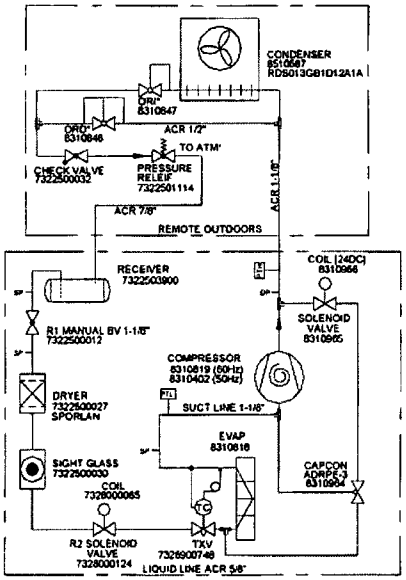
Fan test speed: The speed of the test run can be set manually here. The fan will not run below a minimum speed set at the drive which is approximately 20% in order to protect itself.



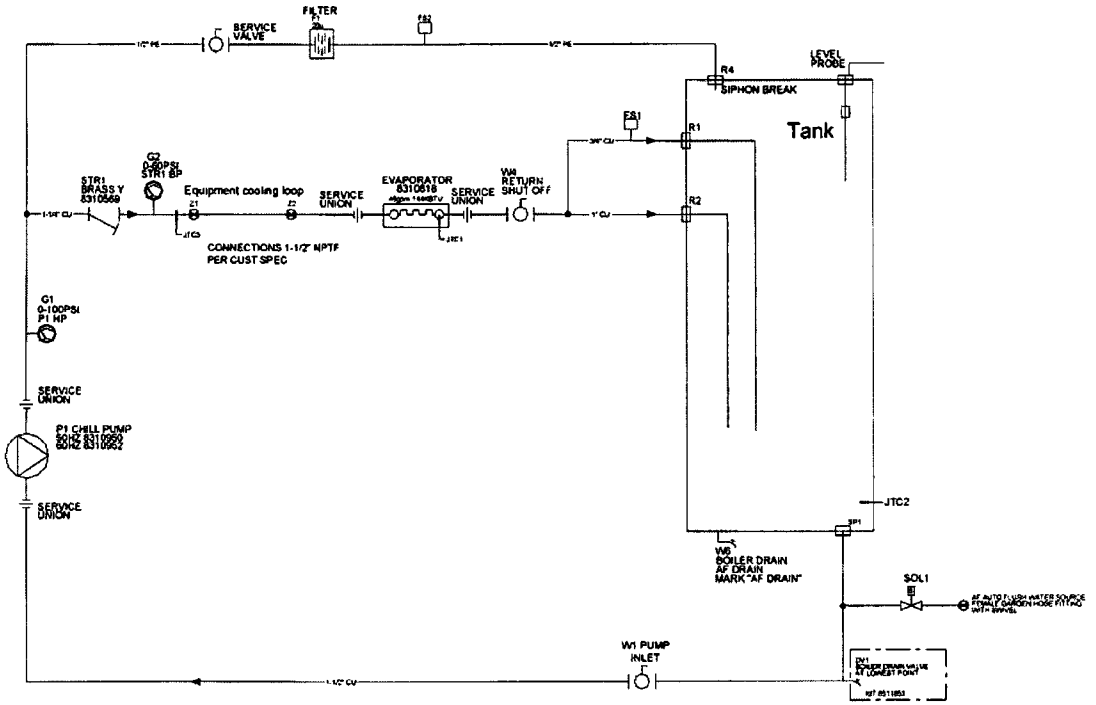
HPC4 v2015
INSTALLATION OF VALVES ORI & ORD
OPTIONAL FOR COLD CLIMATE

INITIAL REFRIGERANT CHARGE 56#

Refrigeration circuit



Chill water circuits



150063 - 413816
Attachments I, SOS

July 1, 2016
Project No. 605174001

Mr. Todd Martin
Maricopa County Air Quality Department
1001 North Central Ave, Suite 125
Phoenix, Arizona 85004

Subject: Non-Minor Modification of Non-Title V Air Permit
Shutterfly, Inc.
7195 South Shutterfly Way
Tempe, Arizona 85283
MCAQ Permit #150063

Dear Mr. Martin:

Attached please find an application for non-minor modification to the Non-Title V Air Permit #150063, which was originally issued by your department in 2015. The purpose of this modification is to add 12 new digital presses (HP Indigo 10000 Series) to the equipment list. Original HP 6000 and 7000 Series presses will remain. The new equipment is designed to replace 22 Xerox presses that do not utilize VOC materials, and are not part of the existing air permit. Because of the beneficial relationship between Shutterfly and HP, the overall capacity of the HP presses far exceeds the anticipated production in the next 5-year air permit cycle; however, potential-to-emit (PTE) calculations of the maximum HP press capacity and emissions at 8,760 hours per year can be provided upon request.

If you have any questions or comments concerning the attached air permit modification application, please contact us at your convenience.

Sincerely,
NINYO & MOORE

Mark J. Guatney, PE, CHMM
Senior Environmental Engineer

MJG/hmf

Attachments: Attachment A – Non-Minor Modification Application Form
Attachment B – Site Plans
Attachment C – Process Flow Diagram
Attachment D – Operations & Maintenance Plan
Attachment E – 12-Month Facility Emissions Thru May 2016
Attachment F – Estimated Emissions of New Equipment, and Future Facility Emissions Estimate with Growth Factor
Attachment G – HP Indigo 10000 Digital Press Information
Attachment H – TRESU Americas Chiller Information
Attachment I – Safety Data Sheets (MSDS or SDS)

Distribution: (1) Addressee (Hard Copy)
(1) Emerly Leano-Lay, Shutterfly, Inc. (Electronic Copy)

ATTACHMENT I

SAFETY DATA SHEETS (MSDS OR SDS)

SAFETY DATA SHEET

ACTEGA Coatings & Sealants

Version 1.4 | Revision Date 05/22/2015 | Print Date 05/29/2015

SECTION 1. IDENTIFICATION

Product name : ACTDIGI® DUV-9020

Product Use Description : UV GLOSS COATING FOR DIGITAL TONERS

Manufacturer or supplier's details

Company : ACTEGA Kelstar
1050 Taylors Lane
Cinnaminson, NJ 08077

Telephone : (800) 255-0021

Telefax : (856) 786-2860

Visit our web site : www.actega.com

Emergency telephone number : Chemtrec Phone: 1-800-424-9300 / +1 703-527-3887

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Skin sensitisation : Category 1

Carcinogenicity : Category 2

GHS Label element

Hazard pictograms :

Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear protective gloves.
P281 Use personal protective equipment as required.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 81 %

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Component	CAS-No.	Concentration (%)
Alkoxylated Diacrylate Ester	-	>= 10 - < 30
Benzophenone	119-61-9	>= 5 - < 10
Diacrylate Ester	-	>= 0.1 - < 1

SECTION 4. FIRST AID MEASURES

General advice : Get medical attention immediately if symptoms occur.
Treat symptomatically.

If inhaled : If inhaled, remove to fresh air.
If breathing is difficult, give oxygen.
If not breathing, give artificial respiration.

In case of skin contact : Remove contaminated clothing. Wash thoroughly with soap and water for at least 20 min. or until material is removed.
Wash contaminated clothing before re-use.
Get medical attention if irritation develops and persists.

In case of eye contact : If easy to do, remove contact lens, if worn.
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Seek medical advice.

If swallowed : Do NOT induce vomiting.
Gently wipe or rinse the inside of the mouth with water.
Obtain medical attention.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	ABC powder Carbon dioxide (CO2)
Unsuitable extinguishing media	:	Water
Specific hazards during firefighting	:	Do not use a solid water stream as it may scatter and spread fire.
Further information	:	Use water spray to cool unopened containers.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Use personal protective equipment.
Environmental precautions	:	Prevent spilled material from entering the ground, water and/or air by using appropriate containment methods.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Use only in accordance with our recommendations.
Conditions for safe storage	:	Keep container tightly closed in a dry and well-ventilated place.
Materials to avoid	:	Keep away from oxidising agents and strongly acid or alkaline materials.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Benzophenone	119-61-9	TWA	0.5 mg/m3	US WEEL

Engineering measures : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Hand protection
Material : Impervious gloves

Eye protection : Safety glasses with side-shields
Safety goggles

Skin and body protection : Long sleeved clothing
Chemical resistant apron
Lightweight protective clothing

Protective measures : Ensure that eye flushing systems and safety showers are located close to the working place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash hands before eating, drinking, or smoking.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	off-white
Odour	:	acrylic-like
Odour Threshold	:	No data available
pH	:	Not applicable
	:	No data available
Initial boiling point	:	> 200.1 °F (> 93.4 °C)
Flash point	:	> 200.1 °F (> 93.4 °C)
Evaporation rate	:	No data available
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative Density/Specific Gravity	:	1.080 (68 °F (20 °C))

Density	:	9.00 lb/gal
Bulk density	:	No data available
Solubility(ies)		
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Thermal decomposition	:	Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).
Viscosity		
Viscosity, kinematic	:	> 21 mm2/s (104 °F (40 °C))

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions	:	Acids and bases Strong oxidizing agents Fluorine
Conditions to avoid	:	Avoid temperatures above 60°C, direct sunlight and contact with sources of heat.
Hazardous decomposition products	:	Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Eyes
Skin contact
Inhalation

Acute toxicity

Product:

Acute oral toxicity	:	Acute toxicity estimate : > 5,000 mg/kg

Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Components:

- Alkoxylated Diacrylate Ester:
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

119-61-9 Benzophenone:
Acute oral toxicity : LD50 (Rat): > 10,000 mg/kg

LD50 (Mouse): 2,895 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 3,535 mg/kg

Skin corrosion/irritation

Product:
Remarks: No data available

Components:

- Alkoxylated Diacrylate Ester:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

- Diacrylate Ester:
Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Product:
Remarks: No data available

Components:

- Alkoxylated Diacrylate Ester:
Species: Rabbit
Result: No eye irritation
Method: OECD Test Guideline 405
GLP: yes

- Diacrylate Ester:
Species: Rabbit
Result: Severe eye irritation

Respiratory or skin sensitisation

Product:

Remarks: No data available

Components:

- Alkoxylated Diacrylate Ester:
Test Type: Mouse Local Lymph Node assay (LLNA)
Exposure routes: Dermal
Species: Mouse
Method: OECD Test Guideline 429
Result: Causes sensitisation.
GLP: yes

- Diacrylate Ester:
Test Type: Mouse Local Lymph Node assay (LLNA)
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.
GLP: yes

Carcinogenicity

IARC	Group 2B: Possibly carcinogenic to humans	
	Benzophenone	119-61-9
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.	
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.	
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.	

Repeated dose toxicity

Product:

Remarks: No data available

Further information

Product:

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Components:

119-61-9 Benzophenone:

Toxicity to fish : NOEC (Pimephales promelas (fathead minnow)): 5.86 mg/l
Exposure time: 168 h

LC50 (Pimephales promelas (fathead minnow)): 14.2 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.28 mg/l
Exposure time: 24 h

Persistence and degradability

Product:

Biodegradability : Remarks: No data available

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances

Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

EPA Hazardous Waste Code(s)	:	none
Waste from residues	:	Dispose of in accordance with applicable local/municipal, state/provincial and federal regulations. The hazard and precautionary statements displayed on the label also apply to any residues left in the container.
Contaminated packaging	:	Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

49 CFR
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : D2B: Toxic Material Causing Other Toxic Effects

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous SubstancesReportable Quantity
This material does not contain any components with a SARA 302 RQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

Benzophenone	119-61-9	5 %

VOC : 0.00 lb/gal
0.06 %

Non-volatile information is not a specification.

Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

Triacrylate Ester	Not Assigned
Multi-Functional Acrylated Epoxy Monomer Mixture	Not Assigned
Acrylated Amine	Not Assigned
Alkoxylated Diacrylate Ester	-
Benzophenone	119-61-9
SURFACTANT	Not Assigned

New Jersey Right To Know

Triacrylate Ester	Not Assigned
Multi-Functional Acrylated Epoxy Monomer Mixture	Not Assigned
Acrylated Amine	Not Assigned
Alkoxylated Diacrylate Ester	-
Benzophenone	119-61-9

California Prop 65 WARNING! This product contains a chemical known to the State of California to cause cancer.

Benzophenone	119-61-9

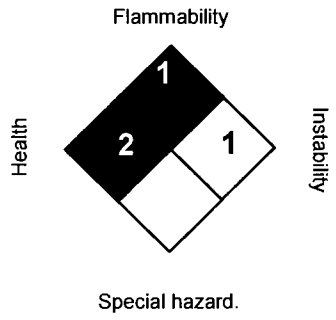
The components of this product are reported in the following inventories:

LISTED : Listed

SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	1
PHYSICAL HAZARD	1

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date : 05/22/2015

DISCLAIMER: The information in this document is believed to be correct as of the date issued. However, no warranty expressed or implied has been made regarding the accuracy or completeness of this information. The information presented in this data sheet represents a compilation of information generated from our suppliers and other recognized sources of scientific evidence and chemical information. Since the conditions of handling and use of this material are beyond our control, ACTEGA Kelstar, Inc. shall not be liable for any injury, loss, or damage direct, incidental or consequential, arising out of the use or inability to use this product. The seller and / or manufacturer's only obligations shall be to replace the product if it is defective, and shall not be liable for more than the cost of the product. Before using, the user shall determine the suitability of the product for its intended use, and assumes all risk and liability whatsoever in connections with the use of said product. The foregoing warranties are in lieu of all other warranties, written, oral, expressed, or implied. No other warranty is made concerning the suitability of this product. The foregoing warranties may not be altered except by an agreement signed by the officers of the seller and / or manufacturer.

10-1004-02

POSCO inc.

Mass. Trade Secret No: 00-000-00

Material Safety Data Sheet (MSDS). May be used to comply with OSHA Hazard Communication Standard 29CFR 1910.1200. Standard must be consulted for specific requirements. U.S. Department of Occupational Safety & Health Administration (Non-Mandatory Form) Form approved. OMB No. 1218-0072.

IDENTITY (As used on Label and List): Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be so marked.

INDIGO SAPPHIRE BLEND 3.2% PRODUCT CODE NO: P5753

Manufacturer's Name:
PRINTERS OIL SUPPLY CO, INC
Address:
310 Ballardvale Street, Wilmington, MA 01887

Emergency Phone No: 978-658-5290
24 Hour Emergency: 800-424-9300
Telephone Number For Information: 978-658-5290

Issue Date: 01-09-09

Signature of Preparer: (Optional):

PRODUCT NAME: INDIGO SAPPHIRE BLEND 3.2% **ID NUMBER: NONE**

PRODUCT CODE NO: P5753 **DOT HAZARD CLASSIFICATION: NOT REGULATED**

DOT PROPER SHIPPING NAME: NOT REGULATED BY D.O.T. **C.A.S. NUMBER: MIXTURE**

SECTION I - HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS:

INGREDIENTS	C.A.S. NUMBER	EXPOSURE LEVELS PPM	AGENCY	TYPE	PERCENTAGE
Water	7732-81-5		Not Established		
Aziridine, Homopolymer	9002-98-6		Not Established		
Aziridine, Homopolymer HCL	26338-45-4		Not Established		

Specific Chemical identities withheld under Trade Secret Status
Does not contain substances which must be reported under the requirements of SARA Title III-313 and 40 CFR372

SECTION II - EMERGENCY AND FIRST AID PROCEDURES:

SKIN:
Wash affected areas with soap and water. Remove and launder contaminated clothing before reuse. If irritation develops, get medical attention.

EYES:
Immediately rinse eyes with running water for 15 minutes. If irritation develops, get medical attention.

INGESTION:
If swallowed, dilute with water. **DO NOT INDUCE VOMITING**. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Get immediate medical attention.

INHALATION:
Move to fresh air. Aid in breathing, if necessary and get immediate medical attention.

NOTES TO PHYSICIAN:
None Known

AGGRAVATED MEDICAL CONDITIONS:
No data is available which addresses medical conditions that are generally recognized as being aggravated by exposure to this product.

SPECIAL PRECAUTIONS:
The product must not come into contact with damaged skin.

OTHER FIRST AID PROCEDURES:
No other first aid needed.

SECTION III - HEALTH HAZARDS AND ROUTES OF ENTRY:

Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

ACUTE OVEREXPOSURE EFFECTS:
Contact with the eyes may result in irritation. Prolonged or repeated skin contact may result in irritation. Inhalation may result in respiratory irritation. Ingestion may result in gastric disturbances.

CHRONIC OVEREXPOSURE EFFECTS:
There are no known chronic effects associated with this material.

SECTION IV - SPECIAL PROTECTION INFORMATION:

CLOTHING:
Gloves, coveralls, apron, boots as necessary to prevent skin contact.

EYES:
Chemical goggles; also wear a face shield if splashing hazard exists.

RESPIRATION:
If vapors or mists are generated, wear a NIOSH/MSHA approved organic vapor/mist respirator or an air-supplied respirator as appropriate.

VENTILATION:
Use local exhaust to control vapors/mists.

EXPLOSION PROOFING:
None required.

OTHER PERSONAL PROTECTION DATA:
None under normal conditions.

SECTION V - REACTIVITY DATA:

STABILITY:
Stable

INCOMPATIBILITY: (Materials to avoid):
None known

CONDITIONS/HAZARDS TO AVOID:
None known

HAZARDOUS DECOMPOSITION/POLYMERIZATION:
Hazardous decomposition products: None known
Polymerization: Does not occur

CORROSIVE PROPERTIES:
Not corrosive

OXIDIZER PROPERTIES:
Not an oxidizer

OTHER REACTIVITY DATA:
None known

SECTION VI - SPILL OR LEAK PROCEDURES:

GENERAL:
Spills should be contained, solidified and placed in suitable containers for disposal in a licensed facility. This material is not regulated by RCRA or CERCLA ("Superfund"). Wear appropriate respiratory protection and protective clothing and provide adequate ventilation during clean-up.

WASTE DISPOSAL:
Incinerate or bury as a solid in a licensed facility. Do not discharge into waterways or sewer systems without proper authority.

CONTAINER DISPOSAL:
Dispose of in a licensed facility. Recommend crushing or other means to prevent unauthorized use.

OTHER SPILL/LEAK PROCEDURES:
Clean up spills quickly to minimize slipping hazard.

SECTION VII - STORAGE AND SPECIAL PRECAUTIONS:

GENERAL:
Protect from freezing

OTHER STORAGE AND HANDLING DATA:
No other specific storage requirements

SECTION VIII - FIRE AND EXPLOSION HAZARD DATA:

HAZARD CLASS			HAZARD RATING SCALE
	HEALTH:	1	0=minimal 1=slight
	FLAMMABILITY:	1	2=moderate 3=high
	REACTIVITY:	0	4=extreme
	PERSONAL PROTECTION:	B	

EXPLOSIVE LIMITS (Volume %): LOWER: NE UPPER: NE **FLASH POINT (TOC):** > 300°F

EXTINGUISHING MEDIA:
Use water fog, foam, CO_2 or dry chemical extinguishing media.

FIRE FIGHTING PROCEDURES:
Firefighters should be equipped with self-contained breathing apparatus and turn out gear.

UNUSUAL HAZARDS:
There are no known unusual fire or explosion hazards.

ADDITIONAL FIRE AND EXPLOSION DATA:
None known

SECTION IX - PHYSICAL DATA:

Approximate Boiling Point:	**212°F**	**Vapor Density:**	**ND**
Evaporation Rate (n-butyl acetate=1.0):	**<0.1**	**% Volatile:**	**>90**
Vapor Pressure (in mm mercury):	**18.7 as water**	**% Water Soluble:**	**100**
Specific Gravity:	**1.01 (8.40 lb/gal)**	**Odor:**	**Faint Amine**
Appearance:	**Slightly Yellow Liquid**	**Melting Point:**	**NA**
pH:	**10.0**	**V.O.C. (lb/gal):**	**0.01**

SECTION X - REGULATORY INFORMATION:

TSCA Inventory Status:
Listed in Inventory: YES

RCRA Hazardous Waste No: NONE
CERCLA: NO **Reportable Qty:** (IF YES)

State Regulatory Information: (By Component)

		NJ/PA/MA/RTK
CAS:	7732-18-5	YES
NAME:	Water	
CAS:	9002-98-6	YES
NAME:	Aziridine, homopolymer	
CAS:	26338-45-4	YES
NAME:	Aziridine, homopolymer HC1	

FDA Approved: XXYES **Use: XX21 cfr 176.170 SEE SECT. 10**

POLYMIN P conforms to the following sections of 21 CFR: (FDA)

21 CFR 173.357 (Specific molecular weight restrictions apply)
21 CFR 175.105 **21 CFR 175.320**
21 CFR 176.170 **21 CFR 176.180**
21 CFR 177.1200

SECTION XI - TRANSPORTATION INFORMATION:

DOT Proper Shipping Name:
NONE

DOT Technical Name:
NONE

DOT Primary Hazard Class:
NONE

DOT Secondary Hazard Class:
NONE

DOT Label Required:
NONE

DOT Placard Required:
NONE

DOT Poison Constituent:
NONE

BASF Commodity Codes: 747 747 **UN/NA Code:** NONE **E/R Guide:** N/A

Bill of Lading Description: Not Regulated by D.O.T.

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

Information contained herein is believed to be accurate as of the issue date. However, no Warranty of Merchantibility, Fitness for any purpose, or any other warranty is expressed or to be implied regarding the accuracy or completeness of this information, or the product, or hazards relating to its use. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk for his use thereof.

SAFETY DATA SHEET

ACTEGA
Coatings & Sealants

Version 1.5 | Revision Date 06/08/2015 | Print Date 06/11/2015

SECTION 1. IDENTIFICATION

Product name : ACTDIGI® DUV-9790

Product Use Description : UV MATTE COATING FOR DIGITAL TONERS

Manufacturer or supplier's details

Company : ACTEGA Kelstar
1050 Taylors Lane
Cinnaminson, NJ 08077

Telephone : (800) 255-0021

Telefax : (856) 786-2860

Visit our web site : www.actega.com

Emergency telephone number : Chemtrec Phone: 1-800-424-9300 / +1 703-527-3887

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Eye irritation : Category 2A

Skin sensitisation : Category 1

Carcinogenicity : Category 2

Specific target organ toxicity - repeated exposure : Category 2 (Liver, Kidney)

GHS Label element

Hazard pictograms :

Signal word : Warning

Hazard statements : H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs (Liver, Kidney) through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P280 Wear eye protection/ face protection.
P280 Wear protective gloves.
P281 Use personal protective equipment as required.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 25 %

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Component	CAS-No.	Concentration (%)
Triacrylate Ester	-	>= 10 - < 30
1,6-Hexanediyl ester 2-propenoic acid	13048-33-4	>= 5 - < 10
Benzophenone	119-61-9	>= 1 - < 5
Photoinitiator	-	>= 1 - < 5
Isopropanol	67-63-0	>= 1 - < 5
Diacrylate Ester	-	>= 0.1 - < 1

SECTION 4. FIRST AID MEASURES

General advice : Get medical attention immediately if symptoms occur.
Treat symptomatically.

If inhaled : If inhaled, remove to fresh air.
If breathing is difficult, give oxygen.

If not breathing, give artificial respiration.

In case of skin contact	:	Remove contaminated clothing. Wash thoroughly with soap and water for at least 20 min. or until material is removed. Wash contaminated clothing before re-use. Get medical attention if irritation develops and persists.
In case of eye contact	:	If easy to do, remove contact lens, if worn. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek medical advice.
If swallowed	:	Do NOT induce vomiting. Gently wipe or rinse the inside of the mouth with water. Obtain medical attention.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	ABC powder Carbon dioxide (CO2)
Unsuitable extinguishing media	:	Water
Specific hazards during firefighting	:	Do not use a solid water stream as it may scatter and spread fire.
Further information	:	Use water spray to cool unopened containers.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Use personal protective equipment.
Environmental precautions	:	Prevent spilled material from entering the ground, water and/or air by using appropriate containment methods.
Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling	:	Use only in accordance with our recommendations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.

Materials to avoid : Keep away from oxidising agents and strongly acid or alkaline materials.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
1,6-Hexanediyl ester 2-propenoic acid	13048-33-4	TWA	1 mg/m3	US WEEL
Benzophenone	119-61-9	TWA	0.5 mg/m3	US WEEL
Isopropanol	67-63-0	TWA	200 ppm	ACGIH
		STEL	400 ppm	ACGIH
		TWA	400 ppm 980 mg/m3	OSHA Z-1
		TWA	400 ppm 980 mg/m3	NIOSH REL
		ST	500 ppm 1,225 mg/m3	NIOSH REL

Engineering measures : Handle only in a place equipped with local exhaust (or other appropriate exhaust).

Personal protective equipment

Hand protection
Material : Impervious gloves

Eye protection : Safety glasses with side-shields
Safety goggles

Skin and body protection : Long sleeved clothing
Chemical resistant apron
Lightweight protective clothing

Protective measures : Ensure that eye flushing systems and safety showers are located close to the working place.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.
Wash hands before eating, drinking, or smoking.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	off-white
Odour	:	acrylic-like
Odour Threshold	:	No data available
pH	:	Not applicable
	:	No data available
Initial boiling point	:	> 200.1 °F (> 93.4 °C)
Flash point	:	> 200.1 °F (> 93.4 °C)
Evaporation rate	:	No data available
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	No data available
Relative Density/Specific Gravity	:	1.040 (68 °F (20 °C))
Density	:	8.70 lb/gal
Bulk density	:	No data available
Solubility(ies)		
Water solubility	:	No data available
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	
		No data available
Auto-ignition temperature	:	No data available
Thermal decomposition	:	Carbon monoxide, carbon dioxide and unburned

hydrocarbons (smoke).

Viscosity
Viscosity, kinematic : > 21 mm2/s (104 °F (40 °C))

SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions : Acids and bases
Strong oxidizing agents
Fluorine

Conditions to avoid : Avoid temperatures above 60°C, direct sunlight and contact with sources of heat.

Hazardous decomposition products : Stable under recommended storage conditions.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Eyes
Skin contact
Inhalation

Acute toxicity

Product:

Acute oral toxicity : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

Components:

13048-33-4 1,6-Hexanediyl ester 2-propenoic acid:
Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

119-61-9 Benzophenone:
Acute oral toxicity : LD50 (Rat): > 10,000 mg/kg

LD50 (Mouse): 2,895 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 3,535 mg/kg

- Photoinitiator:

Acute oral toxicity : Remarks: No data available

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : Remarks: No data available

67-63-0 Isopropanol:
Acute oral toxicity : LD50 (Rat): 5,840 mg/kg

Acute dermal toxicity : LD50 (Rabbit): 12,800 mg/kg

Skin corrosion/irritation

Product:

Remarks: No data available

Components:

13048-33-4 1,6-Hexanediyl ester 2-propenoic acid:
Species: Rabbit
Result: Severe skin irritation

- Photoinitiator:
Remarks: No data available

67-63-0 Isopropanol:
Species: Rabbit
Result: Moderate skin irritation

- Diacrylate Ester:
Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Product:

Remarks: No data available

Components:

13048-33-4 1,6-Hexanediyl ester 2-propenoic acid:
Species: Rabbit
Result: Severe eye irritation

- Photoinitiator:
Remarks: No data available

67-63-0 Isopropanol:
Species: Rabbit
Result: Eye irritation

- Diacrylate Ester:
Species: Rabbit
Result: Severe eye irritation

Respiratory or skin sensitisation

Product:

Remarks: No data available

Components:

13048-33-4 1,6-Hexanediyl ester 2-propenoic acid:
Test Type: Maximisation Test (GPMT)
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Causes sensitisation.

67-63-0 Isopropanol:
Test Type: Buehler Test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

- Diacrylate Ester:
Test Type: Mouse Local Lymph Node assay (LLNA)
Species: Mouse
Method: OECD Test Guideline 429
Result: May cause sensitisation by skin contact.
GLP: yes

Carcinogenicity

IARC	Group 2B: Possibly carcinogenic to humans	
	Benzophenone	119-61-9
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.	
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.	
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.	

Repeated dose toxicity

Product:

Remarks: No data available

Further information

Product:

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	:	Remarks: No data available
Toxicity to daphnia and other aquatic invertebrates	:	Remarks: No data available

Components:

119-61-9 Benzophenone:

Toxicity to fish	:	NOEC (Pimephales promelas (fathead minnow)): 5.86 mg/l Exposure time: 168 h LC50 (Pimephales promelas (fathead minnow)): 14.2 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.28 mg/l Exposure time: 24 h

Persistence and degradability

Product:

Biodegradability	:	Remarks: No data available

Bioaccumulative potential

Product:

Bioaccumulation	:	Remarks: No data available

Mobility in soil

No data available

Other adverse effects

No data available

Product:

Regulation	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

EPA Hazardous Waste Code(s)	:	none
Waste from residues	:	Dispose of in accordance with applicable local/municipal, state/provincial and federal regulations. The hazard and precautionary statements displayed on the label also apply to any residues left in the container.
Contaminated packaging	:	Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

National Regulations

49 CFR
Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

WHMIS Classification : D2B: Toxic Material Causing Other Toxic Effects

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous SubstancesReportable Quantity

This material does not contain any components with a SARA 302 RQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 302 : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 : This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

Isopropanol	67-63-0	1.1 %

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

Benzophenone	119-61-9	4.7 %
Amine Synergist	-	1.8 %
Isopropanol	67-63-0	1.1 %

VOC : 0.08 lb/gal
1.00 %

Non-volatile information is not a specification.

Massachusetts Right To Know

Isopropanol	67-63-0

Pennsylvania Right To Know

Triacrylate Ester	-
Diacrylate Ester	Not Assigned
1,6-Hexanediyl ester 2-propenoic acid	13048-33-4

Inextricably Bound Solid	Not Assigned
Benzophenone	119-61-9
Amine Acrylate	Not Assigned
Surfactant	-
Isopropanol	67-63-0
Triethylamine	121-44-8

New Jersey Right To Know

Triacrylate Ester	-
Diacrylate Ester	Not Assigned
1,6-Hexanediyl ester 2-propenoic acid	13048-33-4
Inextricably Bound Solid	Not Assigned
Benzophenone	119-61-9
Amine Acrylate	Not Assigned
Isopropanol	67-63-0

California Prop 65 WARNING! This product contains a chemical known to the State of California to cause cancer.

Benzophenone	119-61-9

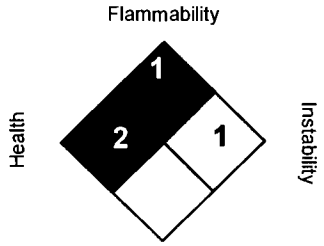
The components of this product are reported in the following inventories:

LISTED : Listed

SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	2*
FLAMMABILITY	1
PHYSICAL HAZARD	1

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date : 06/08/2015

DISCLAIMER: The information in this document is believed to be correct as of the date issued. However, no warranty expressed or implied has been made regarding the accuracy or completeness of this information. The information presented in this data sheet represents a compilation of information generated from our suppliers and other recognized sources of scientific evidence and chemical information. Since the conditions of handling and use of this material are beyond our control, ACTEGA Kelstar, Inc. shall not be liable for any injury, loss, or damage direct, incidental or consequential, arising out of the use or inability to use this product. The seller and / or manufacturer's only obligations shall be to replace the product if it is defective, and shall not be liable for more than the cost of the product. Before using, the user shall determine the suitability of the product for its intended use, and assumes all risk and liability whatsoever in connections with the use of said product. The foregoing warranties are in lieu of all other warranties, written, oral, expressed, or implied. No other warranty is made concerning the suitability of this product. The foregoing warranties may not be altered except by an agreement signed by the officers of the seller and / or manufacturer.

MATERIAL SAFETY DATA SHEET

10-1011-04

1. Product and Company Identification

Identification of the preparation HP Recycle Agent for 7000, WS6000, W7200
Q4315A

Product use HP product for use with HP Indigo Digital Presses 7000, WS6000, W7200.

Version # 04

Revision date 20-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact
Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact
Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation
Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion
Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

Other information This product is classified for health effects according to EU Directive 1999/45/EC with R65, 66.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Refined Petroleum Hydrocarbon	8042-47-5	20 - 25

Composition comments This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.
Skin contact	Wash affected areas thoroughly with mild soap and water. Immediately take off all contaminated clothing. Wash clothing separately before reuse. Get medical attention if irritation develops or persists.
Inhalation	If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media	Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	None known.

Protection of firefighters

Specific hazards arising from the chemical	None known.
Protective equipment and precautions for firefighters	Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.
Hazardous combustion products	Refer to section 10.

6. Accidental Release Measures

Personal precautions	Wear appropriate personal protective equipment.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.
Other information	In case of large spills, follow all facility emergency response procedures. Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container. Dispose of in compliance with federal, state, and local regulations. See also section 13 Disposal considerations.

7. Handling and Storage

Handling	Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Do not reuse the empty container. Take precautionary measures against static discharges.
Storage	Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Refined Petroleum Hydrocarbon (8042-47-5)	TWA	5.0000 mg/m3

Exposure guidelines	Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 70%. TWA = 171ppm (1200 mg/m3).
Engineering controls	Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	clear liquid
Color	Colorless.
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Liquid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.79
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	790 g/L (6.59 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	No data is available on the product itself.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information	Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations

US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.
US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical: Yes

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories:
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance: No

Section 311 hazardous chemical: Yes

Regulatory information

All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information

This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings

Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings

Health: 1
Flammability: 2
Instability: 0

Disclaimer

This Safety Data Sheet document is provided without charge to customers of Hewlett-Packarc Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date: 20-Aug-2011

This data sheet contains changes from the previous version in section(s):

9. Physical & Chemical Properties: Color
14. Transport Information: Further information

Manufacturer information

Hewlett-Packard Indigo BV
Startbaan 16
1187 XR Amstelveen
The Netherlands
(Direct) 1-503-494-7199
(Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1011-05

1. Product and Company Identification

Identification of the preparation
HP Imaging Oil for 7000, WS6000, W7200
Q4313A

Product use
HP product for use with HP Indigo Digital Presses 7000, WS6000, W7200.

Version #
04

Revision date
19-Aug-2011

Company identification
Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview
Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact
Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact
Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation
Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion
Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure
Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects
Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity
None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

Other information
This product is classified for health effects according to EU Directive 1999/45/EC with R65, 66.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	90 - 100
Refined Petroleum Hydrocarbon	8042-47-5	0 - 1

Composition comments
This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.
Skin contact	Wash affected areas thoroughly with mild soap and water. Immediately take off all contaminated clothing. Wash clothing separately before reuse. Get medical attention if irritation develops or persists.
Inhalation	If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media	Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	None known.

Protection of firefighters

Specific hazards arising from the chemical	None known.
Protective equipment and precautions for firefighters	Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.
Hazardous combustion products	Refer to section 10.

6. Accidental Release Measures

Personal precautions	Wear appropriate personal protective equipment.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.
Other information	In case of large spills, follow all facility emergency response procedures. Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container. Dispose of in compliance with federal, state, and local regulations. See also section 13 Disposal considerations.

7. Handling and Storage

Handling	Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Do not reuse the empty container. Take precautionary measures against static discharges.
Storage	Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Refined Petroleum Hydrocarbon (8042-47-5)	TWA	5.0000 mg/m3

Exposure guidelines	Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 95%. TWA = 171ppm (1200 mg/m3).
Engineering controls	Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	clear liquid
Color	Colorless.
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Liquid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.77
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	770 g/L (6.43 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	No data is available on the product itself.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information	Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations

US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.
US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes

Regulatory information

All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information	This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).
HMIS® ratings	Health: 1 Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 2 Instability: 0
Disclaimer	This Safety Data Sheet document is provided without charge to customers of Hewlett-Packarc Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.
Issue date	19-Aug-2011
This data sheet contains changes from the previous version in section(s):	9. Physical & Chemical Properties: Color 14. Transport Information: Further information

Manufacturer information

Hewlett-Packard Indigo BV
Startbaan 16
1187 XR Amstelveen
The Netherlands
(Direct) 1-503-494-7199
(Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	Paste
Color	Cyan
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Solid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.815
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	635 g/L (5.30 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical No

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings
Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings
Health: 1
Flammability: 2
Instability: 0

Disclaimer This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date 18-Aug-2011

This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1012-03

1. Product and Company Identification

Identification of the preparation HP ElectroInk Black for 7000 series and WS6000 press
Q4133A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press.

Version # 05

Revision date 22-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity Carbon black is classified by the IARC as a Group 2B carcinogen (the substance is possibly carcinogenic to humans).
Carbon black in this preparation, due to its bound form, does not present this carcinogenic risk
None of the other ingredients in this preparation are classified as carcinogens according to ACGIH, EU, IARC, MAK, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
Carbon black	1333-86-4	2.5 - 5

Composition comments Carbon black is present only in a bound form in this preparation.

This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person.
If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk.
Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Carbon black (1333-86-4)	TWA	3.5000 mg/m3
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

U.S. - Tennessee

Components	Type	Value
Carbon black (1333-86-4)	TWA	3.5000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 75%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

General Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance Paste

Color Black.

Odor mild hydrocarbon-like

Odor threshold Not available.

Physical state Solid

Form Not available.

pH Not available.

Melting point Not available.

Freezing point Not available.

Boiling point 370.4 °F (188 °C) (based on petroleum hydrocarbon)

Flash point 147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)

Evaporation rate Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Vapor pressure Not available.

Vapor density Not available.

Specific gravity 0.819

Relative density Not available.

Solubility (water) Not soluble

Auto-ignition temperature 392 °F (200 °C) (based on petroleum hydrocarbon)

Decomposition temperature Not available.

VOC 640 g/L (5.33 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability Stable under recommended storage conditions.

Incompatible materials This product may react with strong oxidizing agents.

Hazardous decomposition products Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Possibility of hazardous reactions Will not occur.

11. Toxicological Information

Carcinogenicity Carbon black is classified as a carcinogen by the IARC (possibly carcinogenic to humans, Group 2B) and by the State of California under Proposition 65. In their evaluations of carbon black, both organizations indicate that exposure to carbon black, per se, does not occur when it remains bound within a product matrix, specifically, rubber, ink, or paint.
Carbon black is present only in a bound form in this preparation.

ACGIH Carcinogens

Carbon black (CAS 1333-86-4)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Carbon black (CAS 1333-86-4)	2B Possibly carcinogenic to humans.

IARC Monographs: Evidence of carcinogenicity in humans

Carbon black (CAS 1333-86-4)	Inadequate data.

Toxicological information Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Serious eye damage/eye irritation Not available.

Symptoms and target organs

Target Organs (NIOSH)

Carbon black (CAS 1333-86-4)	Eyes Respiratory system

Further information The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity This product has not been tested for ecological effects.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	No

State regulations

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Carbon black (CAS 1333-86-4) Listed.

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information	This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).
HMIS® ratings	Health: 1 Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 2 Instability: 0
Disclaimer	This Safety Data Sheet document is provided without charge to customers of Hewlett-Packarc Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.
Issue date	22-Aug-2011
This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Ninyo & Moore

www.ninyoandmoore.com -

Phoenix, Tucson, Northern Arizona

COMPRESSION TEST RECORD

FOR: 06/30/2016 TESTED BY: _____ REPORT GENERATED 2016.Jun.29 14:26

CURING TEMPERATURE - AM _____ _____ _____ _____ SULPHUR TEMPERATURE _____ _____ _____ _____

PM _____ _____ _____ _____ RATE OF LOADING _____ _____ _____ _____

PROJECT NUMBER	SET NO.	SPCM NUMB	LAB CODE	SPCM TYPE	MAX. LOAD PREV. TEST (kN)/(lb)	MAXIMUM LOAD (kN)/(lb)	FAIL TYPE	DIAGRAM OR STRENGTH (MPa)/(psi)	SPECIFIED LOAD (kN)/(lb)	AGE AT TEST (Days)	CAST DATE
604485001	970	B	6646	Cylinder	7 Day = 30160				37698.8	28	06/02/2016
604485001	970	C	6646	Cylinder	7 Day = 30160				37698.8	28	06/02/2016
PROJECT	Arizona Center for Law and Society				SITE CONTACT				SITE PHONE		
CLIENT	Arizona State University				CLIENT CONTACT	William Johns			CLIENT PHONE		
604498004	99	B	6647	Cylinder	7 Day = 133070				127233.	28	06/02/2016
604498004	99	C	6647	Cylinder	7 Day = 133070				127233.	28	06/02/2016
604498004	122	A	6722	Cylinder	70% = 79168				113097.	7	06/23/2016
PROJECT	OWRF Expansion				SITE CONTACT	Judd Hunemuller			SITE PHONE		
CLIENT	Carollo Engineers				CLIENT CONTACT	Judd Hunemuller			CLIENT PHONE		
604772001	46	B	6661	Cylinder	7 Day = 52710				31416.3	28	06/02/2016
604772001	46	C	6661	Cylinder	7 Day = 52710				31416.3	28	06/02/2016
PROJECT	Higley and Warner Rd.				SITE CONTACT	Jack Gierak			SITE PHONE		
CLIENT	Town of Gilbert				CLIENT CONTACT	Jack Gierak			CLIENT PHONE		
604946001	163	A	6738	Cylinder	70% = 30788				43983.2	7	06/23/2016
604946001	164	A	6737	Cylinder	70% = 30788				43983.2	7	06/23/2016
PROJECT	Drury Inn & Suites-Chandler				SITE CONTACT	Casey Nesbit			SITE PHONE		
CLIENT	Drury Developement				CLIENT CONTACT				CLIENT PHONE		
604952001	6	B	PV2373	Cylinder	7 Day = 65200				56548.3	28	06/02/2016
604952001	6	C	PV2373	Cylinder	7 Day = 65200				56548.3	28	06/02/2016
604952001	7	B	PV2372	Cylinder	7 Day = 64220				56548.3	28	06/02/2016
604952001	7	C	PV2372	Cylinder	7 Day = 64220				56548.3	28	06/02/2016

COMPRESSION TEST RECORD

FOR: 06/30/2016 TESTED BY: _____ REPORT GENERATED 2016.Jun.29 14:26

CURING TEMPERATURE - AM _____ _____ _____ _____ SULPHUR TEMPERATURE _____ _____ _____ _____

PM _____ _____ _____ _____ RATE OF LOADING _____ _____ _____ _____

PROJECT NUMBER	SET NO.	SPCM NUMB	LAB CODE	SPCM TYPE	MAX. LOAD PREV. TEST (kN)/(lb)	MAXIMUM LOAD (kN)/(lb)	FAIL TYPE	DIAGRAM OR STRENGTH (MPa)/(psi)	SPECIFIED LOAD (kN)/(lb)	AGE AT TEST (Days)	CAST DATE
PROJECT DOWL Pasture Canyon Dam/QA					SITE CONTACT Josh Carter				SITE PHONE		
CLIENT Dowl HKM					CLIENT CONTACT Josh Carter				CLIENT PHONE		
605014001	24	B	6649	Cylinder	7 Day = 67190				56548.3	28	06/02/2016
605014001	24	C	6649	Cylinder	7 Day = 67190				56548.3	28	06/02/2016
605014001	25	B	6650	Cylinder	7 Day = 52020				37698.8	28	06/02/2016
605014001	25	C	6650	Cylinder	7 Day = 52020				37698.8	28	06/02/2016
605014001	26	B	6651	Cylinder	7 Day = 52700				50265.7	28	06/02/2016
605014001	26	C	6651	Cylinder	7 Day = 52700				50265.7	28	06/02/2016
PROJECT Val Vista Transmission PH 3					SITE CONTACT Jason Jansen				SITE PHONE		
CLIENT Garney Construction					CLIENT CONTACT Jason Jansen				CLIENT PHONE		
605072001	20	A	6725	Cylinder	70% = 26389				37698.8	7	06/23/2016
PROJECT O'Reilly Auto Parts					SITE CONTACT Chris Evans				SITE PHONE		
CLIENT O'Reilly Auto Parts					CLIENT CONTACT Chris Evans				CLIENT PHONE		
605136001	4	B	6648	Cylinder	7 Day = 45060				37698.8	28	06/02/2016
605136001	4	C	6648	Cylinder	7 Day = 45060				37698.8	28	06/02/2016
605136001	5	B	6665	Cylinder	7 Day = 50420				37698.8	28	06/02/2016
605136001	5	C	6665	Cylinder	7 Day = 50420				37698.8	28	06/02/2016
PROJECT Willdan/Diversion Dam Road/CMT					SITE CONTACT Grant Anderson				SITE PHONE		
CLIENT Grant Anderson 1440 E. Missouri					CLIENT CONTACT Grant Anderson				CLIENT PHONE		

MATERIAL SAFETY DATA SHEET

10-1012-04

1. Product and Company Identification

Identification of the preparation HP ElectroInk Calibration Cartridge Black for 7000 series and WS6000 press
Q4137A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 03

Revision date 19-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity Carbon black is classified by the IARC as a Group 2B carcinogen (the substance is possibly carcinogenic to humans).
Carbon black in this preparation, due to its bound form, does not present this carcinogenic risk
None of the other ingredients in this preparation are classified as carcinogens according to ACGIH, EU, IARC, MAK, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
Carbon black	1333-86-4	2.5 - 5

Composition comments Carbon black is present only in a bound form in this preparation.

This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Carbon black (1333-86-4)	TWA	3.5000 mg/m3
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

U.S. - Tennessee

Components	Type	Value
Carbon black (1333-86-4)	TWA	3.5000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 75%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

General Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance Paste

Color Black.

Odor mild hydrocarbon-like

Odor threshold Not available.

Physical state Solid

Form Not available.

pH Not available.

Melting point Not available.

Freezing point Not available.

Boiling point 370.4 °F (188 °C) (based on petroleum hydrocarbon)

Flash point 147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)

Evaporation rate Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Vapor pressure Not available.

Vapor density Not available.

Specific gravity 0.819

Relative density Not available.

Solubility (water) Not soluble

Auto-ignition temperature 392 °F (200 °C) (based on petroleum hydrocarbon)

Decomposition temperature Not available.

VOC 640 g/L (5.33 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability Stable under recommended storage conditions.

Incompatible materials This product may react with strong oxidizing agents.

Hazardous decomposition products Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Possibility of hazardous reactions Will not occur.

11. Toxicological Information

Carcinogenicity Carbon black is classified as a carcinogen by the IARC (possibly carcinogenic to humans, Group 2B) and by the State of California under Proposition 65. In their evaluations of carbon black, both organizations indicate that exposure to carbon black, per se, does not occur when it remains bound within a product matrix, specifically, rubber, ink, or paint.
Carbon black is present only in a bound form in this preparation.

ACGIH Carcinogens

Carbon black (CAS 1333-86-4)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Carbon black (CAS 1333-86-4)	2B Possibly carcinogenic to humans.

IARC Monographs: Evidence of carcinogenicity in humans

Carbon black (CAS 1333-86-4)	Inadequate data.

Toxicological information Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Serious eye damage/eye irritation Not available.

Symptoms and target organs

Target Organs (NIOSH)

Carbon black (CAS 1333-86-4)	Eyes Respiratory system

Further information The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity This product has not been tested for ecological effects.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	No

State regulations

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Carbon black (CAS 1333-86-4)	Listed.

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information	This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).
HMIS® ratings	Health: 1 Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 2 Instability: 0
Disclaimer	This Safety Data Sheet document is provided without charge to customers of Hewlett-Packarc Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.
Issue date	19-Aug-2011
This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
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IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1013-03

1. Product and Company Identification

Identification of the preparation HP ElectroInk Cyan for 7000 sereis and WS6000 press
Q4132A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 03

Revision date 18-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
Trade Secret blue colorant	Proprietary	2.5 - 5
Fluoropolymer resin	9002-84-0	0 - 1

Composition comments This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person.
If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk.
Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 75%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	Paste
Color	Cyan
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Solid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.815
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	635 g/L (5.30 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical No

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings Health: 1
Flammability: 2
Instability: 0

Disclaimer This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date 18-Aug-2011

This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1013-04

1. Product and Company Identification

Identification of the preparation HP ElectroInk Calibration Cartridge Cyan for 7000 series and WS6000 press
Q4136A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 03

Revision date 19-Aug-2011

Company identification
Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact
Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact
Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation
As a paste, the risk for lung damage is unlikely.
Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion
Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
Trade Secret blue colorant	Proprietary	2.5 - 5
Fluoropolymer resin	9002-84-0	0 - 1

Composition comments This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person.
If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk.
Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 75%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	Paste
Color	Cyan
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Solid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.815
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	640 g/L (5.30 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical No

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings Health: 1
Flammability: 2
Instability: 0

Disclaimer This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date 19-Aug-2011

This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1014-03

1. Product and Company Identification

Identification of the preparation HP ElectroInk Magenta for 7000 sereis and WS6000 press
Q4131A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 04

Revision date 19-Aug-2011

Company identification
Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
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(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact
Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact
Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation
As a paste, the risk for lung damage is unlikely.
Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion
Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

Other information All pigments are resin coated and therefore, there is no azodye exposure in normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
C.I.P.R. 146 No.12485	5280-68-2	2.5 - 5

Fluoropolymer resin	9002-84-0	0 - 1

Composition comments This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person.
If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk.
Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Trade Secret (Proprietary)	STEL	143.0000 mg/m3

Components	Type	Value
	TWA	3.0000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 75%. TWA = 171ppm (1200 mg/m^3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

General Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance Paste

Color Magenta

Odor mild hydrocarbon-like

Odor threshold Not available.

Physical state Solid

Form Not available.

pH Not available.

Melting point Not available.

Freezing point Not available.

Boiling point 370.4 °F (188 °C) (based on petroleum hydrocarbon)

Flash point 147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)

Evaporation rate Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Vapor pressure Not available.

Vapor density Not available.

Specific gravity 0.817

Relative density Not available.

Solubility (water) Not soluble

Auto-ignition temperature 392 °F (200 °C) (based on petroleum hydrocarbon)

Decomposition temperature Not available.

VOC 650 g/L (5.39 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability Stable under recommended storage conditions.

Incompatible materials This product may react with strong oxidizing agents.

Hazardous decomposition products Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Possibility of hazardous reactions Will not occur.

11. Toxicological Information

Toxicological information Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Serious eye damage/eye irritation Not available.

Further information The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity This product has not been tested for ecological effects.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings Health: 1
Flammability: 2
Instability: 0

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Issue date	19-Aug-2011
This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1014-04

1. Product and Company Identification

Identification of the preparation HP ElectroInk Calibration Cartridge Magenta for 7000 series and WS6000 press Q4135A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 03

Revision date 20-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
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(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

Other information All pigments are resin coated and therefore, there is no azodye exposure in normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
C.I.P.R. 146 No.12485	5280-68-2	2.5 - 5

Odor threshold	Not available.
Physical state	Liquid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.819
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	620 g/L (5.14 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	No data is available on the product itself.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information	Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations

US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.
US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical: Yes

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories:
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance: No

Section 311 hazardous chemical: Yes

Regulatory information: All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information: This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings:
Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings:
Health: 1
Flammability: 2
Instability: 0

Disclaimer: This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date: 20-Aug-2011

This data sheet contains changes from the previous version in section(s):
9. Physical & Chemical Properties: Color
14. Transport Information: Further information
Regulatory Information: Risk Phrases - Labeling

Manufacturer information:
Hewlett-Packard Indigo BV
Startbaan 16
1187 XR Amstelveen
The Netherlands
(Direct) 1-503-494-7199
(Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1015-03

1. Product and Company Identification

Identification of the preparation HP ElectroInk Yellow for 7000 series and WS6000 press
Q4130A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 04

Revision date 19-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
C.I.P.Y. 185 No.56290	76199-85-4	2.5 - 5
Fluoropolymer resin	9002-84-0	0 - 1

Composition comments This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 70%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	Paste
Color	Yellow
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Solid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.818
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	620 g/L (5.18 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings
Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings
Health: 1
Flammability: 2
Instability: 0

Disclaimer This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date 19-Aug-2011

This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1015-04

1. Product and Company Identification

Identification of the preparation HP ElectroInk Calibration Cartridge Yellow for 7000 series and WS6000 press
Q4134A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press

Version # 04

Revision date 21-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
C.I.P.Y. 185 No.56290	76199-85-4	2.5 - 5
Fluoropolymer resin	9002-84-0	0 - 1

Composition comments This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 70%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	Paste
Color	Yellow
Odor	mild hydrocarbon-like
Odor threshold	Not available.
Physical state	Solid
Form	Not available.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	370.4 °F (188 °C) (based on petroleum hydrocarbon)
Flash point	147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.818
Relative density	Not available.
Solubility (water)	Not soluble
Auto-ignition temperature	392 °F (200 °C) (based on petroleum hydrocarbon)
Decomposition temperature	Not available.
VOC	620 g/L (5.18 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under recommended storage conditions.
Incompatible materials	This product may react with strong oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.
Possibility of hazardous reactions	Will not occur.

11. Toxicological Information

Toxicological information	Refer to Section 2 for potential health effects and Section 4 for first aid measures.
Serious eye damage/eye irritation	Not available.
Further information	The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity	This product has not been tested for ecological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Disposal instructions	Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - Yes
Pressure Hazard - No
Reactivity Hazard - No

Section 302 extremely hazardous substance No

Section 311 hazardous chemical Yes

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

HMIS® ratings Health: 1
Flammability: 2
Physical hazard: 0

NFPA ratings Health: 1
Flammability: 2
Instability: 0

Disclaimer This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Issue date 21-Aug-2011

This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

MATERIAL SAFETY DATA SHEET

10-1018-03

1. Product and Company Identification

Identification of the preparation
HP Imaging Agent for 7000, WS6000, W7200
Q4314A

Product use
HP product for use with HP Indigo Digital Presses 7000, WS6000, W7200.

Version #
04

Revision date
20-Aug-2011

Company identification
Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview
Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact
Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact
Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation
Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion
Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure
Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects
Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity
None of the components present in this formulation at concentrations equal to or greater than 0.1% are listed by EU, MAK, IARC, NTP or OSHA.

Other information
This product is classified for health effects according to EU Directive 1999/45/EC with R65, 66.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80

Composition comments
This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.
Skin contact	Wash affected areas thoroughly with mild soap and water. Immediately take off all contaminated clothing. Wash clothing separately before reuse. Get medical attention if irritation develops or persists.
Inhalation	If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media	Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.
Unsuitable extinguishing media	None known.

Protection of firefighters

Specific hazards arising from the chemical	None known.
Protective equipment and precautions for firefighters	Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.
Hazardous combustion products	Refer to section 10.

6. Accidental Release Measures

Personal precautions	Wear appropriate personal protective equipment.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.
Other information	In case of large spills, follow all facility emergency response procedures. Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container. Dispose of in compliance with federal, state, and local regulations. See also section 13 Disposal considerations.

7. Handling and Storage

Handling	Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing. Keep away from open flames, hot surfaces and sources of ignition. Do not reuse the empty container. Take precautionary measures against static discharges.
Storage	Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Exposure guidelines	Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 80%. TWA = 171ppm (1200 mg/m3).
Engineering controls	Use in a well ventilated area.

Personal protective equipment

General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.
General	Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance	clear liquid
Color	Light yellow.
Odor	mild hydrocarbon-like

MATERIAL SAFETY DATA SHEET

10-1012-03

1. Product and Company Identification

Identification of the preparation HP ElectroInk Black for 7000 series and WS6000 press
Q4133A

Product use HP product for use with HP Indigo Digital Presses 7000 series and WS6000 press.

Version # 05

Revision date 22-Aug-2011

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-1501

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-503-494-7199
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazards Identification

Emergency overview Contact with skin and eyes may result in irritation.

Acute health effects

Any potential hazards are presumed to be due to exposure to the components.

Skin contact

Petroleum hydrocarbon
Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).

Eye contact

Petroleum hydrocarbon
Slightly irritating but does not injure eye tissue. Direct contact with the eye may cause discomfort and redness.

Inhalation

As a paste, the risk for lung damage is unlikely.

Petroleum hydrocarbon
Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Ingestion

Petroleum hydrocarbon
Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

Potential health effects

Routes of exposure Potential routes of exposure to this product are skin and eye contact, ingestion and inhalation.

Chronic health effects Prolonged or repeated skin contact may cause skin irritation or allergic skin sensitization reaction.

Carcinogenicity Carbon black is classified by the IARC as a Group 2B carcinogen (the substance is possibly carcinogenic to humans).
Carbon black in this preparation, due to its bound form, does not present this carcinogenic risk
None of the other ingredients in this preparation are classified as carcinogens according to ACGIH, EU, IARC, MAK, NTP or OSHA.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Petroleum hydrocarbon	90622-58-5	70 - 80
Trade Secret	Proprietary	10 - 15
Carbon black	1333-86-4	2.5 - 5

Composition comments Carbon black is present only in a bound form in this preparation.

This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First Aid Measures

First aid procedures

Eye contact Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention. Do not apply neutralizing agents.

Skin contact Wash affected areas thoroughly with mild soap and water. Get medical attention if irritation develops or persists.

Inhalation If overcome by vapor, remove person from exposure to fresh air. If breathing is difficult, give oxygen. If symptoms persist, get medical attention.

Ingestion Do not induce vomiting. Never give anything by mouth to an unconscious person. If ingestion of a large amount does occur, seek medical attention.

5. Fire Fighting Measures

Extinguishing media

Suitable extinguishing media Suitable extinguishing media: Dry chemical, CO2, water spray or regular foam.

Unsuitable extinguishing media None known.

Protection of firefighters

Specific hazards arising from the chemical None known.

Protective equipment and precautions for firefighters Move containers from fire area if you can do it without risk. Evacuate area and fight fire from a safe distance.

Hazardous combustion products Refer to section 10.

6. Accidental Release Measures

Personal precautions Wear appropriate personal protective equipment.

Environmental precautions Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Other information In case of large spills, follow all facility emergency response procedures.

Soak up with inert absorbent material. Slowly vacuum or sweep the material into a bag or other sealed container.
Dispose of in compliance with federal, state, and local regulations.
See also section 13 Disposal considerations.

7. Handling and Storage

Handling Avoid prolonged or repeated skin contact with this material. Avoid contact with skin, eyes and clothing.
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

Storage Keep away from excessive heat or cold. Store in a cool and shaded area. Do not store in direct sunlight.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Components	Type	Value
Carbon black (1333-86-4)	TWA	3.5000 mg/m3
Trade Secret (Proprietary)	STEL	143.0000 mg/m3
	TWA	3.0000 mg/m3

U.S. - Tennessee

Components	Type	Value
Carbon black (1333-86-4)	TWA	3.5000 mg/m3

Exposure guidelines Manufacturer recommended exposure limit based on petroleum hydrocarbon at > 75%. TWA = 171ppm (1200 mg/m3).

Engineering controls Use in a well ventilated area.

Personal protective equipment

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

General Use personal protective equipment to minimize exposure to skin and eye.

9. Physical & Chemical Properties

Appearance Paste

Color Black.

Odor mild hydrocarbon-like

Odor threshold Not available.

Physical state Solid

Form Not available.

pH Not available.

Melting point Not available.

Freezing point Not available.

Boiling point 370.4 °F (188 °C) (based on petroleum hydrocarbon)

Flash point 147.2 °F (64 °C) Pensky-Martens Closed Cup (based on petroleum hydrocarbon)

Evaporation rate Not available.

Flammability limits in air, upper, % by volume Not available.

Flammability limits in air, lower, % by volume Not available.

Vapor pressure Not available.

Vapor density Not available.

Specific gravity 0.819

Relative density Not available.

Solubility (water) Not soluble

Auto-ignition temperature 392 °F (200 °C) (based on petroleum hydrocarbon)

Decomposition temperature Not available.

VOC 640 g/L (5.33 lbs/gal. US)

10. Chemical Stability & Reactivity Information

Chemical stability Stable under recommended storage conditions.

Incompatible materials This product may react with strong oxidizing agents.

Hazardous decomposition products Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Possibility of hazardous reactions Will not occur.

11. Toxicological Information

Carcinogenicity Carbon black is classified as a carcinogen by the IARC (possibly carcinogenic to humans, Group 2B) and by the State of California under Proposition 65. In their evaluations of carbon black, both organizations indicate that exposure to carbon black, per se, does not occur when it remains bound within a product matrix, specifically, rubber, ink, or paint.
Carbon black is present only in a bound form in this preparation.

ACGIH Carcinogens

Carbon black (CAS 1333-86-4)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

Carbon black (CAS 1333-86-4)	2B Possibly carcinogenic to humans.

IARC Monographs: Evidence of carcinogenicity in humans

Carbon black (CAS 1333-86-4)	Inadequate data.

Toxicological information Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Serious eye damage/eye irritation Not available.

Symptoms and target organs

Target Organs (NIOSH)

Carbon black (CAS 1333-86-4)	Eyes Respiratory system

Further information The ink formulation has not been tested.

12. Ecological Information

Aquatic toxicity This product has not been tested for ecological effects.

Persistence and degradability Not available.

13. Disposal Considerations

Disposal instructions Dispose of in compliance with federal, state, and local regulations.

14. Transport Information

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

RID

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.

US TSCA inventory: CASRN 329907-27-9 for Petroleum Hydrocarbon

US TSCA 12(b): Does not contain listed chemicals.

CERCLA (Superfund) reportable quantity

None

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical No

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - No Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	No

State regulations

US - Pennsylvania RTK - Hazardous Substances: Listed substance

Carbon black (CAS 1333-86-4) Listed.

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other Information

Other information	This MSDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).
HMIS® ratings	Health: 1 Flammability: 2 Physical hazard: 0
NFPA ratings	Health: 1 Flammability: 2 Instability: 0
Disclaimer	This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.
Issue date	22-Aug-2011
This data sheet contains changes from the previous version in section(s):	14. Transport Information: Further information
Manufacturer information	Hewlett-Packard Indigo BV Startbaan 16 1187 XR Amstelveen The Netherlands (Direct) 1-503-494-7199 (Toll-free within the US) 1-800-457-4209

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Item #: 10-1032-01

SAFETY DATA SHEET

PRODUCT NUMBER: 2010 B
ISSUE DATE: 06/18/2015

1. IDENTIFICATION

Product Number: 2010 B

Recommended use of the chemical: Protein based adhesive
Restrictions on use: None known

COMPANY ADDRESS: Wisdom Adhesives Worldwide
1575 Executive Drive
Elgin, IL 60123
Phone: (847) 841-7002
Fax: (847) 841-7009
Contact: Safety Data Sheet Coordinator

Emergency Phone Number: CHEMTREC -800-262-8200 Toll Free or 1-703-741-5500

2. HAZARDS IDENTIFICATION

OSHA HAZCOM 2012/GHS HAZARD CLASSIFICATION: Not hazardous.
NO PICTOGRAM REQUIRED

LABELING:
This product is not classified as hazardous in accordance with the OSHA Hazard Communication Standard 29CFR 1910.1200 (2012) or Canadian WHMIS 2015.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Concentration
Non-Hazardous protein adhesive mixture	Proprietary Mixture	70-80%
Sucrose	57-50-1	20-30%

4. FIRST-AID MEASURES

EYE: Irrigate with eyewash solution or clean water until pain is relieved. Obtain medical attention.

SKIN CONTACT: Wash skin with soap and water. If symptoms develop, obtain medical attention. Treat for any burns.

INHALATION: Remove to fresh air. Get medical attention if irritation persists.

INGESTION: Treat symptomatically and supportively. Get medical attention, DO NOT attempt to give anything by mouth to an unconscious person.

MOST IMPORTANT SYMPTOMS/EFFECTS, Hot ACUTE AND DELAYED: May cause mild eye and skin irritation. Hot material may cause thermal burns.

INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT, IF NECESSARY:	Get medical attention if needed for burns.

5. FIREFIGHTING MEASURES

EXTINGUISHING MEDIA:	Water spray or fog, CO2, dry chemical; Foam
SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS:	Fire fighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes.
SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:	This is a water-based product and presents no particular fire or explosion hazard. Dry polymer film will burn. Product contains low level of organic volatiles which may be emitted at elevated temperatures. Hazardous combustion products include carbon monoxide, carbon dioxide, unknown hydrocarbons.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, EMERGENCY PROCEDURES:	No special protection is normally required.
ENVIRONMENTAL PRECAUTIONS:	Avoid release to the environment. Washings must be prevented from entering surface water drains.
METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:	Sweep up and shovel into waste drums. Wash the spillage area with water.

For safety and environmental precautions, please review entire Safety Data Sheet for necessary information

7. HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING:	Avoid breathing vapors. Avoid contact with eyes. Remove contaminated clothing and launder before reuse. Wash before eating, drinking, or using toilet facilities.
CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES:	Store in a cool, dry place.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

EXPOSURE GUIDELINES:

Non-Hazardous protein adhesive mixture	None Established
Sucrose	5 mg/m3 (respirable) 15 mg/m3 (total) TWA OSHA PEL 10 mg/m3 TWA ACGIH TLV

APPROPRIATE ENGINEERING CONTROLS: Good general ventilation should be adequate.

PERSONAL PROTECTION:

EYE PROTECTION:	Wear safety glasses with side shields. Protect against splashing.
GLOVES:	The use of chemically resistant gloves is recommended. When heated, the use of thermal gloves is recommended.
PROTECTIVE CLOTHING:	Uniforms, coveralls, or a lab coat should be worn. Rubber boots and apron if exposure is severe.

RESPIRATORY PROTECTION: None required under normal handling conditions. Use NIOSH approved respirator is vapor or mist levels are irritating.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Solid	COLOR: White/amber
ODOR THRESHOLD: Not established	ODOR: Slight
MELTING/FREEZING POINT: Not applicable	INITIAL BOILING POINT/RANGE: >212°F
FLASH POINT: > 212 °F	EVAPORATION RATE: Same as water
FLAMMABILITY (SOLID, GAS): Not applicable	pH: Not applicable
FLAMMABLE LIMITS: LEL: Not applicable	UEL: Not applicable
VAPOR PRESSURE: Same as water	VAPOR DENSITY: Same as water
RELATIVE DENSITY: Approximately 1.1	SOLUBILITY(IES): Soluble in water
PARTITION COEFFICIENT: N-OCTANOL/WATER:	AUTO-IGNITION TEMPERATURE: Not available
DECOMPOSITION TEMPERATURE: Not available	VISCOSITY: Not available
% NON VOLATILES: Not applicable	

10. STABILITY AND REACTIVITY

REACTITVITY: Not reactive
CHEMICAL STABILITY: Stable
POSSIBILITY OF HAZARDOUS REACTIONS: Reactions with oxidizers may generate heat.
CONDITIONS TO AVOID: None known
INCOMPATIBLE MATERIALS TO AVOID: Strong oxidizers, Materials that react with water
HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous combustion products include carbon monoxide, carbon dioxide, unknown hydrocarbons.

11. TOXICOLOGICAL INFORMATION

ROUTE OF ENTRY: Eye Contact; Skin Contact; Inhalation; Ingestion

ACUTE (SHORT TERM) EFFECTS OF EXPOSURE

EYE: Slight/mild irritant
SKIN CONTACT: Skin irritation may occur. Possible dermatitis on prolonged or repeated contact. Hot solutions may cause thermal burns.
INHALATION: Dust, if generated, can cause irritation of the eyes, nose and respiratory tract
INGESTION: Ingestion may cause irritation of the gastrointestinal tract

CHRONIC (LONG TERM) EFFECTS OF EXPOSURE:

No chronic effects are known.
NUMERICAL MEASURES OF TOXICITY: Ingredients are not acutely toxic

CARCINOGENICITY: None of the ingredients are listed as carcinogens by IARC, NTP or OSHA.

12. ECOLOGICAL INFORMATION

Ecotoxicity: No data is available.
Environmental Fate: No data is available

13. DISPOSAL CONSIDERATIONS

To the best of our ability, this product does not meet the definition of hazardous waste under US EPA Hazardous Waste Regulations 40CFR261. Disposal via at an approved facility is recommended. Consult state, local or provincial authorities for more restrictive requirements.

14. TRANSPORTATION INFORMATION

Consult Bill of Lading for transportation information.

DOT: Not Regulated

IATA: Not Regulated

15. REGULATORY INFORMATION

TSCA Inventory Status and TSCA Information:
This material or its components are listed on or are in compliance with the requirements of the TSCA Chemical Substance Inventory.

TSCA 12 (B) Export Notification:
This material does not contain any TSCA 12 (b) regulated chemicals.

CERCLA Regulated Chemicals:
This material does not contain any CERCLA regulated chemicals.

SARA 302 EHS Chemicals:
This material does not contain any SARA extremely hazardous substances.

SARA 311/312 Hazard Class:
This product does not present any SARA 311/312 hazards.

SARA 313 Chemicals
This material does not contain any SARA 313 chemical above de minimus levels.

16. OTHER INFORMATION

HMIS® Hazard Ratings

Health	Flammability	Reactivity
0	0	0

PREPARED BY: **SDS COORDINATOR**

The information given above is based on our best knowledge, and is believed it to be true and accurate. No guaranty of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operating conditions and to determine whether the product is suitable for their purposes. Please read the entire product bulletin along with our conditions of sale which apply to all goods supplied by us. Wisdom Adhesives Worldwide assumes no responsibility for the use of these statements, recommendations or suggestions, nor do we intend them as a recommendation for any use, which would infringe any patent or copyright.

Revision Number: 004.0

Issue date: 10/09/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: PURMELT QR 2580 BULK
Product type: 1-component-polyurethane adhesive
Restriction of Use: This product is for industrial use only.
Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

IDH number: 974202

Region: United States
Contact information:
Telephone: (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER:

MOLTEN ADHESIVE MAY CAUSE SEVERE BURNS.
STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE IGNITION.
VAPORS ABOVE MOLTEN ADHESIVE MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
CAUSES SKIN IRRITATION.
MAY CAUSE AN ALLERGIC SKIN REACTION.
CAUSES SERIOUS EYE IRRITATION.
TOXIC IF INHALED.
MAY CAUSE ALLERGY OR ASTHMA SYMPTOMS OR BREATHING DIFFICULTIES IF INHALED.
CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

HAZARD CLASS	HAZARD CATEGORY
ACUTE TOXICITY INHALATION	3
SKIN IRRITATION	2
EYE IRRITATION	2A
RESPIRATORY SENSITIZATION	1
SKIN SENSITIZATION	1
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	1

PICTOGRAM(S)

Precautionary Statements

Prevention: Do not breathe dust or fumes. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear eye and face protection. Wear protective gloves. In case of inadequate ventilation wear respiratory protection.

Response: IF ON SKIN: Wash with plenty of soap and water. IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Call a poison control center or physician. If skin irritation or rash occurs: Get medical attention. If eye irritation persists: Get medical attention. If experiencing respiratory symptoms: Call a poison center or physician. Take off contaminated clothing.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Component(s)	CAS Number	Percentage*
Polyurethane prepolymer	Proprietary	60 - 100
Methylenebis(phenylisocyanate)	101-68-8	1 - 5
Resin modifier	Proprietary	0.1 - 1
Methylene bisphenyl isocyanate	26447-40-5	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: If inhaled, immediately remove the affected person to fresh air. If not breathing, give artificial respiration.

Skin contact: Cool melted product on skin with plenty of water. Do not remove solidified product. Immediately wash skin thoroughly with soap and water. Get immediate medical attention.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Continue to flush eyes while awaiting medical attention

Ingestion: DO NOT induce vomiting unless directed to do so by medical personnel. Seek medical advice.

Symptoms: See Section 11.

Notes to physician: Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates.

5. FIRE FIGHTING MEASURES

Extinguishing media: water, carbon dioxide, foam, powder

Special firefighting procedures: Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Unusual fire or explosion hazards: None

Hazardous combustion products: Hydrogen cyanide. Oxides of carbon, oxides of nitrogen, irritating organic vapors.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Do not allow product to enter sewer or waterways.

Clean-up methods: Keep unnecessary personnel away. Wear protective clothing, gloves and safety glasses. Spilled material will solidify. Scrape up spilled material and place in a closed container for disposal.

7. HANDLING AND STORAGE

Handling: Do not place wet or damp solid into melt tank. Avoid skin and eye contact. Avoid breathing vapors or mists of this product. Wash thoroughly after handling.

Storage: Store in tightly closed containers to prevent moisture contamination. Reacts slowly with water to liberate carbon dioxide gas. Do not store above 100 °F (37.7 °C).

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Polyurethane prepolymer	None	None	None	None
Methylenebis(phenylisocyanate)	0.005 ppm TWA	0.02 ppm (0.2 mg/m3) Ceiling	None	None
Resin modifier	None	None	None	None
Methylene bisphenyl isocyanate	None	None	None	None

Engineering controls: Work should be done in an adequately ventilated area (i.e., ventilation sufficient to maintain concentrations below one half of the PEL and other relevant standards). Local exhaust ventilation is recommended when general ventilation is not sufficient to control airborne contamination below occupational exposure limits.

Respiratory protection: No personal respiratory protective equipment normally required. Do not inhale vapors and fumes. Concentrations greater than the TLV can occur when MDI is sprayed, heated or used in a poorly ventilated area. A positive pressure, supplied-air respirator or a self-contained breathing apparatus is recommended when: airborne concentrations of isocyanate are known to exceed 0.005 ppm; operations are performed in a confined space or area with limited ventilation; material is heated or sprayed. Observe OSHA regulations for respirator use (29 CFR 1910.134).

Eye/face protection: Safety glasses with sideshields or chemical safety goggles should be worn if there is a risk of splashing. Full face protection should be used if the potential for splashing or spraying of product exists.

Skin protection: Use impermeable gloves and protective clothing as necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Solid
Color:	White
Odor:	Characteristic
Odor threshold:	Not available.
pH:	Not applicable
Vapor pressure:	Not available.
Boiling point/range:	Not available.
Melting point/ range:	65 °C (149°F) (Softening Point)
Specific gravity:	1.2
Vapor density:	Not determined
Flash point:	> 200 °C (> 392°F) Cleveland open cup
Flammable/Explosive limits - lower:	Not available.
Flammable/Explosive limits - upper:	Not available.
Autoignition temperature:	Not determined
Evaporation rate:	Not applicable
Solubility in water:	Not soluble. Reacts with water to liberate carbon dioxide gas.
Partition coefficient (n-octanol/water):	Not applicable
VOC content:	0 g/l
Viscosity:	4,000 - 6,000 mPa.s
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability:	Stable
Hazardous reactions:	Will not occur.
Hazardous decomposition products:	Thermal decomposition can lead to release of irritating gases and vapors. Hydrogen cyanide. Oxides of carbon. Oxides of nitrogen.
Incompatible materials:	Reacts with alcohols and amines. Reacts with water.
Reactivity:	Not available.
Conditions to avoid:	Container can be pressurised by carbon dioxide due to reaction with humid air and/or water.

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure:	Skin, Inhalation, Eyes

Potential Health Effects/Symptoms

Inhalation: Methylene bisphenyl isocyanate (MDI) vapors or mist at concentrations above the TLV can irritate the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). This product may cause sensitization by inhalation and skin contact. Repeated exposure may lead to respiratory sensitization reactions, producing an asthma-like condition.

Skin contact: Repeated or prolonged skin contact may result in allergic sensitization. May cause skin irritation. Molten adhesive may cause severe burns.

Eye contact: Liquid or vapor can cause moderate to severe irritation.

Ingestion: Harmful if swallowed. Not expected under normal conditions of use.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Polyurethane prepolymer	None	No Records
Methylenebis(phenylisocyanate)	Inhalation LC50 (RAT, 4 h) = 0.38 mg/l Inhalation LC50 (RAT, 4 h) = 0.369 mg/l	Irritant, Respiratory, Allergen
Resin modifier	None	Irritant, Allergen
Methylene bisphenyl isocyanate	None	Allergen, Irritant, Mutagen, Respiratory

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Polyurethane prepolymer	No	No	No
Methylenebis(phenylisocyanate)	No	No	No
Resin modifier	No	No	No
Methylene bisphenyl isocyanate	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: This product is not a RCRA hazardous waste when discarded. Processing, use, or contamination of this product may change the hazard classification and waste management options. Dispose of according to Federal, State and local governmental regulations.

Hazardous waste number: Not hazardous.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

International Air Transportation (ICAO/IATA)

Proper shipping name: Not regulated
Hazard class or division: None
Identification number: None
Packing group: None

Water Transportation (IMO/IMDG)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None
Exceptions:	None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	None above reporting de minimis
CERCLA/SARA Section 311/312:	Immediate Health, Delayed Health
CERCLA/SARA Section 313:	This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372). Methylenebis(phenylisocyanate) (CAS# 101-68-8).
California Proposition 65:	No California Proposition 65 listed chemicals are known to be present.

Canada Regulatory Information

CEPA DSL/NDSL Status:	All components are listed on or are exempt from listing on the Canadian Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: J. Boryszewski, Regulatory Affairs

Issue date: 10/09/2014

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Revision Number: 003.0 **Issue date:** 10/10/2014

1. PRODUCT AND COMPANY IDENTIFICATION

Product name: TECHNOMELT PUR 3317 BRJ BULK
Product type: Hotmelt adhesive
Restriction of Use: This product is for industrial use only.
Company address:
Henkel Corporation
One Henkel Way
Rocky Hill, Connecticut 06067

IDH number: 428484
Region: United States
Contact information:
Telephone: (860) 571-5100
MEDICAL EMERGENCY Phone: Poison Control Center
1-877-671-4608 (toll free) or 1-303-592-1711
TRANSPORT EMERGENCY Phone: CHEMTREC
1-800-424-9300 (toll free) or 1-703-527-3887
Internet: www.henkelna.com

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER:

MOLTEN ADHESIVE MAY CAUSE SEVERE BURNS.
STATIC CHARGES GENERATED BY EMPTYING PACKAGE IN OR NEAR FLAMMABLE VAPORS MAY CAUSE IGNITION.
VAPORS ABOVE MOLTEN ADHESIVE MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION.
CAUSES SKIN IRRITATION.
MAY CAUSE AN ALLERGIC SKIN REACTION.
CAUSES SERIOUS EYE IRRITATION.
FATAL IF INHALED.
MAY CAUSE ALLERGY OR ASTHMA SYMPTOMS OR BREATHING DIFFICULTIES IF INHALED.
CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

HAZARD CLASS	HAZARD CATEGORY
ACUTE TOXICITY INHALATION	2
SKIN IRRITATION	2
EYE IRRITATION	2A
RESPIRATORY SENSITIZATION	1
SKIN SENSITIZATION	1
SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE	1

PICTOGRAM(S)

Precautionary Statements

Prevention: Do not breathe dust or fumes. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. Wear eye and face protection. Wear protective gloves. Wear respiratory protection.

Response: IF ON SKIN: Wash with plenty of soap and water. IF INHALED: Remove person to fresh air and keep comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison control center or physician. If skin irritation or rash occurs: Get medical attention. If eye irritation persists: Get medical attention. If experiencing respiratory symptoms: Call a poison center or physician. Take off contaminated clothing.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents and/or container according to Federal, State/Provincial and local governmental regulations.

Classification complies with OSHA Hazard Communication Standard (29 CFR 1910.1200) and is consistent with the provisions of the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

See Section 11 for additional toxicological information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

General chemical description:
Mixture

Hazardous Component(s)	CAS Number	Percentage*
Polyurethane prepolymer	Proprietary	60 - 100
o-(p-Isocyanatobenzyl)phenyl isocyanate	5873-54-1	1 - 5
Resin modifier	Proprietary	0.1 - 1

* Exact percentage is a trade secret. Concentration range is provided to assist users in providing appropriate protections.

4. FIRST AID MEASURES

Inhalation: Move to fresh air. If not breathing, give artificial respiration. Get immediate medical attention.

Skin contact: Immediately wash skin thoroughly with soap and water. Remove contaminated clothing and footwear. Get immediate medical attention.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get immediate medical attention.

Ingestion: DO NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get immediate medical attention.

Symptoms: See Section 11.

5. FIRE FIGHTING MEASURES

Extinguishing media: Use extinguishing measures appropriate to local circumstances and the surrounding environment.

Special firefighting procedures: Keep unnecessary personnel away. Firefighters should wear self-contained breathing apparatus. Water may be ineffective, but may be used to cool exposed containers to prevent pressure build-up and possible auto-ignition or explosion when exposed to extreme heat. If water is used, fog nozzles are preferable.

Unusual fire or explosion hazards: Decomposition and combustion products may be toxic.

Hazardous combustion products: Oxides of carbon. Hydrogen cyanide.

6. ACCIDENTAL RELEASE MEASURES

Use personal protection recommended in Section 8, isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not allow material to contaminate ground water system. Do not allow product to enter sewer or waterways.

Clean-up methods: Keep unnecessary personnel away. Ensure adequate ventilation. Wear appropriate protective equipment and clothing during clean-up. Dispose of contaminated material as waste according to Section 13.

7. HANDLING AND STORAGE

Handling: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. For industrial use only.

Storage: Store in original container until ready to use.

For information on product shelf life, please review labels on container or check the Technical Data Sheet.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Employers should complete an assessment of all workplaces to determine the need for, and selection of, proper exposure controls and protective equipment for each task performed.

Hazardous Component(s)	ACGIH TLV	OSHA PEL	AIHA WEEL	OTHER
Polyurethane prepolymer	None	None	None	None
o-(p-Isocyanatobenzyl)phenyl isocyanate	None	None	None	None
Resin modifier	None	None	None	None

Engineering controls: Work should be done in an adequately ventilated area (i.e., ventilation sufficient to maintain concentrations below one half of the PEL and other relevant standards). Local exhaust ventilation is recommended when general ventilation is not sufficient to control airborne contamination.

Respiratory protection: Use NIOSH approved respirator if there is potential to exceed exposure limit(s). Observe OSHA regulations for respirator use (29 CFR 1910.134).

Eye/face protection: Safety goggles or safety glasses with side shields. Full face protection should be used if the potential for splashing or spraying of product exists.

Skin protection: Use impermeable gloves and protective clothing as necessary to prevent skin contact. Wear suitable protective clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid
Color: White
Odor: Characteristic
Odor threshold: Not available.
pH: Not available.
Vapor pressure: < 0.03 mbar (20 °C (68°F))
Boiling point/range: Not determined
Melting point/ range: Not determined
Specific gravity: Not determined
Vapor density: Not available.
Flash point: > 220 °C (> 428°F)
Flammable/Explosive limits - lower: Not available.
Flammable/Explosive limits - upper: Not available.

Autoignition temperature:	Not determined
Evaporation rate:	Not determined
Solubility in water:	Insoluble
Partition coefficient (n-octanol/water):	Not determined
VOC content:	Not determined
Viscosity:	Not available.
Decomposition temperature:	Not available.

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions of storage and use.

Hazardous reactions: Will not occur.

Hazardous decomposition products: Oxides of carbon. Hydrogen cyanide.

Incompatible materials: Water. Alcohols. Amines.

Reactivity: Not available.

Conditions to avoid: None known

11. TOXICOLOGICAL INFORMATION

Relevant routes of exposure: Skin, Eyes, Molten adhesive.

Potential Health Effects/Symptoms

Inhalation: Continuous breathing of vapors above molten adhesive may irritate mucous membranes. Dusts from solid adhesive may cause irritation. Fumes may be irritating and may cause an allergic respiratory reaction.

Skin contact: Molten adhesive may cause severe burns. May cause allergic skin reaction.

Eye contact: Molten adhesive in eyes will cause severe and permanant damage. Can cause mechanical irritation if dusts are generated.

Ingestion: Not expected to be harmful by ingestion.

Hazardous Component(s)	LD50s and LC50s	Immediate and Delayed Health Effects
Polyurethane prepolymer	None	No Records
o-(p-Isocyanatobenzyl)phenyl isocyanate	None	Allergen, Irritant, Respiratory
Resin modifier	None	Irritant, Allergen

Hazardous Component(s)	NTP Carcinogen	IARC Carcinogen	OSHA Carcinogen (Specifically Regulated)
Polyurethane prepolymer	No	No	No
o-(p-Isocyanatobenzyl)phenyl isocyanate	No	No	No
Resin modifier	No	No	No

12. ECOLOGICAL INFORMATION

Ecological information: Not available.

13. DISPOSAL CONSIDERATIONS

Information provided is for unused product only.

Recommended method of disposal: Legal disposition of wastes is the responsibility of the owner/generator of the waste. Applicable federal, state and/or local regulations must be followed during treatment, storage, or disposal of waste containing this product.

Hazardous waste number: Not a RCRA hazardous waste.

14. TRANSPORT INFORMATION

The transport information provided in this section only applies to the material/formulation itself, and is not specific to any package/configuration.

U.S. Department of Transportation Ground (49 CFR)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

International Air Transportation (ICAO/IATA)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

Water Transportation (IMO/IMDG)

Proper shipping name:	Not regulated
Hazard class or division:	None
Identification number:	None
Packing group:	None

15. REGULATORY INFORMATION

United States Regulatory Information

TSCA 8 (b) Inventory Status:	All components are listed or are exempt from listing on the Toxic Substances Control Act Inventory.
TSCA 12 (b) Export Notification:	None above reporting de minimis
CERCLA/SARA Section 302 EHS:	None above reporting de minimis
CERCLA/SARA Section 311/312:	Immediate Health
CERCLA/SARA Section 313:	None above reporting de minimis
California Proposition 65:	This product contains a chemical known in the State of California to cause cancer.

Canada Regulatory Information

CEPA DSL/NDSL Status:	One or more components are not listed on, and are not exempt from listing on either the Domestic Substances List or the Non-Domestic Substances List.

16. OTHER INFORMATION

This safety data sheet contains changes from the previous version in sections: New Safety Data Sheet format.

Prepared by: J. Boryszewski, Regulatory Affairs

Issue date: 10/10/2014

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SAFETY DATA SHEET

Item#: 10-1071-01

1. Identification

Product identifier CQ862Series

Other means of identification Not available.

Recommended use Inkjet printing

Recommended restrictions None known.

Company identification

HP
1501 Page Mill Road
Palo Alto, CA 94304-1112
United States
Telephone 650-857-5020

HP health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-760-710-0048
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement Not available.

Precautionary statement

Prevention Not available.

Response Not available.

Storage Not available.

Disposal Not available.

Hazard(s) not otherwise classified (HNOC) Potential routes of overexposure to this product are skin and eye contact.. Inhalation of vapor and ingestion are not expected to be significant routes of exposure for this product under normal use conditions. Complete toxicity data are not available for this specific formulation..

Supplemental information This product is not classified as hazardous according to OSHA CFR 1910.1200 (HazCom 2012).

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	70-90
2-pyrrolidone		616-45-5	< 7.5
Azonaphthalenesulfonate salt		Proprietary	< 7.5

Composition comments This ink supply contains an aqueous ink formulation.
This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First-aid measures

Inhalation	Move to fresh air. If symptoms persist, get medical attention.
Skin contact	Wash affected areas thoroughly with mild soap and water. If irritation persists get medical attention.
Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Ingestion	If ingestion of a large amount does occur, seek medical attention.
Most important symptoms/effects, acute and delayed	Not available.

5. Fire-fighting measures

Suitable extinguishing media	CO2, water, dry chemical, or foam
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Not available.
Specific methods	None established.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Wear appropriate personal protective equipment.
Methods and materials for containment and cleaning up	Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

7. Handling and storage

Precautions for safe handling	Avoid contact with skin, eyes and clothing.
Conditions for safe storage, including any incompatibilities	Keep out of the reach of children. Keep away from excessive heat or cold.

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	Exposure limits have not been established for this product.
Appropriate engineering controls	Use in a well ventilated area.

Individual protection measures, such as personal protective equipment

Eye/face protection	Not available.
Skin protection	
Hand protection	Not available.
Other	Not available.
Respiratory protection	Not available.
Thermal hazards	Not available.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state	Liquid.
Color	Black.

Odor	Not available.
Odor threshold	Not available.
pH	7.5 - 8.5
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not determined
Flash point	> 200.0 °F (> 93.3 °C) Setaflash Closed cup
Evaporation rate	Not determined
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not determined
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not determined
Solubility(ies)	
Solubility (water)	Soluble in water
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not determined
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	For other VOC regulatory data/information see Section 15.
VOC (Weight %)	< 240 g/L

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Not available.
Incompatible materials	Incompatible with strong bases and oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield gaseous nitrogen oxides, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics	Not available.
Information on toxicological effects	
Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization	
Respiratory sensitization	Based on available data, the classification criteria are not met.
Skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.

Reproductive toxicity	Based on available data, the classification criteria are not met.
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.
Specific target organ toxicity repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.
Further information	Complete toxicity data are not available for this specific formulation Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Components	Species	Test Results
2-pyrrolidone (CAS 616-45-5)		
Acute		
Oral		
LD50	Guinea pig	6500 mg/kg
	Rat	6500 mg/kg

12. Ecological information

Ecotoxicity

Product		Species	Test Results
CQ862Series (CAS Mixture)			
Aquatic			
Acute			
Fish	LC50	Fathead minnow (Pimephales promelas)	> 750 mg/l, 96 hours

Components		Species	Test Results
2-pyrrolidone (CAS 616-45-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia pulex)	13.21 mg/l, 48 hours

Persistence and degradability	Not available.
Bioaccumulative potential	Not available.

Partition coefficient n-octanol / water (log Kow)

2-pyrrolidone	-0.85

Mobility in soil	Not available.
Other adverse effects	Not available.

13. Disposal considerations

Disposal instructions

Do not allow this material to drain into sewers/water supplies.
Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

HP's Planet Partners (trademark) supplies recycling program enables simple, convenient recycling of HP original inkjet and LaserJet supplies. For more information and to determine if this service is available in your location, please visit http://www.hp.com/recycle.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

ADR

Not regulated as dangerous goods.

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

15. Regulatory information

US federal regulations

TSCA (Toxic Substances Control Act): All ingredients are on the TSCA Chemical Substances Inventory. A substance in this product is the subject of a Significant New Use Rule (SNUR) at 40 CFR 721.10045. The Significant New Use(s) for this substance (P-02-737) is that it cannot be manufactured domestically and that it cannot be processed or used in solid form.
TSCA 12(b) Components: Reporting not required. SNUR substance is present at less than 1 percent in the final product.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical

No

Other federal regulations

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

2-pyrrolidone (CAS 616-45-5)

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

2-pyrrolidone (CAS 616-45-5)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

Not Listed.

Other information

VOC content (less water, less exempt compounds) = < 898 g/L (U.S. requirement, not for emissions) VOC data based on formulation (Organic compounds minus solids)

Regulatory information

All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other information, including date of preparation or last revision

Issue date 11-Jun-2015

Revision date 21-Aug-2015

Version # 02

Disclaimer

This Safety Data Sheet document is provided without charge to customers of HP. Data is the most current known to HP at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Revision Information	Composition / Information on Ingredients Other information, including date of preparation or last revision: Disclaimer HazReg Data: Pacific Rim
Manufacturer information	HP 1501 Page Mill Road Palo Alto, CA 94304-1112 US Direct 1-650-857-5020

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

SAFETY DATA SHEET

Item #: 10-1072-01

1. Identification

Product identifier CQ863Series

Other means of identification Not available.

Recommended use Inkjet printing

Recommended restrictions None known.

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-5020

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-760-710-0048
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement Not available.

Precautionary statement

Prevention Not available.

Response Not available.

Storage Not available.

Disposal Not available.

Hazard(s) not otherwise classified (HNOC) Potential routes of overexposure to this product are skin and eye contact. Inhalation of vapor and ingestion are not expected to be significant routes of exposure for this product under normal use conditions. Complete toxicity data are not available for this specific formulation.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	70-80
1-(2-hydroxyethyl)-2-pyrrolidone		3445-11-2	<10
2-pyrrolidone		616-45-5	<5
Cyan dye		Proprietary	<5

Composition comments This ink supply contains an aqueous ink formulation.
This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First-aid measures

Inhalation	Move to fresh air. If symptoms persist, get medical attention.
Skin contact	Wash affected areas thoroughly with mild soap and water. If irritation persists get medical attention.
Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Ingestion	If ingestion of a large amount does occur, seek medical attention.
Most important symptoms/effects, acute and delayed	Not available.

5. Fire-fighting measures

Suitable extinguishing media	CO2, water, dry chemical, or foam
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Not available.
Specific methods	None established.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Wear appropriate personal protective equipment.
Methods and materials for containment and cleaning up	Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

7. Handling and storage

Precautions for safe handling	Avoid contact with skin, eyes and clothing.
Conditions for safe storage, including any incompatibilities	Keep out of the reach of children. Keep away from excessive heat or cold.

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	Exposure limits have not been established for this product.
Appropriate engineering controls	Use in a well ventilated area.

Individual protection measures, such as personal protective equipment

Eye/face protection	Not available.
Skin protection	
Hand protection	Not available.
Other	Not available.
Respiratory protection	Not available.
Thermal hazards	Not available.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state	Not available.
Color	Cyan

Odor	Not available.
Odor threshold	Not available.
pH	7.1 - 7.7
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not determined
Flash point	> 200.0 °F (> 93.3 °C) Setaflash Closed Tester
Evaporation rate	Not determined
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not determined
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not determined
Solubility(ies)	
Solubility (water)	Soluble in water
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	2 cp
Other information	For other VOC regulatory data/information see Section 15.
VOC (Weight %)	< 242 g/L

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Not available.
Incompatible materials	Incompatible with strong bases and oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield gaseous nitrogen oxides, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics	Not available.
Information on toxicological effects	
Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization	
Respiratory sensitization	Based on available data, the classification criteria are not met.
Skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.

Reproductive toxicity	Based on available data, the classification criteria are not met.
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.
Further information	Complete toxicity data are not available for this specific formulation Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Components	Species	Test Results
2-pyrrolidone (CAS 616-45-5)		
Acute		
Oral		
LD50	Guinea pig	6500 mg/kg
	Rat	6500 mg/kg

12. Ecological information

Aquatic toxicity Not expected to be harmful to aquatic organisms.

Ecotoxicity

Product		Species	Test Results
CQ863Series (CAS Mixture)			
Aquatic			
Acute			
Fish	LC50	Fathead minnow (Pimephales promelas)	> 750 mg/l, 96 hours

Components		Species	Test Results
2-pyrrolidone (CAS 616-45-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia pulex)	13.21 mg/l, 48 hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

2-pyrrolidone	-0.85

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Do not allow this material to drain into sewers/water supplies.
Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

HP's Planet Partners (trademark) supplies recycling program enables simple, convenient recycling of HP original inkjet and LaserJet supplies. For more information and to determine if this service is available in your location, please visit http://www.hp.com/recycle.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

ADR

Not regulated as dangerous goods.

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

15. Regulatory information

US federal regulations US TSCA 12(b): Does not contain listed chemicals.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

2-pyrrolidone (CAS 616-45-5)

US. Pennsylvania Worker and Community Right-to-Know Law

2-pyrrolidone (CAS 616-45-5)

US. California Proposition 65

Not Listed.

Other information VOC content (less water, less exempt compounds) = < 965 g/L (U.S. requirement, not for emissions)
VOC data based on formulation (Organic compounds minus solids)

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other information, including date of preparation or last revision

Issue date 14-May-2015

Version # 01

Disclaimer This Safety Data Sheet document is provided without charge to customers of Hewlett-Packard Company. Data is the most current known to Hewlett-Packard Company at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Manufacturer information Hewlett-Packard Company
3000 Hanover Street
Palo Alto, California 94304-1112 US
Direct 1-650-857-5020

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

SAFETY DATA SHEET

Item #: 10-1073-01

1. Identification

Product identifier CQ864Series

Other means of identification Not available.

Recommended use Inkjet printing

Recommended restrictions None known.

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-5020

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-760-710-0048
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement Not available.

Precautionary statement

Prevention Not available.

Response Not available.

Storage Not available.

Disposal Not available.

Hazard(s) not otherwise classified (HNOC) Potential routes of overexposure to this product are skin and eye contact. Inhalation of vapor and ingestion are not expected to be significant routes of exposure for this product under normal use conditions. Complete toxicity data are not available for this specific formulation. None of the ingredients have been classified as carcinogens according to EU, IARC, MAK, NTP, OSHA or ACGIH.

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	70-85
1-(2-hydroxyethyl)-2-pyrrolidone		3445-11-2	< 10
2-pyrrolidone		616-45-5	< 7.5
Substituted xanthylium salt #1		Proprietary	< 2.5

Composition comments	This ink supply contains an aqueous ink formulation. This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First-aid measures

Inhalation	Move to fresh air. If symptoms persist, get medical attention.
Skin contact	Wash affected areas thoroughly with mild soap and water. If irritation persists get medical attention.
Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Ingestion	If ingestion of a large amount does occur, seek medical attention.
Most important symptoms/effects, acute and delayed	Not available.

5. Fire-fighting measures

Suitable extinguishing media	CO2, water, dry chemical, or foam
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Refer to section 10.
Special protective equipment and precautions for firefighters	Not available.
Specific methods	None established.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Wear appropriate personal protective equipment.
Methods and materials for containment and cleaning up	Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

7. Handling and storage

Precautions for safe handling	Avoid contact with skin, eyes and clothing.
Conditions for safe storage, including any incompatibilities	Keep out of the reach of children. Keep away from excessive heat or cold.

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	Exposure limits have not been established for this product.
Appropriate engineering controls	Use in a well ventilated area.

Individual protection measures, such as personal protective equipment

Eye/face protection	Not available.
Skin protection	
Hand protection	Not available.
Other	Not available.
Respiratory protection	Not available.
Thermal hazards	Not available.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state	Not available.
Color	Magenta
Odor	Not available.
Odor threshold	Not available.
pH	7 - 7.6
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not determined
Flash point	> 200.0 °F (> 93.3 °C) Setaflash Closed Tester
Evaporation rate	Not determined
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not determined
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not determined
Solubility(ies)	
Solubility (water)	Soluble in water
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	2 cp
Other information	
Specific gravity	1 - 1.2
Other information	For other VOC regulatory data/information see Section 15.
VOC (Weight %)	< 243 g/L

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Not available.
Incompatible materials	Incompatible with strong bases and oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield gaseous nitrogen oxides, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics	Not available.
Information on toxicological effects	
Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.

Respiratory or skin sensitization

Respiratory sensitization	Based on available data, the classification criteria are not met.
Skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.
Further information	Complete toxicity data are not available for this specific formulation Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Components	**Species**	**Test Results**
2-pyrrolidone (CAS 616-45-5)		
Acute		
Oral		
LD50	Guinea pig	6500 mg/kg
	Rat	6500 mg/kg
Substituted xanthylium salt #1 (CAS Proprietary)		
Acute		
Oral		
LD50	Rat	<= 10000 mg/kg

12. Ecological information

Aquatic toxicity Not expected to be harmful to aquatic organisms.

Ecotoxicity

Product		**Species**	**Test Results**
CQ864Series (CAS Mixture)			
Aquatic			
Acute			
Fish	LC50	Fathead minnow (Pimephales promelas)	> 750 mg/l, 96 hours

Components		**Species**	**Test Results**
2-pyrrolidone (CAS 616-45-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia pulex)	13.21 mg/l, 48 hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)

2-pyrrolidone	-0.85

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Do not allow this material to drain into sewers/water supplies.
Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

HP's Planet Partners (trademark) supplies recycling program enables simple, convenient recycling of HP original inkjet and LaserJet supplies. For more information and to determine if this service is available in your location, please visit http://www.hp.com/recycle.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

ADR

Not regulated as dangerous goods.

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

15. Regulatory information

US federal regulations US TSCA 12(b): Does not contain listed chemicals. A substance in this product is the subject of a Significant New Use Rule (SNUR) at 40CFR721.10460. The Significant New Use(s) for this substance (P03-307) is that it may not be manufactured or processed as a powder and must be used in the manner prescribed in the premanufacture notification..
TSCA 12(b) Components: Once per country reporting is required. The SNUR substance is present at 1 percent or greater in the final product.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

2-pyrrolidone (CAS 616-45-5)

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. Pennsylvania Worker and Community Right-to-Know Law

2-pyrrolidone (CAS 616-45-5)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

Not Listed.

Other information VOC content (less water, less exempt compounds) = < 1011 g/L (U.S. requirement, not for emissions)
VOC data based on formulation (Organic compounds minus solids)

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other information, including date of preparation or last revision

Issue date 30-May-2015

Version # 01

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Manufacturer information Hewlett-Packard Company
3000 Hanover Street
Palo Alto, California 94304-1112 US
Direct 1-650-857-5020

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

SAFETY DATA SHEET

Item #: 10-1074-01

1. Identification

Product identifier CQ865Series

Other means of identification Not available.

Recommended use Inkjet printing

Recommended restrictions None known.

Company identification

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304-1185
United States
Telephone 650-857-5020

Hewlett-Packard health effects line
(Toll-free within the US) 1-800-457-4209
(Direct) 1-760-710-0048
HP Customer Care Line
(Toll-free within the US) 1-800-474-6836
(Direct) 1-208-323-2551
Email: hpcustomer.inquiries@hp.com

2. Hazard(s) identification

Physical hazards Not classified.

Health hazards Not classified.

Environmental hazards Not classified.

OSHA defined hazards Not classified.

Label elements

Hazard symbol None.

Signal word None.

Hazard statement Not available.

Precautionary statement

Prevention Not available.

Response Not available.

Storage Not available.

Disposal Not available.

Hazard(s) not otherwise classified (HNOC) Potential routes of overexposure to this product are skin and eye contact Inhalation of vapor and ingestion are not expected to be significant routes of exposure for this product under normal use conditions. Complete toxicity data are not available for this specific formulation

Supplemental information None.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Water		7732-18-5	70-85
1-(2-hydroxyethyl)-2-pyrrolidone		3445-11-2	< 10
2-pyrrolidone		616-45-5	< 7.5
Substituted naphthalenesulfonate salt # 13		Proprietary	< 5

Composition comments This ink supply contains an aqueous ink formulation.
This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazarc Communication Standard).

4. First-aid measures

Inhalation	Move to fresh air. If symptoms persist, get medical attention.
Skin contact	Wash affected areas thoroughly with mild soap and water. If irritation persists get medical attention.
Eye contact	Do not rub eyes. Immediately flush with large amounts of clean, warm water (low pressure) for at least 15 minutes or until particles are removed. If irritation persists get medical attention.
Ingestion	If ingestion of a large amount does occur, seek medical attention.
Most important symptoms/effects, acute and delayed	Not available.

5. Fire-fighting measures

Suitable extinguishing media	CO2, water, dry chemical, or foam
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	Not applicable.
Special protective equipment and precautions for firefighters	Not available.
Specific methods	None established.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Wear appropriate personal protective equipment.
Methods and materials for containment and cleaning up	Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps.
Environmental precautions	Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

7. Handling and storage

Precautions for safe handling	Avoid contact with skin, eyes and clothing.
Conditions for safe storage, including any incompatibilities	Keep out of the reach of children. Keep away from excessive heat or cold.

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Exposure guidelines	Exposure limits have not been established for this product.
Appropriate engineering controls	Use in a well ventilated area.

Individual protection measures, such as personal protective equipment

Eye/face protection	Not available.
Skin protection	
Hand protection	Not available.
Other	Not available.
Respiratory protection	Not available.
Thermal hazards	Not available.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Physical state	Not available.
Color	Yellow

Odor	Not available.
Odor threshold	Not available.
pH	7.1 - 7.7
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not determined
Flash point	> 200.0 °F (> 93.3 °C) Setaflash Closed Tester
Evaporation rate	Not determined
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not determined
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not determined
Solubility(ies)	
Solubility (water)	Soluble in water
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	> 2 cp
Other information	For other VOC regulatory data/information see Section 15.
VOC (Weight %)	< 245 g/L

10. Stability and reactivity

Reactivity	Not available.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Not available.
Incompatible materials	Incompatible with strong bases and oxidizing agents.
Hazardous decomposition products	Upon decomposition, this product may yield gaseous nitrogen oxides, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics	Not available.
Information on toxicological effects	
Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization	
Respiratory sensitization	Based on available data, the classification criteria are not met.
Skin sensitization	Based on available data, the classification criteria are not met.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.

Reproductive toxicity	Based on available data, the classification criteria are not met.
Specific target organ toxicity - single exposure	Based on available data, the classification criteria are not met.
Specific target organ toxicity - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.
Further information	Complete toxicity data are not available for this specific formulation Refer to Section 2 for potential health effects and Section 4 for first aid measures.

Components	**Species**	**Test Results**
2-pyrrolidone (CAS 616-45-5)		
Acute		
Oral		
LD50	Guinea pig	6500 mg/kg
	Rat	6500 mg/kg

12. Ecological information

Aquatic toxicity Not expected to be harmful to aquatic organisms.

Ecotoxicity

Product		**Species**	**Test Results**
CQ865Series (CAS Mixture)			
Aquatic			
Acute			
Fish	LC50	Fathead minnow (Pimephales promelas)	> 750 mg/l, 96 hours

Components		**Species**	**Test Results**
2-pyrrolidone (CAS 616-45-5)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia pulex)	13.21 mg/l, 48 hours

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Partition coefficient n-octanol / water (log Kow)	
2-pyrrolidone	-0.85

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Do not allow this material to drain into sewers/water supplies.
Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

HP's Planet Partners (trademark) supplies recycling program enables simple, convenient recycling of HP original inkjet and LaserJet supplies. For more information and to determine if this service is available in your location, please visit http://www.hp.com/recycle.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

ADR

Not regulated as dangerous goods.

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

15. Regulatory information

US federal regulations US TSCA 12(b): Does not contain listed chemicals.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories Immediate Hazard - No
Delayed Hazard - No
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical No

Other federal regulations

Safe Drinking Water Act (SDWA) Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

2-pyrrolidone (CAS 616-45-5)

US. Pennsylvania Worker and Community Right-to-Know Law

2-pyrrolidone (CAS 616-45-5)

US. California Proposition 65

Not Listed.

Other information VOC content (less water, less exempt compounds) = < 950 g/L (U.S. requirement, not for emissions)
VOC data based on formulation (Organic compounds minus solids)

Regulatory information All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDSL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

16. Other information, including date of preparation or last revision

Issue date 20-May-2015

Version # 01

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Manufacturer information Hewlett-Packard Company
3000 Hanover Street
Palo Alto, California 94304-1112 US
Direct 1-650-857-5020

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds

Varn International, Inc., *a Flint Group Company*
14909 N. Beck Road
Plymouth, MI 48170

For Product Questions call: (800) 336-VARN(8276)
For Health and Safety Questions call: (800) 336-VARN(8276)
24 Hour Emergency Spill Contact call: (800) 424-9300 Chemtrec (US/Canada)

Material Safety Data Sheet

I. PRODUCT AND COMPANY IDENTIFICATION

Product Name: IPA
Product Code: 650-B017282
MSDS Code: MSD-B017282
Revision Number: 4
Revision Date: 2014-02-14 15:12:36

II. COMPOSITION/INFORMATION ON INGREDIENTS

CAS#	Chemical Name	%
67-63-0	Isopropanol	~ 100

Please see Section VIII for product and component exposure guidelines.
Components not listed are not physical or health hazards as defined in 29 CFR 1910.1200 (Hazard Communication Standard).

III. HAZARDS IDENTIFICATION

HMIS Rating **Health:** 1 **Flammability:** 3 **Reactivity:** 0

This product falls under the following WHMIS class:
D2B
B2

Routes of Entry: Eye contact, Skin contact, Inhalation
Target Organs: Skin, Respiratory Tract, Eyes, Central Nervous System
Medical Conditions Aggravated: Respiratory disease including asthma and bronchitis

Immediate (Acute) Health Effects by Route of Exposure

Inhalation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache. Irritation may be delayed for several hours.
Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.
Eye Contact: Can cause moderate/severe irritation, tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion: Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.

Long-Term (Chronic) Health Effects

Reproductive and Developmental: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.
Mutagenicity: No data available to indicate product or any components present at greater than 0.1% is mutagenic or genotoxic.
Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact:	Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Ingredients of this product appear on the following OSHA identified carcinogen lists at >= 0.1% by weight (yes/no):

OSHA	No	**NTP**	No	**IARC 1 & 2A**	No	**NIOSH**	No
				IARC 2B	No		

IV. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately.
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye as advised by your physician.
Skin Contact:	Wash with soap and water. Get medical attention if irritation develops or persists.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this MSDS.

V. FIRE FIGHTING MEASURES

Flammability Summary:	Flammable NFPA IB (NFPA description only; not to be used for shipping purposes)
Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used to extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.
Fire and/or Explosion Hazards:	Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.
Fire Fighting Methods and Protection:	Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

Flash Point:	Less than 38 C (100F)
Tested Closed Cup	53 deg F
Firepoint:	Firepoint not determined.
Autoignition Temperature:	399 deg C 750 deg F

VI. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	No health affects expected from the clean-up of this material if contact can be avoided. Follow personal protective equipment recommendations found in Section VIII of this MSDS Evaporation of volatile substances can lead to the displacement of air creating an environment that can cause asphyxiation.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section VIII at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation. Shut off ignition sources; including electrical equipment and flames. Do not allow smoking in the area.

VII. HANDLING AND STORAGE

Handling Precautions:	Mildly irritating material. Avoid unnecessary exposure. Use spark-proof tools and explosion-proof equipment
Storage Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed.

VIII. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Measures:	General room ventilation might be required to maintain operator comfort under normal conditions of use.
Respiratory Protection:	General or local exhaust ventilation is the preferred means of control. If general or local exhaust ventilation is not available or sufficient to control or eliminate symptoms as described in Section III, respiratory protection should be used.
Eye Protection:	Wear safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Have an eye wash station available.
Skin Protection:	Not normally considered a skin hazard. Where use can result in skin contact, practice good personal hygiene and wear a barrier cream and/or impervious surgical style gloves. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Gloves:	Wear impervious material. Butyl rubber or Nitrile

Exposure Guidelines:

CAS#	Chemical Name	OSHA Exposure Limits	ACGIH TLV - TWA	ACGIH STEL	IDLH
67-63-0	Isopropanol	400 ppm TWA; 980 mg/m3 TWA	200 ppm TWA	400 ppm STEL	

If this product is provided in a dry powder state it should be considered a nuisance dust (PEL 10 mg/m3).

If the processing of this product produces a mist it should be considered to be an oil mist with a PEL of 5 mg/m3.

IX. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Color:	Clear
Odor:	Alcohol
Solubility in Water:	Complete; 100%
Vapor Pressure (mmHg @ 20 deg. C):	33
Volatile Organic Compounds (VOC) % by wt:	99.9
Volatile Organic Compounds (VOC) % by vol:	100.00
VOC lb/gal	6.57
Boiling Point:	90 deg C 194 deg F
Specific Gravity:	0.79
Bulk Density (lbs/Gal):	6.58
Bulk Density (kg/L):	0.79

X. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	Sparks, open flame, other ignition sources, and elevated temperatures.
Materials to Avoid/Chemical Incompatibility:	Strong oxidizing agents. Acids

XI. TOXICOLOGICAL INFORMATION

Component Toxicology Data (NIOSH):

CAS#	Chemical Name	LD50/LC50
67-63-0	Isopropanol	Oral LD50 Rat 4396 mg/kg (Source: IUCLID); Dermal LD50 Rabbit 12800 mg/kg (Source: NLM_CIP); Inhalation LC50 Rat 16000 ppm 8 h

XII. ECOLOGICAL INFORMATION

Ecotoxicity	There is no data available on the preparation itself. Do not allow to enter drains or watercourses.
Marine Pollutants	Not on list
Severe Marine Pollutants	Not on list

XIII. DISPOSAL CONSIDERATIONS

Waste Description for Spent Product:	Spent or discarded material may be a hazardous waste.
Disposal Methods:	Dispose in accordance with Federal, State, Provincial and Local regulations. Material may be compatible with industrial waste incineration or inclusion in a fuel blending program. This characterization is subject to approval by your waste management contractor. This material should be recycled if possible.

XIV. REGULATORY INFORMATION

TSCA Status All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Chemical Name	CAS #	Regulation	Percentage
Not on list		CERCLA	
Isopropyl alcohol	67-63-0	NPRI (Cdn)	~ 100
Not on list		PROP 65	
Not on list		SARA 313	
Not on list		SARA EHS	

The following items require export notification for TSCA

Chemical Name	TSCA 12b list section
Not on list	

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations and the MSDS contains information required by the Controlled Products Regulations.

XV. TRANSPORTATION INFORMATION

49CFR/TDG - Limited Quantity:	LIMITED QUANTITY EXCEPTION MAY BE USED IF EACH INNER PACKAGING IS 0.3 GAL (1 L) OR LESS. ADD "LTD QTY" TO DESCRIPTION.
49CFR/TDG - Non-bulk:	UN1219, ISOPROPANOL, 3, PGII, ERG129
49CFR/TDG - Bulk:	UN1219, ISOPROPANOL, 3, PGII, ERG129
IATA - Limited Quantity:	LIMITED QUANTITY EXCEPTION MAY BE USED IF EACH INNER PACKAGING IS 0.3 GAL (1 L) OR LESS. ADD "LTD QTY" TO DESCRIPTION.
IATA - Non-bulk:	UN1219, ISOPROPANOL, 3, PGII, ERG129
IMDG - Non-bulk:	REGULATED. REFER TO BILL OF LADING.

XVI. ADDITIONAL INFORMATION

IPA

Disclaimer: Flint Group has prepared this Material Safety Data Sheet ("MSDS") in compliance with 29 CFR 1910.1200, understands that its customers may use this MSDS to comply with that section, and believes that the data set forth herein are accurate as of the date hereof; however, this MSDS shall not constitute a warranty with respect thereto.
PPEDERSON

Section 1. Identification

IS product identifier : IPA 99% 5G PAIL

roduct type : Liquid.

SDS # : 696e:63og:8j8

Relevant identified uses of the substance or mixture and uses advised against

Printing ink or additive.

Uses advised against	Reason
Not applicable.	

Supplier's details : Varn International, Inc., a Flint Group Business
1333 N. Kirk Road
Batavia, IL 62510
United States

Emergency telephone number (with hours of operation) : For Health and Safety Questions during business hours call 1-800-336-8276
24 Hour Emergency Spill Contact call 1-800-424-9300 Chemtrec (US/Canada)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

lassification of the ıbstance or mixture : FLAMMABLE LIQUIDS - Category 2
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : Highly flammable liquid and vapor.
Causes serious eye irritation.
May cause drowsiness or dizziness.

Precautionary statements

Prevention : Wear protective gloves. Wear eye or face protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use explosion-proof electrical, ventilating, lighting and all material-handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a well-ventilated area. Avoid breathing vapor. Wash hands thoroughly after handling.

Section 2. Hazards identification

Response : IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Storage : Store locked up. Store in a well-ventilated place. Keep cool.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Ingredient name	%	CAS number
propan-2-ol	60 - 100	67-63-0

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Skin contact : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Section 4. First aid measures

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : No known significant effects or critical hazards.

Ingestion : Can cause central nervous system (CNS) depression.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : No specific data.

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : Highly flammable liquid and vapor. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Section 7. Handling and storage

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
propan-2-ol	**ACGIH TLV (United States, 4/2014).** STEL: 400 ppm 15 minutes. TWA: 200 ppm 8 hours. **NIOSH REL (United States, 10/2013).** STEL: 1225 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 980 mg/m³ 10 hours. TWA: 400 ppm 10 hours. **OSHA PEL (United States, 2/2013).** TWA: 980 mg/m³ 8 hours. TWA: 400 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** STEL: 1225 mg/m³ 15 minutes. STEL: 500 ppm 15 minutes. TWA: 980 mg/m³ 8 hours. TWA: 400 ppm 8 hours.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : Colorless.

Odor : Alcohol

Odor threshold : Not available.

pH : Not available.

Melt point/Freeze point : Not available.

Boiling point : Not available.

Flash point : Between -18°C (0°F) and 23°C (73°F).

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Lower and upper explosive ammable) limits : Not available.

apor pressure : 4.4 kPa (33 mm Hg) [room temperature]

Vapor density : Not available.

Relative density : Not available.

Solubility : Not available.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Not available.

Density : 6.589 lbs/gal

VOC data

VOC % by weight : 100

VOC % by volume : 100

VOC lbs/gallon : 6.59

VOC lbs/gal less water : 6.59

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

. ossibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
propan-2-ol	LD50 Dermal LD50 Oral	Rabbit Rat	12800 mg/kg 5045 mg/kg	- -

Carcinogenicity

Classification

Product/ingredient name	OSHA	IARC	NTP
propan-2-ol	-	3	-

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
propan-2-ol	Category 3	Not applicable.	Narcotic effects

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

Skin contact : No known significant effects or critical hazards.

Ingestion : Can cause central nervous system (CNS) depression.

rmptoms related to the physical, chemical and toxicological characteristics

Section 11. Toxicological information

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

nhalation : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

Skin contact : No specific data.

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Not available.

Persistence and degradability

Not available.

Bioaccumulative potential

Not available.

Mobility in soil

Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN1219	UN1219	UN1219	UN1219
UN proper shipping name	Isopropyl alcohol	ISOPROPYL ALCOHOL	ISOPROPYL ALCOHOL	Isopropyl alcohol
Transport hazard class(es)	3 	3 	3 	3 
acking group	II	II	II	II
Environmental hazards	No.	No.	No.	No.
Additional information	**Limited quantity** Yes. **Packaging instruction** **Passenger aircraft** Quantity limitation: 5 L **Cargo aircraft** Quantity limitation: 60 L **Special provisions** IB2, T4, TP1	Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3). **Explosive Limit and Limited Quantity Index** 1 **Passenger Carrying Road or Rail Index** 5	**Emergency schedules (EmS)** F-E, S-D	**Passenger and Cargo Aircraft** Quantity limitation: 5 L Packaging instructions: 353 **Cargo Aircraft Only** Quantity limitation: 60 L Packaging instructions: 364 **Limited Quantities - Passenger Aircraft** Quantity limitation: 1 L Packaging instructions: Y341 **Special provisions** A180

Section 14. Transport information

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

U.S. Federal regulations : **United States inventory (TSCA 8b)**: All components are listed or exempted.

SARA 311/312

Classification : Fire hazard
Immediate (acute) health hazard

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	propan-2-ol	67-63-0	99.72
Supplier notification	propan-2-ol	67-63-0	99.72

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

California Prop. 65

Not applicable.

Section 16. Other information

History

Date of printing : 5/11/2016

Date of issue/Date of evision : 5/11/2016

)ate of previous issue : No previous validation

Version : 0.01

Key to abbreviations : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations

◤ Indicates information that has changed from previously issued version.

Notice to reader

Flint Group has prepared this Safety Data Sheet ("SDS") in compliance with 29 CFR 1910.1200, understands that its customers may use this SDS to comply with that section, and believes that the data set forth herein are accurate as of the date hereof; however, this SDS shall not constitute a warranty with respect thereto.

Engineering Evaluation
Hewlett-Packard Indigo
Application # 24060
Plant # 21086

BACKGROUND

HP Indigo has submitted an application to pre-certify, in accordance with Regulation 2-1-415, the following digital printing press:

HP Indigo Model 6000 Digital Press

HP Indigo demonstrated the emission of this press during a comprehensive testing program conducted in September 2010. The test report dated in May 2011 was transmitted to the District as part of this application. The test results are similar to the test for the Model 7000 that were reviewed October 15, 2009 in a meeting attended by the District (Engineering, Technical, and Planning Divisions), HP Indigo and AECOM (HP Indigo's consultant).

EMISSION CALCULATIONS

Emissions of a digital press depend on the print job. The 2010 performance test of the HP Indigo 6000 press was conducted over a variety of operations. It was concluded that the worst case print job (one that has high coverage using the highest amount of ink for a 24-hour period) results in an organic emissions rate of 0.63 lb/hr. Assuming the organic emissions are POC, the total emissions for a 24 hour, 365 day per year operation are as follows:

Pollutant	Lb/hr	Lb/day	Lb/year	Tons/year
POC	0.63	15.12	5519	2.759

The emissions above are for all materials used for the press. Based on the performance test that estimated worst case emissions, the throughputs of the materials used in this press are the following:

HP ElectroInks	68,966 lb/yr
HP Recycle Agent	179 gal/yr
HP Imaging Oil	328 gal/yr
HP Imaging Agent	36 gal/yr

In addition to the 15.12 lb/day POC emission limit, Permit Conditions will be imposed for the pre-certified press that will limit the material usage throughputs.

PLANT CUMULATIVE INCREASE

Not applicable for this pre-certification application.

TOXICS

There are no toxic air contaminants emitted from the HP Indigo 6000 press. Therefore, a toxic risk screen is not required.

BACT

POC emissions exceed 10 lb per highest day. Therefore, BACT is triggered.

The HP Indigo 6000 press has an internal VOC recovery system that includes a vapor collection system and condenser that recovers and reuses organic liquids. If not for this internal technology, the daily emissions would exceed the 15.12 lb/day results of the 2010 performance test. Nonetheless, a BACT determination is required to address the 15.12 lb/day POC emissions.

An extensive review of printing press BACT determinations was conducted by the applicant. Based on this survey, the common BACT 1 technologies for the HP Indigo 6000 press are:

Use of water based inks with low VOC content
Emissions collected and vented to a control device.

Water is not compatible with the electrophotography technology used in the 6000 press. Therefore, the water based ink option is not considered technically feasible. For the collection and control option, two options were evaluated:

Thermal Oxidation at 98% destruction efficiency
Carbon Absorption at 95% destruction efficiency

The applicant secured cost estimates for these options and the lowest estimates are summarized below, along with the cost effectiveness.

Technology	Destruction Efficiency	Total Annualized Cost $/year	Uncontrolled Emissions tons/year	Controlled Emissions tons/year	Reduction tons/year	Cost Effectiveness $/ton
Thermal Oxidation	98%	$115,355	2.759	0.055	2.704	$42,661
Carbon Absorption	95%	$53,726	2.759	0.138	2.621	$20,498

Based on the BACT guidelines of $17,500/ton maximum cost effectiveness, this BACT determination demonstrates a BACT 1 level of control is not justified.

BACT 2 for digital presses is not included in the BACT guidelines. Most printing press BACT 2 is the use of low VOC materials. However, this technology is not extendable to digital presses, where the electrophotography technology requires the ElectroInk materials. One BACT 2 technology is to collect and control emissions such that the overall emission would effectively

be less than 2.5 lb/gal (Document 146.1, Rotogravure Printing). The HP Indigo 6000 press collection/condensing system complies with this requirement, as demonstrated in the following table:

Total Ink lb/yr	Typical Ink Density lb/gal	Total Ink gal/yr	Typical Ink VOC lb/gal	Total Ink VOC lb/yr	Total Ink VOC lb/day
68,966	6.8	10,142	5.3	53,754	147
			Permitted POC Limit:		15.12
			Effective VOC lb/gal:		0.54
			Effective abatement:		89.8%

Note: Effective VOC lb/gal = 15.12 lb/day / (10142 gal / 365 day/yr)
Effective abatement = (5.3-0.54)/5.3

The HP Indigo Digital Printing Press complies with BACT and is considered to have a BACT 2 level of control.

OFFSETS

Not applicable for this pre-certification. If the facility that uses this pre-certified HP Indigo 6000 press has emissions that trigger offsets, then 2.759 ton/yr plus any applicable ratio would be required.

COMPLIANCE DETERMINATION

The HP Indigo 6000 Digital Printing Press will comply with Regulation 8, Rule 20, Graphic Arts Printing and Coating Operations. This digital press qualifies for Regulation 8-20-120, Limited Exemption, Digital Printing. Permit Conditions will be imposed such that the owner/operator of a HP Indigo 6000 Digital Printing Press will comply with recordkeeping Regulation 8-20-503.3.

A toxics risk screen is not required since none of the Regulation 2, Rule 5 toxic triggers are exceeded.

This project resulted in POC emissions greater than 10 lb/day. Therefore, BACT is applicable. The HP Indigo 6000 Digital Printing Press has a BACT2 level of control.

The project is considered ministerial under District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review.

PSD, NSPS, and NESHAPs, Offsets and the public notification requirements of Regulation 2-1-412 do not apply to this precertification application. The applicability of these requirements will be determined during the completeness determination of the specific owner/operator application. If the application triggers the public notification requirements of Regulation 2-1-412, the application would not qualify for the Accelerated Permitting Program per Regulation 2-1-106.3. This restriction will be included in the precertification permit conditions.

PERMIT CONDITIONS

As required by Regulation 2-1-415.3, the following permit conditions will be imposed on the pre-certified HP Indigo 6000 digital press. Compliance with the 15.12 lb/day limit will be demonstrated on a monthly average basis, consistent with Regulation 8-20-503.3 and Engineering Division Policy on Recordkeeping Requirements, issued February 17, 2000 by Bill deBoisblanc.

Hewlett-Packard Indigo
Model 6000 Digital Printing Press Pre-Certification
Application 24060
December 2012

The HP Indigo 6000 Digital Printing Press is Pre-Certified pursuant to Regulation 2-1-415. The Owner/Operator may submit an application for Permit to Operate, Accelerated Permitting Program. Installation and operation may begin immediately following the submission of a complete application. A temporary Permit to Operate will be issued as soon as the owner/operator's application is determined to be complete. The Owner/Operator shall comply with the attached permit conditions governing its operation. (Basis: Regulation 2-1-302.2)

1. The Owner/Operator of the HP Indigo 6000 Digital Printing Press shall not exceed the following limits of gross material usage for each consecutive 12-month period:
   a. HP ElectroInks 68,966 pounds
   b. HP Imaging Oil 328 gallons
   c. HP Recycle Agent 179 gallons
   d. HP Imaging Agent 36 gallons
   (Basis: Cumulative Increase)

2. The Owner/Operator of the HP Indigo 6000 Digital Printing Press shall not exceed 15.12 pounds of organic emissions per day, based on a calendar month average. (Basis: Cumulative Increase, BACT)

3. The Owner/Operator of the HP Indigo 6000 Digital Printing Press shall not operate the press within 1000 feet of any school or school grounds unless there are no Toxic Air Contaminant emissions. "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property. (Basis: Regulations 2-1-106.3, 2-1-412)

4. The owner/operator shall maintain all press doors in the closed position at all times when the press is operating. The owner/operator may open the doors to change consumables, repair paper jams, or conduct urgent maintenance. However, once the doors are opened, the press is designed to be unable to operate and the owner/operator must not defeat or in any way compromise this shutdown feature. (Basis: Cumulative Increase, BACT)

5. The owner/operator shall operate the integral oil recovery systems of the press at all times in accordance with the HP Indigo owner's manual. (Basis: Cumulative Increase, BACT)

6. The owner/operator shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, cleanup or ink removal. (Basis: Regulation 8-20-320.1)

7. The owner/operator shall not store in open containers spent or fresh organic compounds used for surface preparation, cleanup or removal of inks. (Basis: Regulation 8-20-320.2)

8. The owner/operator shall not leave containers of ink, Imaging Oil, Imaging Agent, Recycle Agent or waste/spent organic material open when not in use. (Basis: Regulation 8-20-320.3)

9. The owner/operator shall maintain the following records in a District-approved log book, and shall make records available to District inspectors upon request:
    a. Maintain a list of all inks, coatings, adhesives, makeup solvents, and cleaning products currently in use and document the VOC content and density of each material.
    b. Record and add up on a monthly basis the type and amount (in pounds) of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month. In order to determine compliance with Part 1, HP Imaging Oil, HP Recycle Agent and HP Imaging Agent shall also be recorded in gallons.
    c. Record the total pounds of VOC of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month.
    d. Record the amount of organic material that is collected and sent off site or accumulated prior to being sent off site.
    e. For each calendar month, the owner/operator shall determine compliance with Part 2 by subtracting the total pounds of organic material recorded in Part 9d from the total pounds of VOC recorded in Part 9c, and dividing the difference by the number of operating days in the month.
    The owner/operator shall retain all records for a period of 36-months from the date that the records are made. (Basis: Regulation 8-20-503, BACT, Cumulative Increase)

Recommendations

It is recommended that HP Indigo be granted Pre-Certification for the:

HP Indigo 6000 Digital Printing Press

By: _____ Date: _____
Art Valla, Senior Air Quality Engineer Draft December 12, 2012

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

December 31, 2012

HP Indigo
c/o AECOM
2101 Webster Street, Suite 1900
Oakland, CA 94612
Attention: Michael Dudasko

Dear Applicant:

SUBJECT: EQUIPMENT PRECERTIFICATION, APPLICATION 24060

Your application to pre certify the following has been approved:

HP Indigo 6000 Digital Printing Press

Operation of this equipment will be subject to permit condition no. 25432 which is attached.

If you have any questions regarding this matter, please call **Arthur Valla, Senior Air Quality Engineer at (415) 749-5184.**

Very truly yours

Jim Karas
Director of Engineering

by
Air Quality Engineering Manager

JMO:APV
Attachment: Permit Condition no. 25432

Plant No. 21086, HP Indigo
HP Indigo 6000 Digital Printing Press
Condition No. 25432 Application No. 24060

The HP Indigo 6000 Digital Printing Press is Pre-Certified pursuant to Regulation 2-1-415. The Owner/Operator may submit an application for Permit to Operate, Accelerated Permitting Program. Installation and operation may begin immediately following the submission of a complete application. A temporary Permit to Operate will be issued as soon as the owner/operator's application is determined to be complete. The Owner/Operator shall comply with the attached permit conditions governing its operation. (Basis: Regulation 2-1-302.2)

1. The Owner/Operator of the HP Indigo 6000 Digital Printing Press shall not exceed the following limits of gross material usage for each consecutive 12-month period:

a.	HP ElectroInks	67,624 pounds
b.	HP Imaging Oil	328 gallons
c.	HP Recycle Agent	179 gallons
d.	HP Imaging Agent	36 gallons

(Basis: Cumulative Increase)

2. The Owner/Operator of the HP Indigo 6000 Digital Printing Press shall not exceed 15.12 pounds of organic emissions per day, based on a calendar month average. (Basis: Cumulative Increase, BACT)

3. The Owner/Operator of the HP Indigo 6000 Digital Printing Press shall not operate the press within 1000 feet of any school or school grounds unless there are no Toxic Air Contaminant emissions. "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property. (Basis: Regulations 2-1-106.3, 2-1-412)

4. The owner/operator shall maintain all press doors in the closed position at all times when the press is operating. The owner/operator may open the doors to change consumables, repair paper jams, or conduct urgent maintenance. However, once the doors are opened, the press is designed to be unable to operate and the owner/operator must not defeat or in any way compromise this shutdown feature. (Basis: Cumulative Increase, BACT)

5. The owner/operator shall operate the integral oil recovery systems of the press at all times in accordance

with the HP Indigo owner's manual.
(Basis: Cumulative Increase, BACT)

6. The owner/operator shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, cleanup or ink removal. (Basis: Regulation 8-20-320.1)

7. The owner/operator shall not store in open containers spent or fresh organic compounds used for surface preparation, cleanup or removal of inks.
(Basis: Regulation 8-20-320.2)

8. The owner/operator shall not leave containers of ink, Imaging Oil, Imaging Agent, Recycle Agent or waste/spent organic material open when not in use.
(Basis: Regulation 8-20-320.3)

9. The owner/operator shall maintain the following records in a District-approved log book, and shall make records available to District inspectors upon request:
   a. Maintain a list of all inks, coatings, adhesives, makeup solvents, and cleaning products currently in use and document the VOC content and density of each material.
   b. Record and add up on a monthly basis the type and amount (in pounds) of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month. In order to determine compliance with Part 1, HP Imaging Oil, HP Recycle Agent and HP Imaging Agent shall also be recorded in gallons.
   c. Record the total pounds of VOC of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month.
   d. Record the amount of organic material that is collected and sent off site or accumulated prior to being sent off site.

   For each calendar month, the owner/operator shall determine compliance with Part 2 by subtracting the total pounds of organic material recorded in Part 9d from the total pounds of VOC recorded in Part 9c, and dividing the difference by the number of operating days in the month.

   The owner/operator shall retain all records for a period of 36-months from the date that the records are made.
   (Basis: Regulation 8-20-503, BACT, Cumulative Increase)

End of Conditions

Engineering Evaluation
Hewlett-Packard Indigo
Application # 22255
Plant # 20310

BACKGROUND

HP Indigo has submitted an application to pre-certify, in accordance with Regulation 2-1-415, the following digital printing press:

HP Indigo Model 7000 Digital Press

HP Indigo demonstrated the emission of this press during a comprehensive testing program conducted in February 2009. The test report was transmitted to the District on August 10, 2009. The test results were reviewed October 15, 2009 in a meeting attended by the District (Engineering, Technical, and Planning Divisions), HP Indigo and AECOM (HP Indigo's consultant).

EMISSION CALCULATIONS

Emissions of a digital press depend on the print job. The 2009 performance test of the HP Indigo 7000 press was conducted over a variety of operations. It was concluded that the worst case print job (one that has high coverage using the highest amount of ink for a 24-hour period) results in an organic emissions rate of 15.6 lb/day. Assuming the organic emissions are POC, the total emissions for a 365 day per year operation are as follows:

Pollutant	Lb/day	Lb/year	Tons/year
POC	15.6	5694	2.847

The emissions above are for all materials used for the press. Based on the performance test that estimated worst case emissions, the throughputs of the materials used in this press are the following:

HP ElectroInks	75,627 lb/yr
HP Recycle Agent and Imaging Oil	189 gal/yr
HP Imaging Agent	67 gal/yr

In addition to the 15.6 lb/day POC emission limit, Permit Conditions will be imposed for the pre-certified press that will limit the material usage throughputs.

PLANT CUMULATIVE INCREASE

Not applicable for this pre-certification application.

TOXICS

There are no toxic air contaminants emitted from the HP Indigo 7000 press. Therefore, a toxic risk screen is not required.

BACT

POC emissions exceed 10 lb per highest day. Therefore, BACT is triggered.

The HP Indigo 700 press has an internal VOC recovery system that includes a vapor collection system and condenser that recovers and reuses organic liquids. If not for this internal technology, the daily emissions would exceed the 15.6 lb/day results of the 2009 performance test. Nonetheless, a BACT determination is required to address the 15.6 lb/day POC emissions.

An extensive review of printing press BACT determinations was conducted by the applicant. Based on this survey, the common BACT 1 technologies for the HP Indigo 7000 press are:

Use of water based inks with low VOC content
Emissions collected and vented to a control device.

Water is not compatible with the electrophotography technology used in the 7000 press. Therefore, the water based ink option is not considered feasible. For the collection and control option, two options were evaluated:

Regenerative Thermal Oxidation at 98% destruction efficiency
Carbon Absorption at 95% destruction efficiency

The applicant secured cost estimates for these options and the lowest estimates are summarized below, along with the cost effectiveness.

Technology	Destruction Efficiency	Total Annualized Cost $/year	Uncontrolled Emissions tons/year	Controlled Emissions tons/year	Reduction tons/year	Cost Effectiveness $/ton
Regenerative Thermal Oxidation	98%	$113,286	2.847	0.057	2.790	$40,603
Carbon Absorption	95%	$52,763	2.847	0.142	2.705	$19,508

Based on the BACT guidelines of $17,500/ton maximum cost effectiveness, this BACT determination demonstrates a BACT 1 level of control is not justified.

BACT 2 for digital presses is not included in the BACT guidelines. Most printing press BACT 2 is the use of low VOC materials. However, this technology is not extendable to digital presses, where the electrophotography technology requires the ElectroInk materials. One BACT 2 technology is to collect and control emissions such that the overall emission would effectively be less than 2.5 lb/gal (Document 146.1, Rotogravure Printing). The HP Indigo 7000 press collection/condensing system complies with this requirement, as demonstrated in the following table:

Total Ink lb/yr	Typical Ink Density lb/gal	Total Ink gal/yr	Typical Ink VOC lb/gal	Total Ink VOC lb/yr	Total Ink VOC lb/day
76234	6.8	11,210	5.3	59,400	163
			Permitted POC Limit:		15.6
			Effective VOC lb/gal:		0.51
			Effective abatement:		90.4%

Note: Effective VOC lb/gal = 15.6 lb/day / (11210 gal / 365 day/yr)

The HP Indigo Digital Printing Press complies with BACT by having a BACT 2 level of control.

OFFSETS

Not applicable for this pre-certification. If the facility that uses this pre-certified HP Indigo 7000 press has emissions that trigger offsets, then 2.847 ton/yr plus any applicable ratio would be required.

COMPLIANCE DETERMINATION

The HP Indigo 7000 Digital Printing Press will comply with Regulation 8, Rule 20, Graphic Arts Printing and Coating Operations. This digital press qualifies for Regulation 8-20-120, Limited Exemption, Digital Printing. Permit Conditions will be imposed such that the owner/operator of a HP Indigo 7000 Digital Printing Press will comply with recordkeeping Regulation 8-20-503.3.

A toxics risk screen is not required since no Regulation 2, Rule 5 toxic triggers are exceeded.

This project resulted in POC emissions greater than 10 lb/day. Therefore, BACT is applicable. The HP Indigo 7000 Digital Printing Press has a BACT2 level of control.

The project is considered ministerial under District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review.

PSD, NSPS, and NESHAPs, Offsets and the public notification requirements of Regulation 2-1-412 do not apply to this precertification application. The applicability of these requirements will be determined during the completeness determination of the specific owner/operator application. If the application triggers the public notification requirements of Regulation 2-1-412, the application would not qualify for the Accelerated Permitting Program per Regulation 2-1-106.3. This restriction will be included in the precertification permit conditions.

PERMIT CONDITIONS

As required by Regulation 2-1-415.3, the following permit conditions will be imposed on the pre-certified HP Indigo 7000 digital press. Compliance with the 15.6 lb/day limit will be demonstrated on a monthly average basis, consistent with Regulation 8-20-503.3 and

Engineering Division Policy on Recordkeeping Requirements, issued February 17, 2000 by Bill deBoisblanc.

Hewlett-Packard Indigo
Model 7000 Digital Printing Press Pre-Certification
Application 22255
February 2011

The HP Indigo 7000 Digital Printing Press is Pre-Certified pursuant to Regulation 2-1-415. The Owner/Operator may submit an application for Permit to Operate, Accelerated Permitting Program. Installation and operation may begin immediately following the submission of a complete application. A temporary Permit to Operate will be issued as soon as the owner/operator's application is determined to be complete. The Owner/Operator shall comply with the attached permit conditions governing its opearation. (Basis: Regulation 2-1-302.2)

1. The Owner/Operator of the HP Indigo 7000 Digital Printing Press shall not exceed the following limits of gross material usage for each consecutive 12-month period:
   a. HP ElectroInks 75,627 pounds
   b. HP Recycle Agent and Imaging Oil 189 gallons
   c. HP Imaging Agent 67 gallons
   (Basis: Cumulative Increase)

2. The Owner/Operator of the HP Indigo 7000 Digital Printing Press shall not exceed 15.6 pounds of organic emissions per day, based on a calendar month average. (Basis: Cumulative Increase, BACT)

3. The Owner/Operator of the HP Indigo 7000 Digital Printing Press shall not operate the press within 1000 feet of any school or school grounds unless there are no Toxic Air Contaminant emissions. "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property. (Basis: Regulations 2-1-106.3, 2-1-412)

4. The owner/operator shall maintain all press doors in the closed position at all times when the press is operating. The owner/operator may open the doors to change consumables, repair paper jams, or conduct urgent maintenance. However, once the doors are opened, the press is designed to be unable to operate and the owner/operator must not defeat or in any way compromise this shutdown feature. (Basis: Cumulative Increase, BACT)

5. The owner/operator shall operate the integral oil recovery systems of the press at all times in accordance with the HP Indigo owner's manual. (Basis: Cumulative Increase, BACT)

6. The owner/operator shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, cleanup or ink removal. (Basis: Regulation 8-20-320.1)

7. The owner/operator shall not store in open containers spent or fresh organic compounds used for surface preparation, cleanup or removal of inks. (Basis: Regulation 8-20-320.2)

8. The owner/operator shall not leave containers of ink, Imaging Oil, Imaging Agent, or waste/spent organic material open when not in use. (Basis: Regulation 8-20-320.3)

9. The owner/operator shall maintain the following records in a District-approved log book, and shall make records available to District inspectors upon request:
    a. Maintain a list of all inks, coatings, adhesives, makeup solvents, and cleaning products currently in use and document the VOC content and density of each material.
    b. Record and add up on a monthly basis the type and amount (in pounds) of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month. In order to determine compliance with Part 1, HP Imaging Oil, HP Recycle Agent and HP Imaging Agent shall also be recorded in gallons.
    c. Record the total pounds of VOC of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month.
    d. Record the amount of organic material that is collected and sent off site or accumulated prior to being sent off site.
    e. For each calendar month, the owner/operator shall determine compliance with Part 2 by subtracting the total pounds of organic material recorded in Part 9d from the total pounds of VOC recorded in Part 9c, and dividing the difference by the number of days in the month.
    The owner/operator shall retain all records for a period of 36-months from the date that the records are made. (Basis: Regulation 8-20-503, BACT, Cumulative Increase)

Recommendations

It is recommended that HP Indigo be granted Pre-Certification for the:

HP Indigo 7000 Digital Printing Press

By: _____ Date: _____
Art Valla, Senior Air Quality Engineer February 18, 2011

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

March 2, 2011

HP Indigo
c/o AECOM
2101 Webster Street, Suite 1900
Oakland, CA 94612

Attention: Michael Dudasko
Senior Program Manager

Application Number: 22255
Plant Number: 20310
Equipment Location: Pre-Certification

Dear Applicant:

SUBJECT: EQUIPMENT PRE-CERTIFICATION

Your application for pre-certification has been approved for the following equipment:

S-1 HP Indigo 7000 Digital Printing Press

Operation of this equipment will be subject to permit condition no. 24841 which is attached.

Pre-certification allows proposed sources to be permitted as accelerated sources, in accordance with Regulation 2-1-106.

Renewal

This pre-certification is valid through March 1, 2012. The pre-certified printing press triggers and complies with best available control technology (BACT) and may be renewed if this continues to be the case.

Use

While the pre-certification is valid, it may be used to satisfy the requirements of Regulation 2-1-106 for proposed installations.

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

Please include your application number with any correspondence with the District. If you have any questions regarding this matter, please call **Arthur Valla, SeniorAir Quality Engineer at (415) 749-5184.**

Very truly yours

Jack P. Broadbent
Executive Officer/APCO

by
Engineering Division

BGY:APV
Attachment: Permit Condition no. 24841

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

Plant No. 20310 HP Indigo
Source No. 1, HP Indigo 7000 Digital Printing Press
Application No. 22255
Condition No. 24841

The HP Indigo 7000 Digital Printing Press is Pre-Certified pursuant to Regulation 2-1-415. The Owner/Operator may submit an application for Permit to Operate, Accelerated Permitting Program. Installation and operation may begin immediately following the submission of a complete application. A temporary Permit to Operate will be issued as soon as the owner/operator's application is determined to be complete. The Owner/Operator shall comply with the attached permit conditions governing its operation. (Basis: Regulation 2-1-302.2)

1. The Owner/Operator of the HP Indigo 7000 Digital Printing Press shall not exceed the following limits of gross material usage for each consecutive 12-month period:
   a. HP ElectroInks 75,627 pounds
   b. HP Recycle Agent and Imaging Oil 189 gallons
   c. HP Imaging Agent 67 gallons
   (Basis: Cumulative Increase)

2. The Owner/Operator of the HP Indigo 7000 Digital Printing Press shall not exceed 15.6 pounds of organic emissions per day, based on a calendar month average. (Basis: Cumulative Increase, BACT)

3. The Owner/Operator of the HP Indigo 7000 Digital Printing Press shall not operate the press within 1000 feet of any school or school grounds unless there are no Toxic Air Contaminant emissions. "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, athletic field, or other areas of school property but does not include unimproved school property. (Basis: Regulations 2-1-106.3, 2-1-412)

4. The owner/operator shall maintain all press doors in the closed position at all times when the press is operating. The owner/operator may

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

open the doors to change consumables, repair paper jams, or conduct urgent maintenance. However, once the doors are opened, the press is designed to be unable to operate and the owner/operator must not defeat or in any way compromise this shutdown feature. (Basis: Cumulative Increase, BACT)

5. The owner/operator shall operate the integral oil recovery systems of the press at all times in accordance with the HP Indigo owner's manual. (Basis: Cumulative Increase, BACT)

6. The owner/operator shall not use open containers for the storage or disposal of cloth or paper impregnated with organic compounds that are used for surface preparation, cleanup or ink removal. (Basis: Regulation 8-20-320.1)

7. The owner/operator shall not store in open containers spent or fresh organic compounds used for surface preparation, cleanup or removal of inks. (Basis: Regulation 8-20-320.2)

8. The owner/operator shall not leave containers of ink, Imaging Oil, Imaging Agent, or waste/spent organic material open when not in use. (Basis: Regulation 8-20-320.3)

9. The owner/operator shall maintain the following records in a District-approved log book, and shall make records available to District inspectors upon request:
   a. Maintain a list of all inks, coatings, adhesives, makeup solvents, and cleaning products currently in use and document the VOC content and density of each material.
   b. Record and add up on a monthly basis the type and amount (in pounds) of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month. In order to determine compliance with Part 1, HP Imaging Oil, HP Recycle Agent and HP Imaging Agent shall also be recorded in gallons.

BAY AREA
AIR QUALITY
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c. Record the total pounds of VOC of each ink, coating, adhesive, makeup solvent, surface preparation solvent, and cleaning product used during that month.
d. Record the amount of organic material that is collected and sent off site or accumulated prior to being sent off site.
e. For each calendar month, the owner/operator shall determine compliance with Part 2 by subtracting the total pounds of organic material recorded in Part 9d from the total pounds of VOC recorded in Part 9c, and dividing the difference by the number of days in the month.

The owner/operator shall retain all records for a period of 36-months from the date that the records are made. (Basis: Regulation 8-20-503, BACT, Cumulative Increase)

End of Conditions

AIR QUALITY
Department

ONE STOP SHOP

RECEIPT #: AQ16003596

TRANSACTION DATE: 07/01/2016
TRACKING #: AQ16001498 **TYPE:** Air Quality Fees
SITE ADDRESS:
PARCEL:
PERMIT NUMBER/APPLICATION ID #: 150063-413816

PROJECT NAME: SHUTTERFLY INC

APPLICANT NAME: SHUTTERFLY, INC

TRANSACTION AMOUNT: 200.00
NOTATION:

TRANSACTION LIST

Type	Method	Description	Amount
Payment	Check	20571975	200.00

RECEIPT ACCOUNT ITEM LIST

Item#	Description	Account Code	Tot Fee	Paid	Prv. Pmts	Cur. Pmts
7110	Non-V/Gen Engin	504D8508550S	200.00	200.00	.00	200.00

BALANCE DUE: $0.00