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SECTION 1 -- CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CODE: 1600

TRADE NAME...: POWERPRINT(R) UV RETAIL DISPLAY SCREEN INK

- H M I S C O D E S -
HEALTH - 2
FLAMMABILITY - 1
REACTIVITY - 1
PPE - X

PRODUCT CLASS: ULTRAVIOLET CURABLE SCREEN INK

INK SERIES...:

-----Item Description-----	WT lb/gal	VOC g/L	VOC lb/gal	% VOC volume	-----Item Description-----	WT lb/gal	VOC g/L	VOC lb/gal	% VOC volume
1610 PRIMROSE YELLOW	9.5	1	.0	0	1611 LEMON YELLOW	9.2	1	.0	0
1612 MEDIUM YELLOW	9.2	1	.0	0	1613 EMERALD GREEN	9.2	1	.0	0
1619 FIRE RED	9.1	1	.0	0	1620 BRILLIANT ORANGE	9.2	1	.0	0
1626 MIXING CLEAR	9.1	1	.0	0	1627 OVERPRINT CLEAR	9.0	1	.0	0
1636 METALLIC MIXING CLEAR	9.1	1	.0	0	1652 SUPER OPAQUE BLACK	9.2	3	.0	0
1667 REFLEX BLUE	9.3	1	.0	0	1668 PROCESS BLUE	9.4	1	.0	0
1675 SUPER OPAQUE WHITE	10.8	1	.0	0	1678 HIGH INTENSITY WHITE	12.0	1	.0	0
1679 HIGH INTENSITY BLACK	9.2	4	.0	0	1698 BRIGHT WHITE	13.4	1	.0	0
16120 HALFTONE EXT BASE LTR	9.2	1	.0	0	16121 HALFTONE CYAN LTR	9.2	1	.0	0
16122 ECONOMY HT MAGENTA LTR	9.1	1	.0	0	16123 ECONOMY HT YELLOW LTR	9.2	1	.0	0
16124 HALFTONE BLACK LTR	9.1	1	.0	0	16127 HALFTONE YELLOW LTR	9.2	1	.0	0
16128 HALFTONE MAGENTA LTR	9.2	1	.0	0	16131 HT CYAN DENSE LTR	9.2	1	.0	0
16132 ECONOMY HT MAG DENS LTR	9.2	1	.0	0	16133 ECONOMY HT YEL DENS LTR	9.2	1	.0	0
16134 HT BLACK DENSE LTR	9.1	1	.0	0	16135 HT YELLOW DENSE RS LTR	9.2	1	.0	0
16136 HT HIGH INTEN BLACK LTR	9.2	4	.0	1	16137 HT YELLOW DENSE LTR	9.3	1	.0	0
16138 HT MAGENTA DENSE LTR	9.2	1	.0	0	16140 HALFTONE EXT BASE MTR	9.1	1	.0	0
16141 HALFTONE CYAN MTR	9.1	1	.0	0	16142 ECONOMY HT MAGENTA MTR	9.1	1	.0	0
16143 ECONOMY HT YELLOW MTR	9.2	1	.0	0	16144 HALFTONE BLACK MTR	9.1	1	.0	0
16147 HALFTONE YELLOW MTR	9.2	1	.0	0	16148 HALFTONE MAGENTA MTR	9.2	1	.0	0
16151 HALFTONE CYAN DENSE MTR	9.1	1	.0	0	16152 ECONOMY HT MAG DENSE MTR	9.2	1	.0	0
16153 ECONOMY HT YEL DENSE MTR	9.3	1	.0	0	16154 HT BLACK DENSE MTR	9.2	1	.0	0
16155 HT YELLOW DENSE RS MTR	9.1	1	.0	0	16156 HT HIGH INTEN BLACK MTR	9.3	4	.0	1
16157 HT YELLOW DENSE MTR	9.3	1	.0	0	16158 HT MAGENTA DENSE MTR	9.2	1	.0	0
16358 TINTING WHITE	10.4	1	.0	0	16359 TINTING BLACK	9.1	3	.0	0
16360 ORANGE	9.3	1	.0	0	16361 YELLOW	9.2	1	.0	0
16362 WARM RED	9.1	1	.0	0	16363 RUBINE RED	9.2	1	.0	0
16364 RHODAMINE RED	9.1	1	.0	0	16365 PURPLE	9.1	1	.0	0
16366 VIOLET	9.1	1	.0	0	16367 REFLEX BLUE	9.2	1	.0	0
16368 PROCESS BLUE	9.1	1	.0	0	16369 GREEN	9.3	3	.0	0
M1626 MATTE MIXING CLEAR	10.3	1	.0	0	M1627 MATTE OVERPRINT CLEAR	10.3	1	.0	0
M1652 MATTE OPAQUE BLACK	10.5	1	.0	0	M1675 MATTE OPAQUE WHITE	11.7	1	.0	0
M1679 HIGH INTENSITY BLACK	10.4	1	.0	0	M1690 HT MATTE EXTENDER BASE	10.5	1	.0	0
M1691 HT MATTE CYAN	10.6	1	.0	0	M1692 HT MATTE MAGENTA	10.6	1	.0	0
M1693 HT MATTE YELLOW	10.6	1	.0	0	M1694 HT MATTE BLACK	10.6	1	.0	0
M16358 MATTE TINTING WHITE	11.1	1	.0	0	M16359 MATTE TINTING BLACK	10.5	1	.0	0
M16360 MATTE ORANGE	10.4	1	.0	0	M16361 MATTE YELLOW	10.3	1	.0	0
M16362 MATTE WARM RED	10.3	1	.0	0	M16363 MATTE RUBINE RED	10.3	1	.0	0
M16364 MATTE RHODAMINE RED	10.3	1	.0	0	M16365 MATTE PURPLE	10.3	1	.0	0
M16366 MATTE VIOLET	10.4	1	.0	0	M16367 MATTE REFLEX BLUE	10.5	1	.0	0
M16368 MATTE PROCESS BLUE	10.5	1	.0	0	M16369 MATTE GREEN	10.5	1	.0	0
16EC127 ECONO HT YELLOW LTR	9.2	1	.0	0	16EC128 ECONO HT MAGENTA LTR	9.2	1	.0	0
16EC137 ECONO HT YEL DENS LTR	9.2	1	.0	0	16EC138 ECONO HT MAG DENS LTR	9.2	1	.0	0
16EC147 ECONO HT YELLOW MTR	9.2	1	.0	0	16EC148 ECONO HT MAGENTA MTR	9.1	1	.0	0
16EC157 ECONO HT YEL DENS MTR	9.2	1	.0	0	16EC158 ECONO HT MAG DENS MTR	9.2	1	.0	0

SECTION 2 -- COMPOSITION, INFORMATION ON INGREDIENTS

CHEMICAL NAME; COMMON NAME; CAS NUMBER	PERCENT BY WEIGHT	OCCUPATIONAL EXPOSURE LIMITS		VAPOR PRESSURE IN mmHg	NOTES
		-----ACGIH----- TLV	-----OSHA----- PEL		
ACRYLATES; MIXTURES; CAS #: NOT AVAILABLE	10-60	NOT ESTABLISHED	NOT ESTABLISHED	N/A	

* GLYCOL ETHER ACRYLATE; GLYCOL ETHER COMPOUND CAS #: NOT AVAILABLE	10-35	NOT ESTABLISHED	NOT ESTABLISHED	N/A	(1)
RESIN MIXTURES; CAS #: NOT AVAILABLE	< 30	NOT ESTABLISHED	NOT ESTABLISHED	<1 @ 20C	
PHOTOINITIATORS; MIXTURE; CAS #: NOT AVAILABLE	< 15	NOT ESTABLISHED	NOT ESTABLISHED	N/A	
TITANIUM DIOXIDE; CAS #: 13463-67-7	0-55	10 mg/m3	10 mg/m3	N/A	
PIGMENTS; MIXTURE; CAS #: NOT AVAILABLE	0-40	10 mg/m3	15 mg/m3 Total dust	N/A	(2)
2H-AZEPIN-2-ONE,1-ETHENYLHEXAHYDRO-; N-VINYLCAPROLACTAM; CAS #: 2235-00-9	0-20	NOT ESTABLISHED	NOT ESTABLISHED	0.1 @ 20C	
SILICA, AMORPHOUS; CAS #: 112926-00-8	0-15	10 mg/m3	6 mg/m3	N/A	(3)
CARBON BLACK; PIGMENT BLACK; CAS #: 1333-86-4	0-10	3.500 mg/m3	3.500 mg/m3	N/A	
SILICON DIOXIDE; AMORPHOUS FUMED SILICA; CAS #: 112945-52-5	0-5	NOT ESTABLISHED	20 mppcf	N/A	(4)
TRIETHANOLAMINE; ALKANOLAMINE; CAS #: 102-71-6	0-5	5 mg/m3	NOT ESTABLISHED	<0.01 @ 20C	

* SUBJECT TO REPORTING REQUIREMENT OF SECTION 313 OF TITLE III OF SARA (40 CFR PART 372).

- 1) This chemical is included on the list of Hazardous Air Pollutants (HAPs) from Title III of the Clean Air Act Amendments of 1990 (Glycol Ethers Category).
The above glycol ether acrylate is considered a reactive chemical in ultraviolet curable inks. Once initiated by a high dose of ultraviolet light, this glycol ether acrylate rapidly polymerizes (i.e. hardens) and becomes part of the ink film. The polymerization process of UV curable inks is measured in milliseconds.
- 2) The above ACGIH TLV exposure limit of 10 mg/m3 is for inhalable fraction. See Section 8 Exposure Controls, Personal Protection - Exposure Guidelines for more information on exposure limits.
- 3) Exposure limits are for Particulates Not Otherwise Regulated (PNOR).
When referencing TSCA, use Silica CAS# 7631-86-9. CAS# 112926-00-8 was created to help further categorize the family of Silica. It has not yet been listed on TSCA.
- 4) When referencing TSCA, use Silica CAS# 7631-86-9. CAS# 112945-52-5 was created to help further categorize the family of Silica. It has not yet been listed on TSCA.

The recommended permissible exposure limits (PEL) indicated above reflect the levels adopted by OSHA in 1989. Although, some of the 1989 levels have since been vacated, the Nazdar Company recommends that the lower exposure levels be observed as reasonable worker protection.

SECTION 3 -- HAZARDS IDENTIFICATION

GENERAL HEALTH EFFECTS

THE FOLLOWING INFORMATION HAS BEEN DEVELOPED BASED UPON USING THE PRODUCT AS INTENDED BY THE MANUFACTURER. The potential health effects of this product are based on the hazards of its components. The use of this product in combination with other products may produce synergistic (additive) health effects. Cautionary labeling and material safety data sheets of all materials used with this product should be reviewed before use.

EYES

Eye contact with liquid, vapors or mists may cause moderate to severe irritation, including burning, tearing, redness or swelling and reversible eye damage.

SKIN

Skin contact may cause moderate to severe skin injury including reddening and swelling. Repeated and prolonged skin contact may cause blister formation (burns), dermatitis, allergic reaction and/or sensitization. Effects may be delayed and persist for several days. This material may be absorbed through the skin.

INHALATION

Low volatility at room temperature makes vapor inhalation unlikely. Aerosols or vapors which may be generated at elevated processing temperatures may cause respiratory tract irritation. Symptoms may include headaches, nausea, dizziness and intoxication.

INGESTION

Ingestion may cause gastrointestinal tract irritation.

CHRONIC EFFECTS/TARGET ORGANS

No Data Available

ANIMAL STUDIES

No Data Available

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Pregnant women and persons with pre-existing health disorders should consult their physician before using this product. Repeated and prolonged overexposure and/or individual sensitivity may increase the potential for and degree of adverse health effects. See Section 3 "Hazards Identification" for effects of certain hazardous ingredients.

ROUTES OF EXPOSURE

Primary exposure routes: Dermal (Contact/Absorption)- Inhalation-Ingestion Due to the low vapor pressure of this product, minimal volatilization and/or evaporation are expected under normal screen printing conditions.

SECTION 4 -- FIRST AID MEASURES

EYES

After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. If irritation persists have eyes examined and tested by medical personnel.

SKIN

In case of contact, immediately wash skin with a mild soap and plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Cool water is initially suggested to prevent the pores of the skin from opening. This will minimize both the area and time of skin contact. Lukewarm water may then be used to ensure all contaminants are removed. Skin should be monitored for reddening or chemical burns. Mild soap is suggested to help prevent abrading the skin or rubbing the chemicals into pores during cleansing. Get medical attention if irritation persists or significant contact has occurred. Thoroughly wash (or discard) clothing and shoes before reuse.

INHALATION

Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention if breathing difficulty is experienced.

INGESTION

If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person.

OTHER COMMENTS

No Data Available

SECTION 5 -- FIRE FIGHTING MEASURES

FLASH POINT

Greater than 200 Degrees Fahrenheit (PMCC)

OSHA FLAMMABILITY CLASSIFICATION (NFPA)

Class IIIB Combustible Liquid

LEL - LOWER EXPLOSIVE LIMIT / UEL - UPPER EXPLOSIVE LIMIT

1.4% volume in air / No Data Available

EXTINGUISHING MEDIA

Foam-CO2-Dry Chemical-Water Spray

FIRE AND EXPLOSION HAZARDS

Isolate from heat electrical equipment, sparks, and open flame. Keep containers tightly closed. Exposure to thermal decomposition products may be hazardous. High temperatures and fire conditions may cause rapid and uncontrolled polymerization which can result in explosions and violent rupture of storage containers.

FIRE FIGHTING EQUIPMENT

Full protective equipment including self-contained breathing apparatus (SCBA) is recommended to protect firefighters.

SPECIAL FIRE FIGHTING PROCEDURES

Water may be ineffective but may be used to cool containers. Fumes released on burning may be toxic and dangerous.

SECTION 6 -- ACCIDENTAL RELEASE MEASURES

RELEASE MANAGEMENT MEASURES

Remove all sources of ignition (flames, hot surfaces and electrical, static or frictional sparks). Avoid contact or breathing vapors. Ventilate area. Contain release and remove with inert absorbent. Use non-sparking tools to place material in appropriate container for disposal. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. The National Response Center (800-424-8802) and local authorities should be contacted for any reportable spill/release.

SECTION 7 -- HANDLING AND STORAGE

HANDLING AND STORAGE METHODS

Store closed containers between 50 and 90 F and away from direct sunlight. Use in a well ventilated area. Follow all MSDS/label precautions even after container is emptied; container may retain product residues. Keep containers closed when not in use. Smoke in designated areas only. Avoid contact with this product. Remove contaminated clothing immediately and wash before reuse. This product may penetrate leather; discard contaminated shoes. Keep out of the reach of children. Follow label directions carefully. Do not take internally. Harmful or fatal if swallowed.

SECTION 8 -- EXPOSURE CONTROLS, PERSONAL PROTECTION

RESPIRATORY PROTECTION

If concentrations of hazardous ingredients exceed exposure limits listed in Section 2 an appropriate NIOSH (National Institute for Occupational Safety and Health) approved respirator with an organic vapor cartridge should be used. If material is handled under mist, spray or dust forming conditions, a P100 (99.97% efficiency) filter should be used in addition to the organic vapor cartridge. Protection provided by air-purifying respirators is limited. If no exposure limits are listed in Section 2, follow general safety guidelines in 29 CFR 1910.134 Respiratory Protection or other applicable respiratory standard.

SKIN PROTECTION

Use neoprene, nitrile or other gloves resistant to chemicals listed in Section 2. Avoid any contact with skin. Gloves should be worn at all times. Contact a reputable safety supply company for appropriate gloves. Solvent resistant aprons are recommended. Prevent prolonged skin contact with contaminated clothing.

EYE PROTECTION

Use ANSI (American National Standards Institute) approved safety glasses, faceshield or splash proof goggles to prevent eye contact. Contact a reputable safety supply company for appropriate eye protection. The availability of an eye wash is highly recommended.

EXPOSURE GUIDELINES

See Section 2 "Composition, Information on Ingredients" for occupational exposure limits. Excessive concentrations of nuisance dusts or particulates not otherwise classified (PNOC) or regulated (PNOR) may reduce visibility and cause unpleasant deposits in the eyes, ears, and nasal passages. The TLV and PEL has been established for all non-toxic "nuisance dusts" that are not otherwise classified and refers to both organic and inorganic dusts. Exposure or generation of these dusts is not anticipated during normal printing operations. The use of dry pigments and powders, grinding or sanding of printed products may generate quantities of these particulates. Refer to Section 2 Composition, Information on Ingredients for exposure limits.

HYGIENIC PRACTICES

Wash with soap and water before eating, smoking or using toilet facilities. Separately wash or discard clothing and footwear before reuse. NEVER try to remove product from the skin by using solvent or thinner. Such action is likely to increase the possibility of undesirable effects. Remove contaminated clothing to prevent prolonged skin contact.

ENGINEERING CONTROLS

Use applicable engineering controls, work practices and personal protective equipment to ensure all concentrations are kept below the exposure limits listed in Section 2. Adequate controls should be implemented to ensure employee safety from fine mists which may be produced under some printing conditions.

OTHER PROTECTION

UV EQUIPMENT NOTES: UV reactors used in the curing of this product produce ultraviolet radiation which can cause adverse biological effects. Typical symptoms resemble those of sunburn (skin redness and drying; eye inflammation, pain, tearing, temporary blindness, etc.). Basic exposure controls and personal protective equipment should minimize this hazard. Equipment should be supplied with protective mechanisms and should not be removed. ACGIH and NIOSH have established exposure limits for UV light. These exposure limits are designed to prevent skin and eye effects in most workers. Sensitized individuals may exhibit effects at lower exposures and should be isolated from UV light sources. Ozone is created when UV energy mixes with oxygen. Ozone produced by the equipment lamp should not be inhaled and should be vented outdoors. UV reactors should have ventilation systems installed to safely remove ozone. These systems should be inspected regularly. Consult your equipment supplier for further details.

SECTION 9 -- PHYSICAL AND CHEMICAL PROPERTIES

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APPEARANCE:

Viscous liquid

ODOR:
Mild, sweet acrylic

PHYSICAL STATE:
Liquid

pH
Not applicable

VAPOR PRESSURE
See Section 2 for individual ingredients.

VAPOR DENSITY
Heavier than air

BOILING POINT
Greater than 300 degrees Fahrenheit

FREEZING POINT
Not available

SOLUBILITY IN WATER
Not tested

EVAPORATION RATE
Slower than ether

VISCOSITY
Greater than water

PERCENT VOLATILE BY VOLUME: SEE SECTION ONE

WEIGHT PER GALLON: SEE SECTION ONE

VOC: SEE SECTION ONE

PHOTOCHEMICALLY REACTIVE
No

Percent VOC = Negligible

SECTION 10 -- STABILITY AND REACTIVITY

CHEMICAL STABILITY
Stable

CONDITIONS TO AVOID
High temperature, UV and EB radiation.

INCOMPATIBILITY WITH OTHER MATERIALS
Strong acids/bases, oxidizing/reducing agents and reactive chemicals.

HAZARDOUS DECOMPOSITION PRODUCTS
May produce hazardous fumes when heated to decomposition e.g. carbon monoxide, carbon dioxide and other noxious gases.

HAZARDOUS POLYMERIZATION
Not anticipated during normal printing and storage conditions. May occur if product is exposed to unusually high temperatures (>200 F).

SECTION 11 -- TOXICOLOGICAL INFORMATION

EXPERIMENTAL TOXICITY DATA
Refer to Section 3 Hazards Identification for additional toxicological data.

SECTION 12 -- ECOLOGICAL INFORMATION

ECOTOXICITY
Because this product may be a mixture of chemicals, some of which may be ecologically toxic, it is strongly suggested that it not be disposed of into the environment, i.e. soil, water courses, lakes, landfills, sewers, etc.

ENVIRONMENTAL FATE
No Data Available

SECTION 13 -- DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

This product, as supplied, is considered non-hazardous for disposal purposes by the U.S. Environmental Protection Agency Resource Conservation and Recovery Act (RCRA). If combined with other products, the user should determine if hazardous waste codes are required. It is the responsibility of the user to determine if local, county, state, or provincial regulations may also apply to the disposal of this product and/or the container.

SECTION 14 -- TRANSPORT INFORMATION

TRANSPORT INFORMATION

Not regulated. The product(s) described by this Material Safety Data Sheet do not meet the definition of nor are they classified as a hazardous material/dangerous good as defined by the United States Department of Transportation (DOT), the International Civil Aviation Organization (ICAO), the International Maritime Organization (IMO) or the Canadian Transportation of Dangerous Goods Act (TDG). Questions concerning transportation requirements should be directed to Nazdar's Regulatory Compliance Department 913-422-1735.

SECTION 15 -- REGULATORY INFORMATION

SARA TITLE III 313 INFORMATION

See Section 2 "Composition, Information on Ingredients" for applicable chemicals.

TOXIC SUBSTANCES CONTROL ACT STATUS

All ingredients in Section 2 are listed on the U.S. Environmental Protection Agency's Toxic Substances Control Act (TSCA) Inventory and the Canadian Domestic Substance List.

OTHER REGULATORY INFORMATION

OCCUPATIONAL SAFETY and HEALTH ADMINISTRATION (OSHA) - MSDS is compliant with Occupational Safety and Health Administration Hazard Communication Standard - 29 CFR 1910.1200. AMERICAN NATIONAL STANDARDS INSTITUTE - This MSDS follows the ANSI Z400.1-1998 format. WORKPLACE HAZARDOUS MATERIAL INFORMATION SYSTEM (WHMIS) - This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS CLASSIFICATION (CANADA):

D2B _ Materials causing other toxic effects, toxic material;

SECTION 16 -- OTHER INFORMATION

DISCLOSURE

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind express or implied is made with respect to the information contained herein. The data in this MSDS relates only to the specific material designated herein and does not apply to use in combination with any other material or process.

DEFINITIONS

ACGIH: American Conference of Governmental Industrial Hygienists

AIHA: American Industrial Hygiene Association

CEILING: (TLV-Ceiling and PEL Ceiling Limit) The ceiling exposure limit or concentration not to be exceeded for even brief times.

DOT: Department of Transportation

HMIS: The Hazardous Materials Identification System (HMIS) developed by the National Paint and Coatings Association (NPCA) to provide information on the acute health hazards, reactivity and flammability of products encountered in the workplace at room temperatures.

HMIS codes assigned for this product are only suggested ratings based on anticipated normal screen printing applications. The employer has the ultimate responsibility for assigning these ratings and should fully evaluate the MSDS, work practices and environmental conditions prior to assigning the appropriate ratings.

HMIS rating involves data interpretations that may vary from company to company.

HMIS Personal Protection Index of "X-Ask your supervisor" is given on this MSDS due to varying work conditions which may dictate different levels of protection. Please review this MSDS before determining appropriate protective equipment and beginning work.

IARC: International Agency for Research on Cancer

NFPA: National Fire Protection Association

NTP: National Toxicology Program

STEL: Short-Term Exposure Limit: ACGIH terminology for the short-term exposure limit or maximum concentration for a continuous exposure period of 15 minutes.

TLV: Threshold Limit Value. A term ACGIH uses to express the airborne concentration of a material to which most workers can be exposed during a normal daily and weekly work schedule without adverse effects.

TWA: Time-Weighted Average

VOC: Volatile Organic Compound