

MATERIAL SAFETY DATA SHEET

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SECTION 1 -- CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

CODE: ADENL

TRADE NAME...: ADE SERIES EPOXY SCREEN INK

- H M I S C O D E S -  
HEALTH - 1\*  
FLAMMABILITY - 2  
REACTIVITY - 0  
PPE - X

PRODUCT CLASS: 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
ADE10 PRIMROSE YELLOW	10.2	375	3.1	40	ADE11 LEMON YELLOW**	10.1	373	3.1	40
ADE12 MEDIUM YELLOW	9.9	367	3.1	39	ADE15 YELLOW (GS)	11.8	384	3.2	41
ADE16 YELLOW (RS)	9.6	365	3.0	39	ADE19 FIRE RED	9.0	435	3.6	46
ADE20 BRILLIANT ORANGE	9.1	435	3.6	46	ADE22 ULTRA BLUE**	9.4	402	3.4	43
ADE26 MIXING/METALLIC CLEAR	9.1	412	3.4	44	ADE52 OPAQUE BLACK	9.3	394	3.3	42
ADE62 WARM RED	9.1	402	3.4	43	ADE67 REFLEX BLUE	9.1	456	3.8	49
ADE75 OPAQUE WHITE	11.8	367	3.1	39	ADE78 HIGH INTENSITY WHITE	12.9	373	3.1	40
ADE80 PROCESS YELLOW	9.1	395	3.3	42	ADE81 ORANGE*	9.1	447	3.7	48
ADE82 CARMINE	9.2	390	3.3	41	ADE83 MAGENTA	9.0	484	4.0	51
ADE84 MAROON*	9.2	394	3.3	42	ADE85 GREEN	9.3	425	3.5	45
ADE86 BLUE (GS)	9.1	480	4.0	51	ADE87 BLUE (RS)	9.0	475	4.0	50
ADE88 VIOLET	9.0	436	3.6	46	ADE89 RED TONER	9.1	450	3.8	48
ADE90 HEAVY BODY BASE	9.5	381	3.2	41	ADE315 EMERALD GREEN*	9.4	391	3.3	42
ADE358 TINTING WHITE	12.9	373	3.1	40	ADE359 TINTING BLACK	9.1	405	3.4	43
ADE360 ORANGE	9.2	415	3.5	44	ADE361 YELLOW	9.1	398	3.3	42
ADE362 WARM RED	9.1	401	3.3	43	ADE363 RUBINE RED	9.0	443	3.7	47
ADE364 RHODAMINE RED	9.0	443	3.7	47	ADE365 PURPLE	9.0	438	3.7	47
ADE366 VIOLET	9.1	404	3.4	43	ADE367 REFLEX BLUE	9.1	403	3.4	43
ADE368 PROCESS BLUE	9.1	399	3.3	42	ADE369 GREEN	9.2	416	3.5	44
ADE405 BRILLIANT BLUE*	9.4	397	3.3	42	ADE435 REGAL BLUE*	9.3	396	3.3	42
ADE456 HT PROCESS BLUE	9.2	395	3.3	42	ADE503 PERMANENT RED Y*	9.1	398	3.3	42
ADE538 PERMANENT RED B*	9.1	397	3.3	42	ADE568 PERMANENT MAGENTA*	9.7	390	3.3	42
ADE578 PERMANENT CERISE*	9.6	393	3.3	42	ADE586 PERMANENT PROCESS RED	9.1	399	3.3	43

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		
RESIN MIXTURES; CAS #: NOT AVAILABLE	31-57	NOT ESTABLISHED	NOT ESTABLISHED	<1 @ 20C	
DIPROPYLENE GLYCOL METHYL ETHER; ALIPHATIC GLYCOL ETHER; CAS #: 34590-94-8	12-26	100 ppm STEL: 150 ppm Skin	100 ppm STEL: 150 ppm Skin	0.4 @ 25C	
DIACETONE ALCOHOL; 4-HYDROXY-4-METHYL-2-PENTANONE; CAS #: 123-42-2	6-13	50 ppm	50 ppm	1.0 @ 20C	
PROPYLENE GLYCOL METHYL ETHER; PM SOLVENT; CAS #: 107-98-2	3-6	100 ppm STEL: 150 ppm	100 ppm STEL: 150 ppm	8.0 @ 20C	
TITANIUM DIOXIDE; CAS #: 13463-67-7	0-42	10 mg/m3	10 mg/m3	N/A	
* VANADIUM COMPOUNDS; CAS #: 7440-62-2	0-26	NOT ESTABLISHED	NOT ESTABLISHED	N/A	
PIGMENTS; MIXTURE; CAS #: NOT AVAILABLE	0-19	10 mg/m3	15 mg/m3 Total dust	N/A	( 1)

SILICON DIOXIDE; AMORPHOUS FUMED SILICA; CAS #: 112945-52-5	0-12	NOT ESTABLISHED	20 mppcf	N/A	( 2)
CARBON BLACK; PIGMENT BLACK; CAS #: 1333-86-4	0-8	3.500 mg/m3	3.500 mg/m3	N/A	
* XYLENE; DIMETHYLBENZENE; CAS #: 1330-20-7	0-3	100 ppm STEL: 150 ppm	100 ppm STEL: 150 ppm	6.6 @ 20C	( 3)
* TOLUENE; METHYLBENZENE; CAS #: 108-88-3	0-2	50 ppm	100 ppm STEL: 150 ppm	24 @ 20C	( 4)
ZINC COMPOUNDS; CAS #: 7440-66-6	0-2	10 mg/m3 Total dust	15 mg/m3 Total dust	N/A	( 5)
* ETHYL BENZENE; CAS #: 100-41-4	0-.75	100 ppm STEL: 125 ppm	100 ppm STEL: 125 ppm	7.1 @ 20C	( 6)

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

- 1) 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.
- 2) 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.
- 3) This chemical is included on the list of Hazardous Air Pollutants (HAPs) from Title III of the Clean Air Act Amendments of 1990.
- 4) This chemical is included on the list of Hazardous Air Pollutants (HAPs) from Title III of the Clean Air Act Amendments of 1990.
- 5) See Section 8 Exposure Controls, Personal Protection - Exposure Guidelines for more information on above exposure limits.
- 6) This chemical is included on the list of Hazardous Air Pollutants (HAPs) from Title III of the Clean Air Act Amendments of 1990.

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.

NOTE: Due to the broad spectrum of colors each MSDS may represent, ranges of some ingredients listed in Section 2 may exceed those specified in the Canadian Controlled Product Regulations. If specific concentration information is needed to comply with this regulation contact Nazdar's Regulatory Compliance Department at 913-422-1735.

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 irritation, including burning, tearing, redness or swelling.

SKIN

Skin contact may cause irritation. Symptoms may include dryness, chapping and redness. Skin absorption is possible but harmful effects are not expected from this route of exposure under normal conditions of handling and use.

INHALATION

Inhalation may cause respiratory tract irritation. Symptoms may include drowsiness.

INGESTION

Ingestion may cause gastrointestinal tract irritation.

CHRONIC EFFECTS/TARGET ORGANS

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Toluene has been associated with liver, kidney and brain damage in humans after intentional misuse by deliberately inhaling. Studies have shown that toxic effects from toluene overexposure during pregnancy may be harmful to the fetus. Overexposure to this material has been suggested as a cause of cardiac sensitization in humans. Ethylbenzene is possibly carcinogenic to humans (IARC Group 2B).

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**ANIMAL STUDIES**

Dipropylene glycol methyl ether has been suggested to cause the following effects, after overexposure, in lab animals, and may aggravate pre-existing disorders of these organs in humans; mild, reversible liver and kidney effects. Diacetone alcohol has been found to cause kidney and liver injury and blood disorders in lab animals. Propylene glycol methyl ether has been suggested to cause liver abnormalities and kidney damage in lab animals. Xylene causes harm to the fetus in lab animal studies. The relevance of these findings to humans is uncertain. Repeated and prolonged overexposure to high concentrations of xylene has been suggested to cause the following effects in laboratory animals; hearing loss, mild reversible liver effects, kidney, lung, heart, spleen and nervous system effects. Repeated exposure to toluene has been associated with high frequency hearing loss in lab animals. For animal studies, reference TSCA Section 4 Test Rule Results or contact the manufacturer for further details.

**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: Inhalation-Dermal (Contact/Absorption)-Ingestion

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**SECTION 4 -- FIRST AID MEASURES**

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**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

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**SECTION 5 -- FIRE FIGHTING MEASURES**

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**FLASH POINT**

125 Degrees Fahrenheit (SETA Flash)

**OSHA FLAMMABILITY CLASSIFICATION (NFPA)**

Class II Combustible Liquid

**LEL - LOWER EXPLOSIVE LIMIT / UEL - UPPER EXPLOSIVE LIMIT**

1.0% 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. Vapors may be heavier than air and can travel to a source of ignition then flash back. Closed containers may explode when exposed to extreme heat.

**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.

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**SECTION 6 -- ACCIDENTAL RELEASE MEASURES**

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**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

Use in a well ventilated area. Follow all MSDS/label precautions even after container is emptied; container may retain product residues. Store in closed containers in cool, dry, well ventilated area away from sources of ignition. Keep containers closed when not in use. Smoke in designated areas only. Avoid prolonged or repeated overexposure to this product. Keep out of 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. 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

No Data Available

SECTION 9 -- PHYSICAL AND CHEMICAL PROPERTIES

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APPEARANCE:

Viscous liquid

ODOR:

Characteristic

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**

Yes

Percent volatile = Percent VOC

SECTION 10 -- STABILITY AND REACTIVITY

**CHEMICAL STABILITY**

Stable

**CONDITIONS TO AVOID**

Avoid excessive heat, ignition sources, sparks and open flame.

**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.

SECTION 11 -- TOXICOLOGICAL INFORMATION

**EXPERIMENTAL TOXICITY DATA**

Refer to Section 3 Hazards Identification for additional toxicological data. Experimental toxicity data on dipropylene glycol methyl ether has given the following results: Oral LD50 Rat; 5.4 ml/kg; Dermal LD50 Rabbit; > 20 ml/kg. Experimental toxicity data on diacetone alcohol has given the following results: Intraperitoneal LD50 Mouse; 933 mg/kg. Oral LD50 Rat; 4 g/kg; Dermal LD50 Rabbit; 13.6 g/kg. Experimental toxicity data on propylene glycol methyl ether has given the following results: Oral LD50 Rat; 6.6 ml/kg; Dermal LD50 Rabbit; 12 ml/kg. Experimental toxicity data on xylene has given the following results: Oral LD50 Rat; 4300 mg/kg; Inhalation LC50 Rat; 6700 ppm. Experimental toxicity data on toluene has given the following results: Oral LD 50 Rat; 5000 mg/kg; Inhalation LC50 Rat; 8800 ppm; Dermal LD50 Rabbit; 14 g/kg.

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 is considered hazardous for disposal purposes by the U.S. Environmental Protection Agency Resource Conservation and Recovery Act (RCRA). Contact Nazdar's Regulatory Compliance Department or refer to the regulations located in 40 CFR Part 261 for additional waste disposal information, including appropriate hazardous waste codes. 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 container. Empty containers may retain hazardous properties and should be disposed of in an environmentally safe manner in accordance with applicable regulations.

SECTION 14 -- TRANSPORT INFORMATION

TRANSPORT INFORMATION

DOT Proper Shipping Description: Printing Ink, 3, UN1210, PG III. In the U.S. and Canada, this material may be reclassified as a combustible liquid and is not regulated, via surface transportation, in containers less than 119 gallons or 450 liters [per 49 CFR 173.150(f)] [per Transportation of Dangerous Goods Regulations/Clear Language Part 1.33]. 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):

B3 Combustible Liquids; D2A \_ Materials causing other toxic effects, very toxic material; 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

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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