

M A T E R I A L S A F E T Y D A T A S H E E T

I. IDENTIFICATION

MANUFACTURED BY: Diamond Vogel Paint
2100 North Second Street
Minneapolis, MN 55414

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24 Hour Emergency Telephone
CHEMTREC 1-800-424-9300

General Information:
Mon-Fri 8 AM - 5 PM
712-737-4993

TRADE NAME: High Solids Miracle Glaze Urethane

MFG. PRODUCT NUMBER: LG-0414

PROPER SHIPPING NAME: PAINT

II. HAZARDOUS INGREDIENTS

CAS #584-84-9	Toluene Diisocyanate	WT %:	20-50
ACGIH TLV:	0.005 ppm tw	ACGIH STEL:	.02 ppm
OSHA PEL:		OSHA CEILING:	.02 ppm
VAPOR PRESSURE:	.01 mm Hg _{20c}	LEL%:	
		OSHA PEAK:	
CAS #1330-20-7	Xylene	WT %:	20-50
ACGIH TLV:	100 ppm TWA	ACGIH STEL:	150 ppm
OSHA PEL:	100 ppm TWA	OSHA CEILING:	
VAPOR PRESSURE:	6.6mmHg@20C	LEL%:	1.0%
		OSHA PEAK:	
CAS #100-41-4	Ethyl Benzene	WT %:	5-20
ACGIH TLV:	100 ppm TWA	ACGIH STEL:	125 ppm
OSHA PEL:	100 ppm TWA	OSHA CEILING:	
VAPOR PRESSURE:		LEL%:	
		OSHA PEAK:	

WARNING MESSAGES:

- (1) 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. Chronic exposure may cause damage to the central nervous system, respiratory system, lung, eye, skin, liver, gastrointestinal tract, spleen, kidneys, and blood.
- (2) See Section IX for reportable Hazardous Air Pollutants.

III. PHYSICAL DATA

BOILING RANGE: 276-484° F

EVAPORATION RATE: * slower than ether *

PERCENT VOLATILE BY VOLUME: 45.85%

WEIGHT PER GALLON: 8.23 LBS

VAPOR DENSITY: * heavier than air *

ACTUAL VOC (lb/gal): 3.33

EPA VOC (lb/gal): 3.33

EPA VOC (g/L): 399.07

IV. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 29° C 85° F

LEL: Refer to Section II

FLAMMABILITY CLASSIFICATION: CLASS 1C

DOT CLASSIFICATION (HAZARD CLASS): *Flammable Liquid

EXTINGUISHING MEDIA: Dry Chemical, Carbon Dioxide, Foam, Water spray for large fires.

UNUSUAL FIRE AND EXPLOSION HAZARDS: With excessive heat, cans will rupture from internal pressure and discharge flammable contents. Vapors may ignite explosively. Keep away from heat, sparks and flame. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Prevent build up of vapors by opening all windows and doors to achieve cross-ventilation.

SPECIAL FIRE FIGHTING PROCEDURES:

Full emergency equipment with self-contained breathing apparatus and full protective clothing (such as rubber gloves, boots, bands around legs, arms and waist) should be worn by firefighters. No skin surface should be exposed. During a fire, TDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion (See Section VI). Closed containers may explode when exposed to extreme heat or burst when contaminated with water (CO₂ evolved). Solvent vapors may be heavier than air. Under conditions of stagnant air, vapors may build up and travel along the ground to an ignition source which may result in a flash back to the source of the vapors.

V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE: See Section II.

EFFECTS OF OVEREXPOSURE:

Odor Threshold- There is no available information on the polymeric isocyanate. The odor threshold for Toluene 2,4-diisocyanate is 0.17 ppm. TDI is considered to have a poor warning properties, that is if you can smell it, then it is above the recommended occupational standards for the compound.

Irritation Threshold- The irritation threshold for this product has not been clearly established because those persons sensitized to TDI may show signs and symptoms of irritation at levels far below those that are not sensitized.

Inhalation-

Acute: Exposure may cause mucous membrane and respiratory tract irritation, tightness of chest, headache, shortness of

breath, and a dry cough. Inhalation may cause headaches, drowsiness, unconsciousness, anesthesia and asthma-like symptoms to occur. These symptoms may include coughing, wheezing, and shortness of breath. A hypersensitive pneumonitis may also occur if the person is sensitized. This syndrome is characterized by fever, nonproductive cough, wheezing, chills, and shortness of breath. The effects of acute exposure may be delayed in onset up to 12-24 hours.

Chronic: Repeated exposure may cause an allergic sensitization of the respiratory tract. This is characterized by an asthma-like response upon re-exposure to the chemical. The symptoms may include coughing, wheezing, shortness of breath and chest tightness. Repeated overexposure to isocyanates and high one-time accidental exposures to isocyanates have been associated with a gradual decrease in lung volume (lung damage).

Skin-

Acute: If not properly removed, liquid spills of TDI on the skin may cause irritation, redness, swelling, blistering or burns.

Chronic: Repeated contact may cause irritation of the skin and an allergic skin reaction consisting of a hive-like rash on locations not even directly contacted by the liquid. Animal studies indicate that dermal exposure to TDI may induce an allergic sensitization of the respiratory tract as well. This is characterized by an asthma-like response which may include coughing, wheezing, shortness of breath, chest tightness, and may be fatal.

Eye- The effects of liquid directly contacting the eye can be significant. This may result in severe irritation and possible damage to the cornea and impairment of vision. The effects of high vapor concentrations may vary from slight irritation with tearing and burning sensation to keratitis consisting of inflammation of the cornea and impairment of vision.

Ingestion-

Acute: Can result in irritation of the mouth, stomach tissue and digestive tract. Gastroenteritis may result with any or all of the following symptoms; nausea, vomiting diarrhea, headache. Small amounts aspirated into the lungs during ingestion or vomiting may cause mild to severe pulmonary injury and possibly death.

Chronic: More pronounced gastroenteritis effects would probably occur if this material was repeatedly ingested.

Target organ toxicity- Irritation to the skin, eyes, mucous membrane, and respiratory tract.

Reproductive and developmental toxicity- TDI is not known or reported to be a developmental or reproductive toxin.

Carcinogenicity- TDI is reported to be carcinogenic by the following agencies: IARC, NTP. These determinations have

been based on the following information. TDI isocyanate has been shown to cause cancer in laboratory animals when administered orally at high dose levels in corn oil. This study was conducted under the auspices of the US National Toxicology Program. It has been postulated that the positive results (tumor formation) in this study may have been caused by the hydrolysis of TDI to TDA, a known carcinogen. The relevant route of industrial exposure to this product is through inhalation. Other studies, sponsored by the International Isocyanate Institute have shown that TDI does not produce cancer when administered to laboratory animals via inhalation. The dose levels in the inhalation studies were significantly lower than those of the studies in which TDI given orally in corn oil, and TDI is not hydrolyzed to TDA when administered via the inhalation route of exposure. The route of exposure and level of dose used on the inhalation work reflect more accurately the conditions of industrial exposure. Based on the lack of carcinogenic response in animals from inhalation of TDI, the manufacturer of the TDI judges that the risk of cancer in humans from industrial use of this substance is not significant.

Xylene contains ethylbenzene which has been classified as a possible carcinogen to humans, Class 2B, by the International Agency for Research of Cancer (IARC), based on sufficient evidence in laboratory animals but inadequate evidence for cancer in humans. Prolonged or repeated overexposure to ethylbenzene may cause the following: kidney effects, liver effects, lung effects, thyroid effects, testicular effects, pituitary effects.

Mutagenicity- TDI has produced both positive and negative results in the Ames Salmonella gene mutation assay. A positive result may have been caused by hydrolysis of the TDI to TDA, a known mutagen. Other in vitro test systems have also reported positive results, also probably due to the water-TDI interaction. In vivo (whole animal studies) have reported negative results. A micronucleous assay to measure chromosomal effects potential was performed in conjunction with the two year rat inhalation study showed negative results. An unscheduled DNA synthesis assay conducted dosing the animals in vivo also showed TDI not to be mutagenic under this system's conditions. The significance of all these tests for human health is unclear other than to conclude that TDI is a reactive chemical and has some possible significant biological activity.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:

Asthma, Chronic respiratory disease (e.g. Bronchitis, Emphysema)
Eye disease, Skin disorders and Allergies.

PRIMARY ROUTE(S) OF ENTRY: Inhalation, skin contact, skin absorption & eye contact.

EMERGENCY AND FIRST AID PROCEDURES:

EYES- Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

SKIN- Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician. If clothing comes in contact with the product, the clothing should be laundered before reuse.

INGESTION- Immediately drink large quantities of water. DO NOT induce vomiting. Call a physician at once. DO NOT give anything by mouth if the person is unconscious or if having convulsions.

INHALATION- If person experiences nausea, headache or dizziness, person should stop work immediately and move to fresh air until these symptoms disappear. If breathing is difficult, administer oxygen, keep the person warm and at rest. Call a physician. In the event that an individual inhales enough product to lose consciousness, person should be moved to fresh air at once and a physician should be called immediately. If breathing has stopped, artificial respiration should be given immediately. In all cases, ensure adequate ventilation and provide respiratory protection before the person returns to work.

VI. REACTIVITY DATA

STABILITY: *stable*

HAZARDOUS POLYMERIZATION: *will not occur*

INCOMPATIBILITY: Water, acids, bases, alcohols, surface active materials. It will react with water slowly under 50 degree C and will accelerate rapidly in the presence of tertiary amines, alkalis, and some metal compounds. Some reactions can be violent and if they occur in a closed container they could cause container rupture because of the evolution of carbon dioxide gas.

HAZARDOUS DECOMPOSITION: Carbon monoxide, carbon dioxide, nitrogen, traces of hydrogen cyanide. One may also encounter isocyanate vapors and mist dependent on rate of heat evolution.

CONDITIONS TO AVOID: Avoid temperatures above 40C (104F). Can form dimers at higher temperatures. Rate of formation is time-temperature related.

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Remove sources of ignition and ventilate area. Use a respirator and other protective equipment as outlined in Section 8. Absorb spill with inert material, then place in a chemical waste container. After

removal, flush contaminated area with water and collect for disposal. Clean up spills immediately.

WASTE DISPOSAL METHOD: Waste must be disposed of in accordance with federal, state and local environmental control regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue. Decontaminate prior to disposal. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH.

VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY REQUIREMENT:

A respirator that is recommended or approved for use in isocyanate containing environments (air purifying or fresh air supplied) may be necessary. Consider type of application and environmental concentrations. Observe OSHA regulations for respirator use (29 CFR 1910.134). In spray applications, when the airborne isocyanate monomer concentrations are known to be below 0.05 ppm and if the polyisocyanate (polymeric, oligomer) concentrations are known to be below 10 mg/m³, a properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by tests to be effective in isocyanate containing spray paint environments, will provide sufficient protection. The use of a positive pressure supplied air respirator is mandatory when: airborne isocyanate concentrations are not known, either of the above guidelines are exceeded, or if spraying is performed in a confined space or area with limited ventilation. It is possible to be exposed to airborne solvent or isocyanate vapors even during non-spray operations such as mixing, and brush or roller application, depending on the conditions of application. For example, heating of material or application to a hot substrate may increase emissions from the coating. Therefore, when airborne concentrations during such non-spray operations exceed the TLV of 0.005 ppm for isocyanate monomer, but are below 0.05 ppm, at least an air purifying (organic vapor) respirator is required. If airborne concentrations are unknown or exceed 0.05 ppm; or if operations are performed in a confined space, a supplied air respirator must be worn. In addition, solvent concentrations should be considered when determining the selection and use of a respirator. Refer to Patty's Industrial Hygiene and Toxicology, Volume 1 (3rd edition) Chapter 17 and Volume III (1st edition) Chapter 3, for guidance concerning appropriate air sampling strategy to determine airborne concentrations.

MONITORING: TDI, polyisocyanate and solvent exposure levels must be monitored by accepted monitoring techniques to ensure that the TLVs are not exceeded. See Volume 1 (Chapter 17) and Volume 3 (Chapter 3) in Patty's Industrial Hygiene and Toxicology for sampling strategy.

VENTILATION: Provide general dilution or local exhaust ventilation in volume and pattern to keep TLV and LEL of most hazardous ingredient in Section II, below acceptable limit.

PROTECTIVE GLOVES: Permeation resistant gloves (butyl rubber, nitrile rubber) should be used. Cover as much of the exposed skin area as possible with appropriate clothing.

EYE PROTECTION: Liquid chemical goggles or full-face shield goggles should be used. Contact lenses should not be worn.

OTHER PROTECTIVE EQUIPMENT: Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instruction.

MEDICAL SURVEILLANCE: Medical supervision of all employees who handle or come in contact with TDI is recommended. This should include pre-employment and periodic medical examinations with respiratory function tests (FEV, FVC as minimum). Persons with asthmatic-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrant skin eczema or sensitization should be excluded from working with TDI. Once a person is diagnosed as being sensitized to TDI, no further exposure can be permitted.

HYGIENIC PRACTICES: See Section V

IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORAGE:

Keep away from heat. Keep away from sparks, flames and other sources of ignition. Store in a cool, dry place. Keep container closed when not in use. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Use with adequate ventilation. Ground and bond containers when transferring material. Use explosion proof equipment. Follow all MSDS/label precautions even after the container is emptied because it may retain product residues. Wash thoroughly after handling.

OTHER PRECAUTIONS: Avoid resealing containers that have been contaminated with water. The resulting reaction could cause a pressure within the container which is great enough to burst the container.

LIST OF HAZARDOUS AIR POLLUTANTS SUBJECT TO THE PROVISIONS OF THE CLEAN AIR ACT, TITLE I SECTION 112 'National Emission Standards for Hazardous Air Pollutants':

Ingredient	CAS #	Wt% of HAPS in product	Pounds HAPS/ Gal product
Xylene	1330-20-7	32.8 %	2.7

LG-0414

Toluene Diisocyanate
Ethyl Benzene

584-84-9
100-41-4

24.3 %
7.0 %

2.0
0.6