

Urocel-103 Part A

symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible. May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Delayed: Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Inhalation

Move to an area free from further exposure. Extreme asthmatic reactions that may occur in sensitized persons can be life threatening. Get medical attention immediately. Administer oxygen or artificial respiration as needed. Asthmatic symptoms may develop and may be immediate or delayed up to several hours.

Skin Contact

If direct skin contact with isocyanates occurs, immediately remove contaminated clothing and shoes. Wipe off the isocyanate product from the skin using dry towels or other similar absorbent fabric. If readily available, apply a polyglycol-based cleanser (e.g. Colorimetric Laboratories, Inc. (CLI) D-TAM™ Skin Cleanser) or corn oil. Wash with soap and warm water and pat dry. If a polyglycol-based cleanser is not available, wash with soap and warm water for 15 minutes. If available, use a wipe test pad to verify decontamination is complete (e.g. CLI SWYPE™). Get medical attention if irritation develops. Discard or wash contaminated clothing before reuse.

Eye Contact

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Then remove contact lenses, if easily removable, and continue eye irrigation for not less than 15 minutes. Get medical attention if irritation develops.

Ingestion

Do NOT induce vomiting. Wash mouth out with water. Do not give anything by mouth to an unconscious person. Get medical attention.

Note to Physician

Eyes: Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision. Skin: This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. Ingestion: Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound. Inhalation: Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable extinguishing media

Dry chemical

Carbon dioxide (CO₂)

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| | Foam, water spray for large fires. |
| Unsuitable Extinguishing Media | High volume water jet |
| Special hazards arising from the substance or mixture | |
| Specific hazards | |
| Hazardous Decomposition Products | By Fire and High Heat: Carbon dioxide (CO ₂), carbon monoxide (CO), oxides of nitrogen (NO _x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds |
| Unusual Fire Explosion Hazards | Closed container may forcibly rupture under extreme heat or when contents are contaminated with water (CO ₂ formed). Use cold-water spray to cool fire-exposed containers to minimize the risk of rupture. Large fires can be extinguished with large volumes of water applied from a safe distance, since reaction between water and hot diisocyanate can be vigorous. |
| Special protective equipment for fire-fighters | Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. |
| Further information | .Avoid contact with product. Decontaminate equipment and protective clothing prior to reuse. During a fire, isocyanate vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Exposure to heated diisocyanate can be extremely dangerous. |

SECTION 6: ACCIDENTAL RELEASE MEASURES

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| Personal precautions, protective equipment and emergency procedures | Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus and chemically protective clothing. Evacuate personnel to safe areas. |
| Environmental precautions | Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc.). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface. For spills involving a solid product, remove mechanically (sweep up, vacuum, shovel etc.) and collect and place into an approved metal container. |
| Methods and material for containment and cleaning up | Decontaminate the spill surface area using a neutralization solution (see list of solutions on the SDS); scrubbing the surface with a broom or brush helps the decontamination solution to penetrate into porous surfaces. Wait at least 15 minutes after first application of the neutralization solution. Cover the area with absorbent material and shovel this into an approved metal container. Residual surface contamination can be checked using a wipe test pad to verify decontamination is complete (e.g. CLI Surface Swype™). If the wipe test pad demonstrates that isocyanate remains on the surface (red color on pad), repeat applications of neutralization solution, with scrubbing, followed by absorbent until the surface is decontaminated (no color change on wipe pad). Apply lid loosely to metal waste container (do not tighten the lid because carbon dioxide gas and heat can be generated from the neutralization process). With the lid still loosely in place, move the container to an isolated, well-ventilated area to allow release of carbon dioxide. After |

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72 hours, seal the container, and properly dispose of the waste material and any contaminated equipment (i.e., broom or brush) in accordance with existing federal, state and local regulations.

Additional advice

Products or product mixtures that have been shown to be effective neutralization solutions for decontaminating surfaces, tools, or equipment that have been in contact with an isocyanate include, but are not limited to:

Colorimetric Laboratories, Inc. (CLI): 1-847-803-3737 Isocyanate Decontamination Solution

Spartan Chemical Company: 1-800-537-8990

Spartan® ShineLine Emulsifier Plus (stripping solution)

Spartan® SC-200 Heavy Duty Cleaner

ZEP Commercial Heavy Duty Floor Stripper

A mixture of 90% water, 10% non-ionic surfactant (e.g. Plurafac SL-62, Tergitol TMN-10)

A mixture of 75% water, 20% non-ionic surfactant, and 5% n-propanol

A mixture of 80% water, 10% non-ionic surfactant, 5% isopropanol, 5% ammonium hydroxide (household ammonia)

Always wear proper PPE when cleaning up an isocyanate spill or when decontaminating surfaces, tools, or equipment using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Residual surface contamination can be checked using a surface wipe method such as the CLI Swype™ pad.

SECTION 7: HANDLING AND STORAGE

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| Precautions for safe handling | Do not breathe vapors, mists, or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space, or if the exposure limit is exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposures to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breathe smoke and gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating. Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. |
| Storage Period: | Do not store near acids. Keep containers tightly closed in a dry, cool and well-ventilated place. |
| Storage Temperature | 9 Months @ 25 °C (77 °F): after receipt of material by customer |
| Storage Conditions | |
| Minimum | -34 °C (-29.2 °F) |
| Maximum | 50 °C (122 °F) |
| Substances to Avoid | Water, Amines, Strong bases, Alcohols, Copper alloys. |

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits

| SUBSTANCE. | CAS No. | (8hr TWA) | | (STEL) | | Note: |
|---|------------|---|-------------|------------|-------------|-------|
| | | PEL (OSHA) | TLV (ACGIH) | PEL (OSHA) | TLV (ACGIH) | |
| Homopolymer of Hexamethylene Diisocyanate | 28182-81-2 | 0.5 mg/m ³ 1.0 mg/m ³ (STEL 15 min) | ----- | ----- | ----- | ----- |
| Hexamethylene-1,6-Diisocyanate | 1305-62-0 | ----- | ----- | ----- | 0.005 ppm | ----- |

Exposure Controls

Appropriate engineering controls

Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls, such as ventilation, whenever feasible. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated. Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent emissions into the workplace. If oven off-gases are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne monomeric HDI.

Personal protection equipment

Respiratory protection



A respirator that is recommended or approved for use in isocyanate-containing environments (air-purifying or fresh air-supplied) may be necessary for spray applications or other situations such as high temperature use which may produce inhalation exposures. A supplied-air respirator (either positive pressure or continuous flow-type) is recommended. Before an air-purifying respirator can be used, air monitoring must be performed to measure airborne concentrations of HDI monomer and HDI polyisocyanate. Specific conditions under which air-purifying respirators can be used are outlined in the following sections. Observe OSHA regulations for respirator use (29 CFR 1910.134).
SPRAY APPLICATION: A. Good industrial hygiene practice dictates that when isocyanate-based coatings are spray applied, some form of respiratory protection should be worn. During the spray application of coatings containing this product the use of a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists: -the airborne isocyanate concentrations are not known; or -the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or -the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or -operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -The airborne isocyanate monomer concentrations are known to be below 0.05 ppm averaged over eight (8) hours (10 times 8 hour TWA exposure limit); and -the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits). In addition, prefilters should be changed whenever breathing resistance increases due to particulate

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buildup. NON-SPRAY OPERATIONS: A. During non-spray operations such as mixing, batch-making, brush or roller application, etc., at elevated temperatures (for example, heating of material or application to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be applied in a non-spray manner, a supplied-air (either positive pressure or continuous flow- type) respirator is mandatory when ONE OR MORE of the following conditions exists: - the airborne isocyanate concentrations are not known; or - the airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or - the airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m³ averaged over 8 hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or - operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146). A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met: -the airborne concentrations of the isocyanate monomer are below 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); and - the airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m³ averaged over eight (8) hours or 10 mg/m³ averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits) and - a NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup.

Skin protection (Hand protection/ Other)



Ensure gloves remain in good condition during use and replace if any deterioration is observed. Gloves should be worn., Nitrile rubber gloves., Butyl rubber gloves., Neoprene gloves.

Avoid all skin contact. Depending on the conditions of use, cover as much of the exposed skin area as possible with appropriate clothing to prevent skin contact., Gloves, long sleeved shirts and pants.

Eye/face protection



When directly handling liquid product, eye protection is required. Examples of eye protection include a chemical safety goggle, or chemical safety goggle in combination with a full face shield when there is a greater risk of splash.

Medical Surveillance

All applicants who are assigned to an isocyanate work area should undergo a pre-placement medical evaluation. A history of eczema or respiratory allergies such as hay fever, are possible reasons for medical exclusion from isocyanate areas. Applicants who have a history of adult asthma should be restricted from work with isocyanates. Applicants with a history of prior isocyanate sensitization should be excluded from further work with isocyanates. A comprehensive annual medical surveillance program should be instituted for all employees who are potentially exposed to diisocyanates. Once a worker has been diagnosed as sensitized to any isocyanate, no further exposure can be permitted.

Special instructions for protection and hygiene

Emergency showers and eye wash stations should be available. Educate and train employees in the safe use and handling of this product. Follow all label instructions.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Yellow Liquid.

Odor

Slight odor

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| Odor threshold | Not available. |
| pH | Not available. |
| Melting point /range | Not available. |
| Pour point | ca. -24 °C (-11.2 °F). |
| Boiling point/range | Not applicable, decomposition. |
| Flash Point (Closed Cup) | 238 °C (460.4 °F). |
| Evaporation rate (Butyl Acetate = 1) | Not available. |
| Flammability (solid, gas) | Not available. |
| Lower explosion limit | Not available. |
| Upper explosion limit | Not available. |
| Vapor pressure | HDI Polyisocyanate: 5.2 X 10 ⁻⁹ @ 68°F (20°C) mmHg. |
| Relative vapor density | Not available. |
| Relative density | ca. 1.16 g/cm ³ (9.68 lb/gal) at 68 °F (20 °C). |
| Water solubility | Insoluble - Reacts slowly with water to liberate CO ₂ gas. |
| Partition coefficient: n-octanol/water | Not available. |
| Autoignition temperature | ca. 460 °C (860 °F). |
| Decomposition temperature | Not available. |
| Viscosity | ca. 3,000 mPa.s @ 23 °C (73.4 °F) (DIN EN ISO 3219/A.3). |
| Molecular weight | 500 For the polyisocyanate. |
| Bulk Density | 1,159.92 kg/m ³ (72.41 lb/ft ³) at 70 F (21 °C). |

SECTION 10: STABILITY AND REACTIVITY

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| Chemical stability | Stable under normal conditions of use and storage. |
| Conditions to avoid | Avoid heat, flames, sparks and other sources of ignition. Avoid contact with moisture / water. |
| Materials to avoid | Water, Amines, Strong bases, Alcohols, Copper alloys |
| Hazardous decomposition products | By Fire and High Heat: Carbon dioxide (CO ₂), carbon monoxide (CO), oxides of nitrogen (NO _x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds |
| Possibility of hazardous reactions/reactivity | Contact with moisture, other materials that react with isocyanates, or temperatures above 350°F (177°C), may cause polymerization |

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

| | |
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| Likely routes of exposure | Skin contact Inhalation Eye contact |
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Health Effects and Symptoms

Acute

Isocyanate vapors or mist at concentrations above the exposure limits or guidelines can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) with symptoms of runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing difficulty). Persons with a preexisting, nonspecific bronchial hyperreactivity can respond to concentrations below the exposure limits or guidelines with similar symptoms as well as asthma attack or asthma-like symptoms. Exposure well above the exposure limits or guidelines may lead to bronchitis, bronchial spasm and pulmonary edema (fluid in lungs). Chemical or hypersensitivity pneumonitis, with flu-like symptoms (e.g. fever, chills), has also been reported. These symptoms can be delayed up to several hours after exposure. These effects are usually reversible.

May cause skin irritation with symptoms of reddening, itching, and swelling. Can cause sensitization. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling, and rash. Cured material is difficult to remove.

May cause eye irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

May cause irritation of the digestive tract; Symptoms may include abdominal pain, nausea, vomiting, and diarrhea.

Chronic

As a result of previous repeated overexposures or a single large dose, certain individuals may develop sensitization to isocyanates (asthma or asthma-like symptoms) that may cause them to react to a later exposure to isocyanates at levels well below the exposure limits or guidelines. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthmatic attack, could be immediate or delayed up to several hours after exposure. Extreme asthmatic reactions can be life threatening. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Sensitization can be permanent.

Prolonged contact with skin can cause reddening, swelling, rash, and, in some cases, skin sensitization. Animal tests and other research indicate that skin contact with isocyanates can play a role in causing isocyanate sensitization and respiratory reaction. This data reinforces the need to prevent direct skin contact with isocyanates.

Prolonged vapor contact with the eyes may cause conjunctivitis.

Delayed

Symptoms affecting the respiratory tract can also occur several hours after overexposure.

Homopolymer of Hexamethylene Diisocyanate

Acute Oral Toxicity

LD50: > 2,500 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity

LC50: 0.39 - 0.543 mg/l, 4 h, dust/mist (rat, male/female) (OECD Test Guideline 403) The test atmosphere generated in the animal study is not representative of workplace environments, how the substance is placed on the market, and how it can reasonably be expected to be used. Therefore the test result cannot be directly applied for the purpose of assessing hazard. Based on expert judgment and the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

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| Acute Dermal Toxicity | LD50: > 2,000 mg/kg (rabbit, male/female) LD50: > 2,000 mg/kg (rat, male/female) (OECD Test Guideline 402) |
| Skin Irritation | rabbit, OECD Test Guideline 404, Exposure Time: 4 h, slight irritant. |
| Eye Irritation | rabbit, OECD Test Guideline 405, slight irritant |
| Skin Sensitization | Skin sensitization (local lymph node assay (LLNA)):: positive (Mouse, OECD Test Guideline 429) Skin sensitisation according to Magnusson/Kligmann (maximizing test):: positive (Guinea pig, OECD Test Guideline 406) |
| Respiratory Sensitization | No pulmonary sensitisation observed in animal tests.No pulmonary sensitisation potential was observed in guinea pigs after either intradermal or inhalative induction with polyisocyanate based on hexamethylene diisocyanate. |
| Repeated Dose Toxicity | 90 d, Inhalative: NOAEL: 3.3, (rat, male/female, 6 hours a day, 5 days a week)Irritation to lungs and nasal cavity.Evidence of damage to organs other than the organs of respiration was not found |
| Mutagenicity | Genetic Toxicity in Vitro:Salmonella/microsome test (Ames test): No indication of mutagenic effects. (Metabolic Activation: with/without) Chromosome aberration test in vitro: negative (Chinese hamster V79 cell line, Metabolic Activation: with/without) Point mutation in mammalian cells (HPRT test): negative (Chinese hamster ovary (CHO) cells, Metabolic Activation: with/without) |

Hexamethylene-1,6-Diisocyanate

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| Acute Oral Toxicity | LD50: 746 mg/kg (rat, male) (OECD Test Guideline 401) LD50: 959 mg/kg (rat, male) (OECD Test Guideline 401) |
| Acute Inhalation Toxicity | LC50: 0.124 mg/l, 4 h, vapour (rat, male/female) (OECD Test Guideline 403) |
| Acute Dermal Toxicity | LD50: > 7,000 mg/kg (rat, male/female) (OECD Test Guideline 402) |
| Skin Irritation | rabbit, OECD Test Guideline 404, Corrosive |
| Eye Irritation | rabbit, OECD Test Guideline 405, Corrosive |
| Skin Sensitization | dermal: sensitizer (Guinea pig, Maximisation Test) dermal: sensitizer (Human, Case Report) |
| Respiratory Sensitization | sensitizer (Guinea pig) |
| Repeated Dose Toxicity | 2 years, inhalation: NOAEL: 0.005 ppm, (rat, Male/Female, 6 hrs/day 5 days/week) Irritation to lungs and nasal cavity. |
| Mutagenicity | Genetic Toxicity in Vitro: Salmonella/microsome test (Ames test): negative (Salmonella typhimurium, Metabolic Activation: with/without) Point mutation in mammalian cells (HPRT test): negative (Metabolic Activation: with/without) Genetic Toxicity in Vivo: Micronucleus test: negative (Mouse, male/female, Inhalative) negative |
| Carcinogenicity | Rat, male/female, Inhalative, 2 yrs, 6 hours/day, 5 days/week Did not show carcinogenic effects in animal experiments |

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| Toxicity to Reproduction/Fertility | Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test, Inhalative, 6 hours/day 7 days/week, (rat, male/female) NOAEL (F2): 0.3 ppm Fertility and developmental toxicity tests did not reveal any effect on reproduction. |
| Developmental Toxicity/Teratogenicity | rat, female, Inhalative, 6 hours/day (Exposure duration: day 0 - 19 of gestation), NOAEL (teratogenicity): 0.3 ppm, NOAEL (maternal): 0.005 ppm Did not show teratogenic effects in animal experiments. |
| Neurological Effects | Rats exposed by inhalation, 6 hours/day, for approximately 3 weeks, to concentrations as high as 0.3 ppm showed no neurobehavioral effects or damage to nerve tissues. |
| Carcinogenicity | No carcinogenic substances as defined by IARC, NTP and/or OSHA |

SECTION 12: ECOLOGICAL INFORMATION

Homopolymer of Hexamethylene Diisocyanate

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| Biodegradation | aerobic, 1 %, Exposure time: 28 d, i.e. not readily degradable aerobic, 0 %, Exposure time: 28 d, i.e. not readily degradable |
| Bioaccumulation | 3.2 BCF An accumulation in aquatic organisms is not to be expected. 367.7 BCF An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products. |
| Acute and Prolonged Toxicity to Fish | LC50: > 100 mg/l (Danio rerio (zebra fish), 96 h) |
| Acute Toxicity to Aquatic Invertebrates | EC50: > 100 mg/l (Daphnia magna (Water flea), 48 h) |
| Toxicity to Aquatic Plants | ErC50: > 1,000 mg/l, (scenedesmus subspicatus, 72 h) |
| Toxicity to Microorganisms | EC50: 3,828 mg/l, (activated sludge, 3 h) |

Hexamethylene-1,6-Diisocyanate

| | |
|---|---|
| Biodegradation | aerobic, 42 %, Exposure time: 28 d, i.e. not readily degradable |
| Bioaccumulation | 3.2 BCF, value calculated An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products. 57.6 BCF, value calculated An accumulation in aquatic organisms is not to be expected. |
| Acute and Prolonged Toxicity to Fish | LC0: >= 82.8 mg/l (Danio rerio (zebra fish), 96 h) |
| Acute Toxicity to Aquatic Invertebrates | EC0: >= 89.1 mg/l (Daphnia magna (Water flea), 48 h) |
| Toxicity to Aquatic Plants | ErC50: > 77.4 mg/l, (Desmodesmus subspicatus (Green algae), 72 h) |
| Toxicity to Microorganisms | EC50: 842 mg/l, (activated sludge, 3 h) |

Additional Ecotoxicological Remarks Data is based on the product, including residual monomer

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SECTION 13: DISPOSAL CONSIDERATIONS

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| Waste from residues/unused products | Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method. |
| Contaminated packaging | Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are removed prior to disposal. |

SECTION 14: TRANSPORT INFORMATION

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|------|---------------|
| DOT | Not regulated |
| IATA | Not regulated |
| IMDG | Not regulated |

SECTION 15: REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Component(s): None

United States Federal Regulations

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| US. Toxic Substances Control Act | Listed on the TSCA Inventory. |
| US. EPA CERCLA Hazardous Substances (40 CFR 302) Components | None. |
| SARA Section 311/312 Hazard Categories | Acute Health Hazard. |
| US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A) Components | None. |
| US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required Components | None. |
| US. EPA Resource Conservation and Recovery Act (RCRA) Composite List of Hazardous Wastes and Appendix VIII Hazardous Constituents (40 CFR 261) | Under RCRA, it is the responsibility of the person who generates a solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste. |

State Right-To-Know Information

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists

| Component | CAS Number | Concentration |
|---|------------|---------------|
| Homopolymer of Hexamethylene Diisocyanate | 28182-81-2 | 95% - 100% |
| Hexamethylene-1,6- Diisocyanate | 822-06-0 | <=0.15% |

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New Jersey Environmental Hazardous Substances List and/or New Jersey RTK Special Hazardous Substances Lists

| Component | CAS Number | Concentration |
|---------------------------------|------------|---------------|
| Hexamethylene-1,6- Diisocyanate | 822-06-0 | <=0.15% |

California Prop. 65

To the best of our knowledge, this product does not contain any of the listed chemicals, which the state of California has found to cause cancer, birth defects or other reproductive harm.

CFATS (Chemical Facility Anti-Terrorism Standards) Chemicals

To the best of our knowledge, this product does not contain Appendix A Chemicals of Interest (COI), at or above the Screening Threshold Quantity (STQ), as defined by the Department of Homeland Security Chemical Facility Anti-terrorism Standard (CFATS, 6 CFR Part 27).

Based on information provided by our suppliers, this product is considered "DRC Conflict Free" as defined by the SEC Conflict Minerals Final Rule (Release No. 34-67716; File No. S7-40-10; Date: 2012-08-22).

SECTION 16: OTHER INFORMATION

Information source and references

This SDS is prepared by Res-Tek from information supplied by internal references within our company.

Hazard Rating System HMIS

Health: 3

Flammability: 1

Physical hazard: 1

Hazard Statement(s) Listed in: SECTION 3

H317 May cause an allergic skin reaction.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

Additional information: None.

Disclaimer: We believe the statements, technical information and recommendations contained herein are reliable, but they are given without warranty or guarantee of any kind. The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

SAFETY DATA SHEET

OSHA HCS (29 CFR 1910.1200)

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Chemical Name

Dipropylene Glycol Monomethyl Ether

Product Name / Trade Name

UR-103 Part B Mixture

CAS No.

Curing agent

Product use description

Relevant identified uses of the substance or mixture and uses advised against

Identified Use(s)

Industrial Flooring Resin

Uses Advised Against

None

Details of the supplier of the safety data sheet

Company Identification

Pilgrim Permocoat, Inc.

402 S. 22nd St.

Tampa, FL 33605

United States of America

Telephone

813 248 3328

Emergency telephone number

CHEMTREC 24 hr. 1-800-424-9300

SECTION 2: HAZARDS IDENTIFICATION

Hazard classification

GHS Classification

Flammable liquid 4; Specific target organ systemic tox. – single exp. 3

Label elements

Hazard pictograms



Signal Word(s)

WARNING

Hazard Statement(s)

Combustible liquid.
May cause respiratory irritation.

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SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS Number | Weight | Hazard Statements |
|--|------------|-----------|---|
| Dipropylene Glycol Monomethyl Ether | 34590-94-8 | 60% - 90% | H227 Flammable liquids, Category 4 H335 Specific target organ systemic toxicity – single exposure, Category 3 |

SECTION 4: FIRST AID MEASURES



Description of first aid measures

General advice

Consult a physician/doctor if necessary. Take proper precautions to ensure your own health and safety before attempting rescue and providing first aid. Show this material safety data sheet to the doctor in attendance.

Inhalation

Remove to fresh air. Keep patient warm and at rest. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

Skin Contact

Remove contaminated clothing as needed. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Seek medical attention if discomfort persists.

Eye Contact

Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If eye irritation persists, consult a specialist.

Ingestion

This material may be a slight health hazard if ingested in large quantities. If large quantity swallowed, give lukewarm water (pint/ 1/2 liter) if victim completely conscious/alert. Do not induce vomiting. Risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

Notes to physician

Symptoms

High doses may cause CNS depression (fatigue, dizziness and possibly loss of concentration, with collapse, coma and death in cases of severe over-exposure).

Hazards

May be harmful if swallowed and enters airways. May cause respiratory irritation.

Treatment

Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable extinguishing media

SMALL FIRE: Use dry chemical, CO₂, water spray or regular foam. LARGE

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| Unsuitable extinguishing media | FIRE: Use water spray, water fog or regular foam. Do not use straight streams. Do not use solid water stream. |
| Special hazards arising from the substance or mixture | |
| Specific hazards | Heat from fire can generate flammable vapor. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Flammable vapors may be heavier than air and travel long distances along the ground before igniting and flashing back to vapor source. Fine sprays/mists may be combustible at temperatures below normal flash point. Heat may build enough pressure to rupture closed containers/spreading fire/increasing risk of burns/injuries. Cool containers with flooding quantities of water until well after fire is out. Always stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Move containers from fire area if it can be done without risk. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for fire-fighters | Wear an approved positive pressure self-contained breathing apparatus and firefighter turnout gear. Structural firefighter's protective clothing will only provide limited protection. |
| Further information | Cool containers with flooding quantities of water until well after fire is out. |

SECTION 6: ACCIDENTAL RELEASE MEASURES

| | |
|--|--|
| Personal precautions, protective equipment and emergency procedures | Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment. Eliminate all sources of ignition. Clean-up to be performed only by trained and properly equipped personnel. |
| Methods and material for containment and cleaning up | Eliminate all sources of ignition. All equipment used when handling this product must be grounded. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material. |
| Additional advice | Keep non-involved personnel away from the area of spillage. See section 8 for additional PPE information. See section 13 for disposal information. |

SECTION 7: HANDLING AND STORAGE

| | |
|--------------------------------------|--|
| Precautions for safe handling | Keep container tightly closed when not in use. The potential for peroxide formation is enhanced when this solvent is used in processes such as distillation. Use only non-sparking tools. Properly ground containers before beginning transfer. When transferring propylene glycol ethers with flash points at or below 60 °C (140 °F) into fixed site vessels, the vessel should be purged and inerted prior to transfer. Propylene glycol ethers may be transferred into air atmospheres if the temperature of the product and the ambient temperature within the shipping container are both at least 16.7 °C (30 °F) less than the product's flash point. After loading, nitrogen blanketing is required if the contents of the transportation container could exceed a temperature of 16.7 °C (30 °F) less than the product flash point during any subsequent transportation activities. If the product flash point is less than 16.7 °C (30 °F) above either the ambient |
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temperature of the transportation container or the storage temperature of the product, the container should be purged and inerted with nitrogen prior to loading and nitrogen blanketed after loading. Handle empty containers with care. Flammable/combustible residue remains after emptying. The purging of all empty shipping containers, regardless of the flashpoint, is recommended when received with air atmospheres. Isolate, vent, drain, wash and purge systems or equipment before maintenance or repair. Use adequate personal protective equipment. Observe precautions pertaining to confined space entry. OSHA/NFPA Class IIIA Combustible Liquid

Fire fighting class

Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers

Store only in tightly closed, properly vented containers away from heat, sparks, open flame and strong oxidizing agents. Storage under nitrogen atmosphere is recommended to minimize potential for moisture condensation in the vapor space, and the formation of peroxides. Store in properly lined steel/stainless steel to avoid slight discoloration from mild steel/copper. Aluminum (5000 series alloys - U.S. Aluminum Association Standard) showed no corrosion after 30 days contact with PM Acetate, DPM, TPM, PTB, or PM at 71°C (160°F). Some plastics/rubbers are attacked by Glycol Ethers/Ether Esters. This product will absorb water if exposed to air.

Advice on common storage

Carbon steel. Store in properly lined steel/stainless steel to avoid slight discoloration from mild steel/copper. Some plastics/rubbers are attacked by Glycol Ethers/Ether Esters.

Other data

Stable under recommended storage conditions.

Specific end use(s)

See Section 1.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Ingredients with workplace control parameters

Occupational Exposure Limits

| Ingredients | CAS-No. | Type | Limit Value | Basis Revision Date | Additional Information |
|-------------------------------------|------------|------|-------------|-------------------------|------------------------|
| Dipropylene Glycol Monomethyl Ether | 34590-94-8 | STEL | 150 ppm | US (ACGIH) 2012 | |
| Dipropylene Glycol Monomethyl Ether | 34590-94-8 | TWA | 100 ppm | US (ACGIH) 2012 | |
| Dipropylene Glycol Monomethyl Ether | 34590-94-8 | IDLH | 600 ppm | NIOSH September 2007 | |
| Dipropylene Glycol Monomethyl Ether | 34590-94-8 | TWA | 100 ppm | US (OSHA) June 23, 2006 | |

Consult local authorities for acceptable exposure limits.

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Exposure controls

Engineering measures

Local exhaust in addition to general room ventilation may be required to meet exposure limit(s).

Personal protection equipment

Respiratory protection



When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. If exposure can exceed the occupational exposure limit(s), use approved respiratory protection equipment.

Skin protection (Hand protection/ Other)



Wear chemical resistant gloves such as: Neoprene.

Eye/face protection



Use splash goggles when eye contact due to splashing or spraying liquid is possible.

Special instructions for protection and hygiene

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Take off contaminated clothing and wash before reuse. Use care in walking on spilled material.

Protective measures

Wear suitable protective equipment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

| | |
|--|---|
| Appearance | Liquid. Clear, colorless. |
| Odor | Ether-like odor. |
| Odor threshold | No data available. |
| pH | No data available. |
| Melting point /range | -83 °C at 1,013 hPa |
| Boiling point/range | 189.6 °C at 1,013 hPa |
| Flash Point | 75 °C at 1,013 hPa (760 mm Hg) |
| Evaporation rate | 0.02 (butyl acetate=1) |
| Flammability (solid, gas) | Not applicable. |
| Lower explosion limit | 1.1 vol% |
| Upper explosion limit | 14 vol% |
| Vapor pressure | ~ 0.37 hPa at 20 °C |
| Relative vapor density | ~ 5.1 at 16 - 32 °C (Air = 1.0) |
| Relative density | 0.95 g/cm ³ (7.93 lb/gal) at 20 °C |
| Water solubility | Completely miscible at 25 °C |
| Partition coefficient: n-octanol/water | log Pow: 0.004 at 25 °C |
| Autoignition temperature | 206.5 °C at 1,013 hPa |
| Decomposition temperature | No data available |
| Viscosity | 4.0 mPa.s at 25 °C (Brookfield) |
| Molecular weight | 148.2 g/mol |
| Density | 0.95 g/cm ³ at 20 °C |
| Other | Hygroscopic |
| Oxidizing properties | Not considered an oxidizing agent |

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SECTION 10: STABILITY AND REACTIVITY

| | |
|---|--|
| Reactivity | Will not occur. |
| Chemical Stability | Stable under recommended storage conditions. |
| Hazardous reactions | Will not occur. |
| Conditions to avoid | Extended contact with air or oxygen. The potential for peroxide formation is enhanced when this solvent is used in processes such as distillation. Heat, sparks, open flame, other ignition sources, and oxidizing conditions. Ignition may occur at temperatures below those published in the literature as autoignition or ignition temperatures.. |
| Materials to avoid | Air or oxygen. Moisture and humidity. Strong oxidizing agents. May react with oxygen to form peroxides. |
| Hazardous decomposition products | Not expected to decompose under normal conditions. |
| Thermal decomposition | Carbon Monoxide and other toxic vapors. |

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components is based on the assessment of the product including impurities.

Acute toxicity

Acute oral toxicity
Based on acute toxicity values, not classified. Ingestion of very large amounts may cause CNS depression, respiratory failure, and death in cases of severe over- exposure.

LD50: > 5,000 mg/kg Species: Rat

Acute inhalation toxicity
Based on acute toxicity values, not classified. May cause mild CNS depression. Exposure to vapor may cause irritation of the eyes, nose, or throat.

LC50: > 275 ppm
Exposure time: 7 HOURS Species: Rat

Acute dermal toxicity
Based on acute toxicity values, not classified.

LD50: > 9,500 mg/kg Species: Rat

Skin corrosion/irritation

Based on skin irritation values, not classified.

Serious eye damage/eye irritation

Based on eye irritation values, not classified.

Respiratory or skin sensitization

Respiratory sensitization no data available. No study available.

Skin sensitization no data available. No adverse effect observed.

Chronic toxicity or effects from long-term exposure

Carcinogenicity
Not classified. No adverse effect observed.

Reproductive toxicity

Effects on fertility/
Effects on or via lactation
Not classified. No adverse effect observed.

Effects on development
Not classified. No adverse effect observed.

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|---|--|
| Germ cell mutagenicity | Not classified. No adverse effect observed. |
| Specific target organ systemic toxicity (single exposure) | Classified. May cause respiratory irritation. Exposure routes: Inhalation |
| Specific target organ systemic toxicity (repeated exposure) | Based on repeated exposure toxicity values, not classified. |
| Aspiration hazard | Not classified. |

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity effects

| | |
|---|---|
| Acute aquatic toxicity | Based on acute aquatic toxicity values, not classified. |
| Chronic aquatic toxicity | Not classified, based on readily biodegradability and low acute toxicity. |
| Toxicity to fish | Low acute toxicity to fish |
| Toxicity to daphnia and other aquatic invertebrates | Low acute toxicity to aquatic invertebrates. |
| Toxicity to algae | Low toxicity to algae. |
| Toxicity to bacteria | Low toxicity to sewage microbes. |
| Chronic Toxicity | No data available. |
| Toxicity to fish | |
| Toxicity to daphnia and other aquatic invertebrates | Low chronic toxicity to aquatic invertebrates. |

Persistence and degradability

| | |
|---|--|
| Biodegradability | 76 - 92 % Rapidly degradable. (After 28 days in a ready biodegradability test) |
| Mobility in soil | Stability in water; no data available. |
| Distribution among environmental compartments | Stability in soil; no data available. Low absorption to soil particulates predicted |
| Bioaccumulation | This material is not expected to bioaccumulate. |
| Results of PBT and vPvB assessment | Not applicable |
| Other adverse effects | |
| Additional ecological information | No data available. |

SECTION 13: DISPOSAL CONSIDERATIONS

Waste from residues/unused products

Contaminated product, soil, or water may be hazardous waste. Dispose of contents/ container to an approved landfill. Use registered transporters. Burn concentrated liquids. Assure emissions comply with applicable regulations. Dilute aqueous waste may biodegrade. Avoid overloading/poisoning plant biomass. Assure effluent complies with applicable regulations.

Contaminated packaging

Do not burn, or use a cutting torch on, the empty drum. Dispose of container and unused contents in accordance with federal, state, and local requirements.

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SECTION 14: TRANSPORT INFORMATION

DOT

| | |
|----------------------|---|
| UN/ID number | NA1993 |
| Proper shipping name | Combustible liquid, N.O.S. (DIPROPYLENE GLYCOL METHYL ETHER)) |
| Class or division | C |
| Packing group | III |
| Label(s) | 3 |

IMDG

| | |
|----------------------|---|
| UN/ID number | NA1993 |
| Proper shipping name | POLY(2-8)ALKYLENE GLYCOL MONOALKYL(C1-C6)ETHER (CONTAINS DIPROPYLENE GLYCOL METHYL ETHER) |
| Pollution category | Z |
| Ship type | 3 |

Further Information

The transportation information is not intended to convey all specific regulatory data relating to this material. For complete transportation information, contact Res-Tek, Inc.

SECTION 15: REGULATORY INFORMATION

Toxic Substance Control Act (TSCA) 12(b) Component(s): Dipropylene Glycol Monomethyl Ether / CAS# 34590- 94-8.
TSCA section 4

| Country | Regulatory list | Notification |
|-------------|-----------------|--------------|
| USA | TSCA | Compliant |
| EU | REACH | None |
| Canada | DSL | Compliant |
| Australia | AICS | Compliant |
| Japan | ENCS | Compliant |
| South Korea | KECI | Compliant |
| China | IECSC | Compliant |
| Philippines | PICCS | Compliant |
| New Zealand | NZIoC | Compliant |
| Taiwan | TCSCA | Compliant |

EPA SARA Section 302/304. This product contains no known chemicals regulated under SARA 302/304.

EPA SARA Title III Section 311/312 (40 CFR 370) Hazard Classification Fire hazard, Immediate/Health

EPA SARA Title III Section 313 (40 CFR 372) Component(s) above 'de minimus' level None.

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm. However, Pilgrim has not tested for the presence of chemical substances.

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This product contains the following chemicals regulated by New Jersey's Worker and Community Right to Know Act:

34590-94-8 Dipropylene Glycol Monomethyl Ether

This product contains the following chemicals regulated by Massachusetts' Right to Know Law:

34590-94-8 Dipropylene Glycol Monomethyl Ether

This product contains the following chemicals regulated by Pennsylvania's Right to Know Act:

34590-94-8 Dipropylene Glycol Monomethyl Ether

SECTION 16: OTHER INFORMATION

Hazard Rating System HMIS

Health: 2
Flammability: 2
Physical hazard: 0

Hazard statement(s) listed in SECTION 3.

H227 Combustible liquid

H335 May cause respiratory irritation

Information source and references

This SDS is prepared by Pilgrim Permocoat, Inc. from information supplied by internal references within our company.

Additional information: None

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