

SAFETY DATA SHEET, revised 12 April 2019, printed 12 April 2019 15:59

6185 MFUA-12 Catalyst**1. PRODUCT AND COMPANY INFORMATION**

Trade name	MFUA-12 Catalyst (Part B)
Product codes	ZB6185, B6185, 6185, MFUA-12 Catalyst
Chemical family	Aliphatic Polyisocyanate
Intended use	Catalyst / curing agent / hardener for MFUA-12 traffic marking paint system
Company	Colorado Paint Company II, LLC 2851 N. Walden Street Aurora, CO 80011; U. S. A.
Telephone	+1 303-388-9265
Web site	www.swarco.com/cpc
Emergency (Chemtrec; 24 h)	1-800-424-9300 (U. S. A. and Canada)

2. HAZARD IDENTIFICATION**Emergency Overview****GHS Classification**

Acute toxicity, Inhalation (Category 4)
 Skin sensitisation (Category 1)
 Specific target organ toxicity- Single exposure (Category 3) (Respiratory system)

GHS Label elements, including precautionary statements

Pictograms:

Signal word: Warning**Hazard statements**

H317 May cause an allergic skin reaction
 H332 Harmful if inhaled.
 H335 May cause respiratory irritation.

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing should not be allowed out of the workplace.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P302+352 IF ON SKIN Wash with soap and water
 P304+340 IF INHALED Remove victim to fresh air and keep at rest in a position comfortable for breathing
 P304+312 IF INHALED Call a POISON CENTER or doctor/physician if you feel unwell
 P333+313 If skin irritation or a rash occurs Get medical advice/attention
 P342+311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician
 P363 Wash contaminated clothing before reuse
 P403+233 Store in a well ventilated place. Keep container tightly closed
 P405 Store locked up
 P501 Dispose of contents/container to an approved waste disposal plant.

HMIS and NFPA Classification:

	HMIS	NFPA Hazard
Health	2	2
Chronic health	-	-
Flammability	1	1

6185 MFUA-12 Catalyst

Reactivity	-	1
Physical hazard	1	—

3. COMPOSITION

Name	CAS	Concentration	
Homopolymer of Hexamethylene Diisocyanate	28182-81-2	95 - 100%	Acute toxicity Category 4 Inhalation. Respiratory sensitisation Category 1. Skin sensitisation Category 1. Specific target organ toxicity – single exposure Category 3 Respiratory system.
Hexamethylene-1,6-Diisocyanate	822-06-0	<0.15%	Acute toxicity Category 4 Oral. Acute toxicity Category 1 Inhalation. Skin corrosion Category 1. Serious eye damage Category 1. Respiratory sensitisation Category 1. Skin sensitisation Category 1. Specific target organ toxicity - single exposure Category 3 Respiratory system

4. FIRST AID MEASURES

Most Important Symptom(s)/Effect(s)

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 pre-existing, nonspecific bronchial hyper reactivity 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.

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

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.

Skin Contact

Immediately remove contaminated clothing and shoes. Wash off with soap and water. Use lukewarm water if possible. Wash contaminated clothing before reuse. For severe exposures, immediately get under safety shower and begin rinsing. Get medical attention if irritation develops and persists.

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.

Ingestion

6185 MFUA-12 Catalyst

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

Notes 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.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Dry chemical, Carbon dioxide (CO₂), Foam, water spray for large fires.

Unsuitable Extinguishing Media: High volume water jet

Fire Fighting Procedure

Firefighters should wear NFPA compliant structural firefighting protective equipment, including self-contained breathing apparatus and NFPA compliant helmet, hood, boots and gloves. 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.

Hazardous Decomposition Products

By Fire and High Heat: Carbon dioxide (CO₂), 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 (CO₂ 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.

6. ACCIDENTAL RELEASE MEASURES**Spill and Leak Procedures**

Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity released, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424- 9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan. Ventilate and remove ignition sources. Control the source of the leak. 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.

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. Check for residual surface contamination using Swype® test kits, available from Colorimetric Laboratories, Inc. (CL!) at 847-803-3737. If the Swype® 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 Swype® 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

6185 MFUA-12 Catalyst

release of carbon dioxide. After 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 Spill Procedures/Neutralization

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 includes: Products available through industrial suppliers:

- Spartan Chemical Company: 1-800-537-8990: o Spartan® ShineLine Emulsifier Plus
Spartan® SC-200 Heavy Duty Cleaner
- Colorimetric Laboratories, Inc. (CLI): 1-847-803-3737
Isocyanate Decontamination Solution
- * Mix equal amounts of the following:
Mineral spirits (80%), VM&P Naphtha (15%), and household detergent (5%), and
A 50-50 mixture of monoethanolamine and water

In a separate container, blend the two solutions in a 1:1 ratio by volume. Immediately prior to applying this blended neutralization solution onto the contaminated surface area, mix or agitate the container to help ensure uniform mixing of the ingredients.

If the above products are not available, the following products can be obtained through retail outlets:

- ZEP® Commercial Heavy-Duty Floor Stripper
- Greased Lightning® Super Strength Cleaner and Degreaser
- EASY OFF® Grill and Oven Cleaner or EASY OFF® Fume Free Oven Cleaner
- A mixture of 50% Simple Green® Pro HD Heavy-Duty Cleaner and 50% household ammonia
- A mixture of 90% Fantastic® Heavy Duty All Purpose Cleaner and 10% household ammonia.

Note: Always wear proper PPE when cleaning up an isocyanate spill and using a neutralization solution. It may take two or more applications of the neutralization solution to decontaminate the surface. Check for residual surface contamination using a surface wipe method such as the CLI Swype® pad.

7. HANDLING AND STORAGE

Handling/Storage Precautions

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:

6 Months @ 25 °C (77 °F): after receipt of material by customer

Storage Temperature

Minimum: -34 °C (-29.2 °F)

Maximum: 50 °C (122 °F)

Storage Conditions

Store separate from food products.

6185 MFUA-12 Catalyst

Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard 29 CFR 1910.1200.

Substances to Avoid

Water, Amines, Strong bases, Alcohols, Copper alloys

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**Homopolymer of Hexamethylene Diisocyanate (28182-81-2)****Exposure Limit**

time weighted average 0.5 mg/m³

Exposure Limit

Short Term Exposure Limit (STEL): 1.0 mg/m³ (15-min)

Hexamethylene-1,6-Diisocyanate (822-06-0)**US. ACGIH Threshold Limit Values**

Time Weighted Average (TWA): 0.005 ppm

Any component which is listed in section 3 and is not listed in this section does not have a known ACGIH TLV, OSHA PEL or supplier recommended occupational exposure limit.

Industrial Hygiene / Ventilation Measures

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.

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) 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, pre-filters should be changed whenever breathing resistance increases due to particulate 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

6185 MFUA-12 Catalyst

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.

Hand Protection

Gloves should be worn., Nitrile rubber gloves., Butyl rubber gloves., Neoprene gloves

Eye 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.

Skin Protection

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.

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.

Additional Protective Measures

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.

9. PHYSICAL PROPERTIES

State of Matter:	liquid
Color:	Pale Yellow
Odor:	Slight, Odorless
Odor Threshold:	No Data Available
pH:	No Data Available
Boiling Point:	No Data Available
Flash Point:	not applicable, decomposition
Evaporation Rate:	238 °C (460.4 °F) (ASTM D 93)
Lower Explosion Limit:	No Data Available
Upper Explosion Limit:	No Data Available
Vapor Pressure:	HDI Polyisocyanate: 5.2 X 10 ⁻⁹ @ 68 F (20 C) mmHg
Vapor Density:	No Data Available
Density:	ca. 1.16 g/cm ³ @ 20 °C (68 °F)
Relative Vapor Density:	No Data Available
Specific Gravity:	No Data Available
Solubility in Water:	Insoluble - Reacts slowly with water to liberate CO ₂ gas
Partition Coefficient:	No Data Available
n- octanol/water:	
Auto-ignition Temperature:	ca. 460 °C (860 °F)
Decomposition Temperature:	No Data Available
Dynamic Viscosity:	ca. 3,000 mPa.s @ 23 °C (73.4 °F) (DIN EN ISO 3219/A.3)
Kinematic Viscosity:	No Data Available

SAFETY DATA SHEET, revised 12 April 2019, printed 12 April 2019 15:59

6185 MFUA-12 Catalyst

Bulk Density:	1,159.92 kg/m ³
Molecular Weight:	500 For the polyisocyanate
pour point:	ca. -24 °C (-11.2 °F)
Self Ignition:	not applicable

10. STABILITY AND REACTIVITY DATA**Hazardous Reactions**

Contact with moisture, other materials that react with isocyanates, or temperatures above 350 F (177 C), may cause polymerization

Stability

Stable under normal conditions of use and storage.

Materials to Avoid

Water, Amines, Strong bases, Alcohols, Copper alloys

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with moisture / water.

Hazardous Decomposition Products

By Fire and High Heat: Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

6185 MFUA-12 Catalyst**11. TOXICOLOGICAL DATA**

Likely Routes of Exposure: Skin Contact
 Inhalation
 Eye Contact

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. Chronic overexposure to isocyanates has also been reported to cause lung damage (including fibrosis, decrease in lung function) that may 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.

Toxicity Data for MFUA-12 Catalyst

Data is based on the product, including residual monomer.

Toxicity Data for Homopolymer of Hexamethylene Diisocyanate**Toxicity Note**

Data is based on the product, including residual monomer.

Acute Oral Toxicity

LD50: > 2500 mg/kg (rat, female) (OECD Test Guideline 423)

Acute Inhalation Toxicity

LC50: 0.39 - 0.543 mg/l, 4 h (rat, male/female) (OECD Test Guideline 403)

SAFETY DATA SHEET, revised 12 April 2019, printed 12 April 2019 15:59

6185 MFUA-12 Catalyst

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 the weight of the evidence, a modified classification for acute inhalation toxicity is justified.

Acute Dermal Toxicity

LD50: > 2000 mg/kg (rabbit, male/female)

LD50: > 2000 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

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: sensitizer

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:

Salmonellalmicrosome 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)

Toxicity Data for Hexamethylene-1.6-Diisocyanate**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 (rat, male/female) (OECD Test Guideline 403)

Acute Dermal Toxicity

LD50: > 7000 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

Sensitization

dermal: sensitizer (guinea pig, Maximisation Test (GPMT))

Other isocyanates have been shown to produce dermal and respiratory sensitization in several species (guinea pigs, mice, rabbits, dogs). In addition, there is some evidence to suggest that cross-sensitization between different types of diisocyanates may occur.

dermal: sensitizer (Human, Case Report)

SAFETY DATA SHEET, revised 12 April 2019, printed 12 April 2019 15:59

6185 MFUA-12 Catalyst

Respiratory sensitization: sensitizer (guinea pig)

Repeated Dose Toxicity

2 years, inhalation: NOAEL: < 0.005 ppm, LOAEL: 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.

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, inhalation, gestation days 0 - 19, daily, NOAEL (teratogenicity): >0.3 ppm, NOAEL (maternal): < 0.3 ppm

No Teratogenic effects observed at doses tested.

No fetotoxicity observed at doses tested.

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

12. ECOLOGICAL DATA

Data is based on the product, including residual monomer.

Ecological Data for Homopolymer of Hexamethylene Diisocyanate**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)

SAFETY DATA SHEET, revised 12 April 2019, printed 12 April 2019 15:59

6185 MFUA-12 Catalyst

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)

Additional Ecotoxicological Remarks

Data is based on the product, including residual monomer.

Ecological Data for Hexamethylene-1.6-Diisocyanate**Biodegradation**

aerobic, 42 %, Exposure time: 28 d, i.e. not readily degradable

Bioaccumulation

value calculated, 57.6 BCF

An accumulation in aquatic organisms is not to be expected.

value calculated, 3.2 BCF

An accumulation in aquatic organisms is not to be expected. Studies of hydrolysis products.

Acute and Prolonged Toxicity to Fish

LCO: > 82.8 mg/l (Danio rerio (zebra fish), 96 h)

Acute Toxicity to Aquatic Invertebrates

ECO: > 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)

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions

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.

14. TRANSPORTATION INFORMATION**Land transport (DOT)**

Non-Regulated

Sea transport (IMDG)

Non-Regulated

Air transport (ICAO/IATA)

Non-Regulated

15. REGULATORY INFORMATION**United States Federal Regulations****US. Toxic Substances Control Act:** Listed on the TSCA Inventory.

SAFETY DATA SHEET, revised 12 April 2019, printed 12 April 2019 15:59

6185 MFUA-12 Catalyst

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

The following chemicals are specifically listed by individual states: other product specific health and safety data in other sections of the SDS may also be applicable for state requirements. For details on your regulatory requirements you should contact the appropriate agency in your state.

Massachusetts, New Jersey or Pennsylvania Right to Know Substance Lists:

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
≥95%	Homopolymer of Hexamethylene Diisocyanate	28182-81-2
≤0.15%	Hexamethylene-1,6-Diisocyanate	822-06-0

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

<u>Weight percent</u>	<u>Components</u>	<u>CAS-No.</u>
≤0.15%	Hexamethylene-1,6-Diisocyanate	822-06-0

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.

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).

16. ADDITIONAL INFORMATION

This safety data sheet complies with 29 CFR 1910.1200 and with EC 1907/2006, as amended. Unlimited paper copies of this publication may be made by the users for internal purposes only. Last modified: Friday, 12 April 2019 15:59 (Minor misspellings were corrected.)

Disclaimer

The handling of products containing reactive HDI polyisocyanate/prepolymer and/or monomeric HDI requires appropriate protective measures referred to in this SDS. These products are therefore recommended only for use in industrial or trade (commercial) applications. They are not suitable for use in Do-It-Yourself applications.

6185 MFUA-12 Catalyst

All information and data appearing on this Safety Data Sheet are provided in good faith and are believed to be reliable and accurate to the best of our knowledge at the date of publication. Although certain hazards are listed herein, there is no guarantee that these are only risks. None of the provided information is to be considered a warranty or quality specification or all-inclusive and is given only as guidance. It is the user's responsibility to determine the safety of use, handling, storage, transportation, disposal, and suitability for the intended utilisation of the product. Unless otherwise specified, the data provided herein is valid only for the described material and may be not applicable for the product used in combination with any other materials or processes. Colorado Paint Company / Swarco shall not be liable for any damage resulting from handling, contact, use, or inability to use of this product. No guarantee, expressed or implied, is made by Colorado Paint Company / Swarco and the user assumes all risk and responsibility.