

Material Name: Flexible FAST Part A

Product #: 317329 – 15 gal
310472 – 50 gal

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name: Flexible FAST Part A

Synonym: Diphenylmethane Diisocyanate

Chemical Family: Aromatic isocyanates

Product Use: Two-part adhesive for roofing systems

Restrictions on Use: For industrial use only.

Manufacturer Information

Carlisle SynTec Systems
1285 Ritner Highway
Carlisle, PA 17013
USA
Phone: +1-800-479-6832
Emergency Phone #: +1-800-424-9300 (CHEMTREC)

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.

Acute Toxicity- Category 4 (Inhalation- mist)

Skin Corrosive/Irritation - Category 2

Eye Damage/Irritation - Category 2B

Specific Target Organ Toxicity - Single Exposure –(Irritating to respiratory system)-Category 3

Specific Target Organ Toxicity - Repeated Exposure –(by inhalation)-Category 2

Skin Sensitivity - Category 1B

Respiratory Sensitization- Category 1

Carcinogenicity-Category 2

GHS Label Elements

Symbol(s)



Signal Word

Danger

Hazard Statement:

H320 Causes eye irritation.

H315 Causes skin irritation.

H332 Harmful if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

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H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
H373 May cause damage to organs (Olfactory organs) through prolonged or repeated exposure (inhalation).

Precautionary Statements (Prevention):

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P271 Use only outdoors or in a well-ventilated area.
P260 Do not breathe dust/gas/mist/vapours.
P201 Obtain special instructions before use.
P261 Avoid breathing mist.
P202 Do not handle until all safety precautions have been read and understood.
P284 [In case of inadequate ventilation] wear respiratory protection.
P272 Contaminated work clothing should not be allowed out of the workplace.
P264 Wash with plenty of water and soap thoroughly after handling.

Precautionary Statements (Response):

P312 Call a POISON CENTER or doctor/physician if you feel unwell.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P311 IF exposed or concerned: Call a POISON CENTER or doctor/physician.
P314 Get medical advice/attention if you feel unwell.
P303 + P352 IF ON SKIN (or hair): Wash with plenty of soap and water.
P333 + P311 If skin irritation or rash occurs: Call a POISON CENTER or doctor/physician.
P362 + P364 Take off contaminated clothing and wash before reuse.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.

Precautionary Statements (Storage):

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

Hazards not otherwise classified

No specific dangers known, if the regulations/notes for storage and handling are considered.

Labeling of special preparations (GHS):

CONTAINS ISOCYANATES. INHALATION OF ISOCYANATE MISTS OR VAPORS MAY CAUSE RESPIRATORY IRRITATION, BREATHELESSNESS, CHEST DISCOMFORT AND REDUCED PULMONARY FUNCTION. OVEREXPOSURE WELL ABOVE THE PEL MAY RESULT IN BRONCHITIS, BRONCHIAL SPASMS AND PULMONARY EDEMA. LONG-TERM EXPOSURE TO ISOCYANATES HAS BEEN REPORTED TO CAUSE LUNG DAMAGE, INCLUDING REDUCED LUNG FUNCTION WHICH MAY BE PERMANENT. ACUTE OR CHRONIC OVEREXPOSURE TO ISOCYANATES MAY CAUSE SENSITIZATION IN SOME INDIVIDUALS, RESULTING IN ALLERGIC RESPIRATORY REACTIONS INCLUDING WHEEZING, SHORTNESS OF BREATH AND DIFFICULTY BREATHING. ANIMAL TESTS INDICATE THAT SKIN CONTACT MAY PLAY A ROLE IN CAUSING RESPIRATORY SENSITIZATION.

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According to Regulation 1994 OSHA Hazard Communication Standard; 29 CFR Part 1910.1200

Emergency overview

WARNING:

CONTAINS ISOCYANATES. INHALATION OF ISOCYANATE MISTS OR VAPORS MAY CAUSE RESPIRATORY IRRITATION, BREATHLESSNESS, CHEST DISCOMFORT AND REDUCED PULMONARY FUNCTION. OVEREXPOSURE WELL ABOVE THE PEL MAY RESULT IN BRONCHITIS, BRONCHIAL SPASMS AND PULMONARY EDEMA. LONG-TERM EXPOSURE TO ISOCYANATES HAS BEEN REPORTED TO CAUSE LUNG DAMAGE, INCLUDING REDUCED LUNG FUNCTION WHICH MAY BE PERMANENT. ACUTE OR CHRONIC OVEREXPOSURE TO ISOCYANATES MAY CAUSE SENSITIZATION IN SOME INDIVIDUALS, RESULTING IN ALLERGIC RESPIRATORY REACTIONS INCLUDING WHEEZING, SHORTNESS OF BREATH AND DIFFICULTY BREATHING. ANIMAL TESTS INDICATE THAT SKIN CONTACT MAY PLAY A ROLE IN CAUSING RESPIRATORY SENSITIZATION. AVOID CONTACT WITH SKIN AND EYES. SKIN OR EYE CONTACT MAY CAUSE IRRITATION.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
101-68-8	Diphenylmethane-4,4'-diisocyanate (MDI)	25.0 - 60.0
25686-28-6	4,4'-Methylenediphenyl diisocyanate, oligomers	3.0 – 7.0
26447-40-5	Methylenediphenyl diisocyanate	10.0 – 30.0
39420-98-9	Isocyanates, reaction product of polyol with methylenediphenyl diisocyanate	10.0 - 30.0
9016-87-9	P-MDI	7.0 – 13.0
39310-05-9	Diphenylmethane diisocyanate, homopolymer	10.0 – 30.0
5873-54-1	Diphenylmethane-2,4'- diisocyanate	10.0 – 30.0

Section 4 - FIRST AID MEASURES

General advice: Remove contaminated clothing.

EYES: In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Immediate medical attention required.

SKIN: Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

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INGESTION: Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required

INHALATION: Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary. Immediate medical attention required.

Most important symptoms and effects, both acute and delayed

Symptoms: The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Eye irritation, skin irritation, allergic symptoms

Hazards: Symptoms can appear later.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

Hazards: Respiratory sensitization may result in allergic (asthma-like) signs in the lower respiratory tract including wheezing, shortness of breath and difficulty breathing, the onset of which may be delayed. Repeated inhalation of high concentrations may cause lung damage, including reduced lung function, which may be permanent. Substances eliciting lower respiratory tract irritation may worsen the asthma-like reactions that may be produced by product exposures.

Indication of any immediate medical attention and special treatment needed

Note to physician

Antidote: Specific antidotes or neutralizers to isocyanates do not exist.

Treatment: Treatment should be supportive and based on the judgement of the physician in response to the reaction of the patient.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Dry powder, foam, carbon dioxide, water spray.

Special hazards arising from the substance or mixture

Hazards during fire-fighting: nitrous gases, fumes/smoke, isocyanate, vapor

Fire Fighting Measures

Protective equipment for fire-fighting:

Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Keep containers cool by spraying with water if exposed to fire. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Clear area. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental precautions

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Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

For small amounts: Absorb isocyanate with suitable absorbent material (see § 40 CFR, sections 260, 264 and 265 for further information). Shovel into open container. Do not make container pressure tight. Move container to a well-ventilated area (outside). Spill area can be decontaminated with the following recommended decontamination solution: Mixture of 90 % water, 8 % concentrated ammonia, 2 % detergent. Add at a 10 to 1 ratio. Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide.

For large amounts: If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over the spill. Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal.

For residues: The following measures should be taken for final cleanup: Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes.

Dike spillage.

Section 7 - HANDLING AND STORAGE

Precautions for safe handling

Provide suitable exhaust ventilation at the processing machines. Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. When handling heated product, vapours of the product should be ventilated, and respiratory protection used. Wear respiratory protection when spraying. Danger of bursting when sealed gastight. Protect against moisture. If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent and let stand for 48 hours before resealing.

Protection against fire and explosion:

Storage No explosion proofing necessary.

Conditions for safe storage, including any incompatibilities

Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases.

Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4301 (V2)

Further information on storage conditions: Formation of CO₂ and build up of pressure possible. Keep container tightly closed and in a well-ventilated place. Outage of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture.

Storage stability:

Storage temperature: 16 - 27 °C (60 – 80 °F)

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

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Diphenylmethane-4,4'-diisocyanate (MDI)	101-68-8
OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³
ACGIH TLV	TWA value 0.005 ppm
P-MDI	9016-87-9
OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³
ACGIH TVL	TWA value 0.005 ppm

Advice on system design:

Provide local exhaust ventilation to maintain recommended P.E.L.

Personal protective equipment

Respiratory protection:

When workers are facing concentrations above the occupational exposure limits they must use appropriate certified respirators. When atmospheric levels may exceed the occupational exposure limit (PEL or TLV) NIOSH-certified air-purifying respirators equipped with an organic vapor sorbent and particulate filter can be used as long as appropriate precautions and change out schedules are in place. For emergency or non-routine, high exposure situations, including confined space entry, use a NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:

Chemical resistant protective gloves should be worn to prevent all skin contact., Suitable materials may include, chloroprene rubber (Neoprene), nitrile rubber (Buna N), chlorinated polyethylene, polyvinylchloride (Pylox), butyl rubber, depending upon conditions of use.

Eye protection:

Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:

Cover as much of the exposed skin as possible to prevent all skin contact., Suitable materials may include, saran-coated material, depending upon conditions of use.

General safety and hygiene measures:

Wear protective clothing as necessary to prevent contact. Eye wash fountains and safety showers must be easily accessible. Observe the appropriate PEL or TLV value. Wash soiled clothing immediately. Contaminated equipment or clothing should be cleaned after each use or disposed of.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	liquid	Physical State	liquid
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Odor	faint aromatic	Color	Light yellow to amber
Boiling Point (@ 5mmHg)	200 °C (392 °F)	Flammability Limit	Not flammable
Freezing Point	< -20.0 °C (-4 °F)	Vapor Pressure (25 °C)	0.00001 mmHg
Autoignition	>470 °C (878 °F)	Flash Point	200 °C (392 °F)
Solubility in water	Reacts with water	Viscosity, Dynamic (25°C)	270 mPa.s
Vapor Density	N/A	Miscibility with water:	Reacts with water.
Density (25 °C)	9.66 lb/USg	pH	N/A
Relative Density	N/A	Vapor Density	N/A
Thermal decomposition	No decomposition if stored and handled as prescribed.	Self-ignition temperature:	Based on its structural properties the product is not classified as self-igniting.
Partitioning coefficient noctanol/ water (log Pow):	N/A		

Other Information: If necessary, information on other physical and chemical parameters is indicated in this section

Section 10 - STABILITY AND REACTIVITY

Reactivity

Corrosion to metals: No corrosive effect on metal.

Oxidizing properties: Not an oxidizer

Chemical Stability

The product is stable if stored and handled as prescribed/indicated.

Possibility of Hazardous Reactions

Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols. Reacts with acids. Reacts with alkalis. Reacts with amines. Risk of exothermic reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

Conditions to Avoid

Avoid moisture.

Incompatible Materials

Acids, amines, alcohols, water, Alkalines, strong bases, Substances/products that react with isocyanates

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Hazardous decomposition products: carbon monoxide, carbon dioxide, nitrogen oxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapors

Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Primary routes of exposure

Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.

Acute Toxicity/Effects

Acute toxicity

Assessment of acute toxicity: Inhalation of vapors may cause irritation of the mucous membranes of the nose, throat or trachea, breathlessness, chest discomfort, difficult breathing and reduced pulmonary function. Inhalation exposure well above the PEL may result additionally in eye irritation, headache, chemical bronchitis, asthma-like findings or pulmonary edema. Isocyanates have also been reported to cause hypersensitivity pneumonitis, which is characterized by flu-like symptoms, the onset of which may be delayed.

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

Diphenylmethane-4,4'-diisocyanate (MDI) (101-68-8)

Oral LD50 Rat >10,000 mg/kg (Directive 84/449/EEC, B.1)

Dermal LD50 Rabbit >9,400 mg/kg

Inhalation LC50 Rat 0.49 mg/l (OECD Guideline 403)

An aerosol was tested

Isocyanates, reaction product of polyol with methylenediphenyl diisocyanate (39420-98-9)

Oral LD50 Rat >10,000 mg/kg (Directive 84/449/EEC, B.1)

Dermal LD50 Rabbit >9,400 mg/kg

Inhalation LC50 Rat 0.49 mg/l (OECD Guideline 403)

Interaperitoneal LD50 Rabbit 100mg/kg

Diphenylmethane diisocyanate, homopolymer (39310-05-9)

Oral LD50 Rat >5,000 mg/kg (up and down procedure)

Dermal LD50 Rabbit >9,400 mg/kg

Inhalation LC50 Rat 0.49 mg/l (OECD Guideline 403)

Diphenylmethane-2,4'-diisocyanate (5873-54-1)

Dermal LD50 Rabbit >9,400 mg/kg

Inhalation LC50 Rat 0.49 mg/l (OECD Guideline 403)

Interaperitoneal LD50 Rabbit 100mg/kg

Assessment other acute effects

Assessment of STOT single: Category 3

Causes temporary irritation of the respiratory tract.

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Irritation / corrosion

Assessment of irritating effects: Irritating to eyes, respiratory system and skin. Skin contact may result in dermatitis, either irritative or allergic.

Skin

Information on: Diphenylmethane-4,4'-diisocyanate (MDI); Isocyanates, reaction product of polyol with methylenediphenyl diisocyanate; Diphenylmethane diisocyanate, homopolymer; Diphenylmethane-2,4'-diisocyanate

Species: rabbit

Result: Irritating.

Method: Draize test

Eye

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

Species: rabbit

Result: Irritating.

Method: Draize test

Sensitization

Assessment of sensitization: Sensitization after skin contact possible. The substance may cause sensitization of the respiratory tract. As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the PEL/TLV. These symptoms, which include chest tightness, wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. 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. Chronic overexposure to isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of vapour-only exposure. Animal tests indicate that skin contact may play a role in causing respiratory sensitization.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI); Isocyanates, reaction product of polyol with methylenediphenyl diisocyanate; Diphenylmethane diisocyanate, homopolymer; Diphenylmethane-2,4'-diisocyanate

Buehler test

Species: guinea pig

Result: sensitizing

Mouse Local Lymph Node Assay (LLNA)

Species: mouse

Result: sensitizin

Can cause skin sensitization

other

Species: guinea pig

Result: sensitizing

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Studies in animals suggest that dermal exposure may lead to pulmonary sensitization. However, the relevance of this result for humans is unclear.

Aspiration Hazard

No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: The substance may cause damage to the olfactory epithelium after repeated inhalation. The substance may cause damage to the lung after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

Experimental/calculated data: rat (Wistar) (male/female) Inhalation 2 yrs, 6 hr/day 0, 0.2, 1, 6 mg/m³, olfactory epithelium

NOAEL: 0.2 mg/m³

LOAEL: 1 mg/m³

The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure. Repeated inhalative uptake of the substance did not cause damage to the reproductive organs.

Genetic toxicity

Assessment of mutagenicity: The substance was mutagenic in various bacterial test systems; however, these results could not be confirmed in tests with mammals.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

Genetic toxicity in vitro: OECD Guideline 471 Ames-test Salmonella typhimurium:with and without metabolic activation ambiguous

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)

Genetic toxicity in vivo: OECD Guideline 474 Micronucleus assay rat (male) Inhalation negative.

No clastogenic effect reported.

Carcinogenicity

Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI); Isocyanates, reaction product of polyol with methylenediphenyl diisocyanate; Diphenylmethane-2,4'-diisocyanate

Experimental/calculated data: OECD Guideline 453 rat Inhalation 0, 0.2, 1, 6 mg/m³

Result:Positive/Lung tumors

Carcinogenetic class: Diphenylmethane-4,4'-diisocyanate (MDI) – IARC 3

Reproductive toxicity

Assessment of reproduction toxicity: Repeated inhalative uptake of the substance did not cause damage to the reproductive organs.

Teratogenicity

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Assessment of teratogenicity: The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Development

OECD Guideline 414 rat Inhalation 0, 1, 4, 12 mg/m³

NOAEL Mat.: 4 mg/m³

NOAEL Teratog.: 4 mg/m³

The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Symptoms of Exposure

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11., Eye irritation, skin irritation, allergic symptoms

Medical conditions aggravated by overexposure

The isocyanate component is a respiratory sensitizer. It may cause allergic reaction leading to asthma-like spasms of the bronchial tubes and difficulty in breathing. Medical supervision of all employees who handle or come into contact with isocyanates is recommended. Contact may aggravate pulmonary disorders. Persons with history of respiratory disease or hypersensitivity should not be exposed to this product. Preemployment and periodic medical examinations with respiratory function tests (FEV₁, FVC as a minimum) are suggested. Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema or pulmonary sensitization should be excluded from working with isocyanates. Once a person is diagnosed as having pulmonary sensitization (allergic asthma) to isocyanates, further exposure is not recommended.

Potential Acute effects:

Eye contact: Causes eye irritation

Inhalation: Harmful if inhaled. May cause respiratory irritation. This product is a respiratory irritant and potential respiratory sensitizer: repeated inhalation of vapour or aerosol at levels above the occupational exposure limit could cause respiratory sensitisation. Symptoms may include irritation to the eyes, nose, throat and lungs, possibly combined with dryness of the throat, tightness of chest and difficulty in breathing. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitised persons. LC50 (rat) : ca. 490 mg/m³ (4 hours) : using experimentally produced respirable aerosol having aerodynamic diameter <5microns.

Skin contact: Causes skin irritation. May cause sensitization by skin contact. Animal studies have shown that respiratory sensitisation can be induced by skin contact with known respiratory sensitizers including diisocyanates. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

Ingestion: Low oral toxicity, but ingestion may cause irritation of the gastrointestinal tract

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

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Diphenylmethane 4,4'-diisocyanate	
Fish:	LC50 96 h Brachydanio rerio >1000 mg/L [static]
Invertebrate:	EC50 24 hr Daphnia magna >1000 mg/L[static] NOEC 21 days Daphnia magna >10 mg/L[semi-static]
Algae:	NOEC 72 h Algae 1640 mg/L IUCLID
Isocyanates, reaction product of polyol with methylenediphenyl diisocyanate	
Fish:	LC50 96 h Brachydanio rerio >1000 mg/L [static]
Invertebrate:	EC50 24 hr Daphnia magna >1000 mg/L[static] NOEC 21 days Daphnia magna >10 mg/L[semi-static]
Bacteria:	EC50 3 hr bacteria >100 mg/L[static]
Diphenylmethane diisocyanate, homopolymer	
Fish:	LC50 96 h Brachydanio rerio >1000 mg/L [static]
Invertebrate:	EC50 24 hr Daphnia magna >1000 mg/L[static] NOEC 21 days Daphnia magna >10 mg/L[semi-static]
Bacteria:	EC50 3 hr bacteria >100 mg/L[static]
Algae:	EC50 72 h Algae >1640 mg/L IUCLID NOEC 72 h Algae 1640 mg/L IUCLID
Diphenylmethane-2,4'-diisocyanate	
Fish:	LC50 96 h Brachydanio rerio >1000 mg/L [static]
Invertebrate:	EC50 24 hr Daphnia magna >1000 mg/L[static] NOEC 21 days Daphnia magna >10 mg/L[semi-static]
Bacteria:	EC50 3 hr bacteria >100 mg/L[static]

Aquatic toxicity

Assessment of aquatic toxicity:

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There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. Based on long-term (chronic) toxicity study data, the product is very likely not harmful to aquatic organisms.

The product may hydrolyse. The test result maybe partially due to degradation products. The product has not been tested as a whole. The statement has been derived from substances/products of a similar structure or composition.

Persistence and degradability

Assessment biodegradation and elimination (H₂O): Poorly biodegradable. The product is unstable in water. The elimination data also refer to products of hydrolysis.

Elimination information:

0 % BOD of the ThOD (28 d) (OECD Guideline 302 C) (aerobic, activated sludge) Poorly biodegradable.

Assessment of stability in water

In contact with water the substance will hydrolyse slowly.

Information on Stability in Water (Hydrolysis)

t_{1/2} 20 h (25 °C)

Bioaccumulative potential

Assessment bioaccumulation potential

Significant accumulation in organisms is not to be expected.

Bioaccumulation potential

Bioconcentration factor: 200 (28 d), Cyprinus carpio (OECD Guideline 305 E)

Mobility in soil

Assessment transport between environmental compartments.

The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

Section 13 - DISPOSAL CONSIDERATIONS

Waste disposal of substance:

Incinerate or dispose of in a licensed facility. Do not discharge substance/product into sewer system.

Container disposal:

DRUMS:

Steel drums must be emptied and can be sent to a licensed drum reconditioner for reuse, a scrap metal dealer or an approved landfill. Do not attempt to refill or clean containers since residue is difficult to remove. Under no circumstances should empty drums be burned or cut open with gas or electric torch as toxic decomposition products may be liberated. Do not reuse empty containers.

Section 14 - TRANSPORT INFORMATION

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US DOT Information:

Not classified as a dangerous good under transport regulations

Sea transport IMDG

Not classified as a dangerous good under transport regulations

Air transportation IATA/ICAO

Not classified as a dangerous good under transport regulations

Further information

DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this MSDS for the RQ for this product.

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

Registration status:

Chemical TSCA, US released / listed.

EPCRA 311/312 (Hazard categories) Acute; Chronic

EPCRA SECTION 313 SUPPLIER NOTIFICATION

Chemical Name	CAS
Diphenylmethane-4,4'-diisocyanate (MDI)	101-68-8
P-MDI	9016-87-9

CERCLA-RQ (COMPREHENSIVE RESPONSE, COMPENSATION, AND LIABILITY ACT)

Chemical Name	CAS	CERCLA RQ
Diphenylmethane-4,4'-diisocyanate (MDI);	101-68-8	5000 lbs
P-MDI	9016-87-9	5,000 lbs

Reportable Quantity for release: 13,157.9 lb

STATE REGULATIONS

Chemical Name	CAS	State RTK
Diphenylmethane-4,4'-diisocyanate (MDI);	101-68-8	MA, NJ, PA
P-MDI	9016-87-9	MA, NJ, PA
Methylenediphenyl diisocyanate	26447-40-5	NJ

Section 16 - OTHER INFORMATION

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HMIS Rating

Health: 2 Fire: 1 Physical Hazard: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

NFPA Ratings

Health: 2 Fire: 1 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes

Revision Date: August 10, 2021

Revision Note: General Update

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States.

Other Information

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