

SAFETY DATA SHEET

Hi-Tech Spall FX2 "A"

Revised February 27, 2015

1. PRODUCT & COMPANY IDENTIFICATION

Recommended use of the chemical and restriction on use

Recommended use: Polyurethane component industrial chemicals
Suitable for use in industrial sector: Polymers industry; chemical industry

Company

Progressive Fastening Systems
1190 N. Del Rio Pl.
Ontario, CA 91764

Phone: (909) 945-5530
Fax: (909) 945-3009
www.hitechpolyurea.com

Emergency Telephone Number: Call CHEMTREC Day or Night, Within USA or Canada 1-800-424-9300
Outside USA or Canada: Call 1-703-527-3887 (collect calls accepted)

Use only for hazardous materials (or dangerous goods) incident - spill, leak, fire, exposure, or accident.

Chemical Family: Aromatic Isocyanates
Synonyms: Diphenylmethane Diisocyanate

2. HAZARDS IDENTIFICATION

According to Regulation 2012 OSHA Hazard Communication Standard: 29 CFR Part 1910.1200

Classification of the product

Acute Tox.	4 (Inhalation - mist)	Acute toxicity
Eye Dam./Irrit.	2B	Serious eye damage/eye irritation
Skin Corr./Irrit.	2	Skin corrosion/irritation
Skin Sens.	1B	Skin sensitization
Resp. Sens.	1	Respiratory sensitization
Carc.	2	Carcinogenicity
STOT SE	3 (irritating to Respiratory system)	Specific target organ toxicity — single exposure
STOT RE	2 (by inhalation)	Specific target organ toxicity — repeated exposure
Aquatic Chronic	3	Hazardous to the aquatic environment - chronic
Aquatic Acute	3	Hazardous to the aquatic environment - acute
Flam. Liq.	4	Flammable liquids

Label elements

Pictogram:



Signal Word:
Danger

Hazard Statement:

H227	Combustible liquid.
H320	Causes eye irritation.
H315	Causes skin irritation.
H332	Harmful if inhaled.

H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
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).
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

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.
P273	Avoid release to the environment.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

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.
P370 + P378	In case of fire: Use water spray, dry powder, carbon dioxide, foam to extinguish.

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.
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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, 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.

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

Emergency overview

DANGER:

COMBUSTIBLE LIQUID.

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.

Harmful to aquatic organisms.

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

FLAMMABLE LIQUID.

3. COMPOSITION / INFORMATION ON INGREDIENTS

According to Regulation 2012 OSHA Hazard Communication Standard: 29 CFR Part 1910.1200

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
101-68-8	>= 50.0 - < 75.0 %	Diphenylmethane-4,4'-diisocyanate (MDI)
64742-94-5	>= 15.0 - < 20.0 %	solvent naphtha
9016-87-9	>= 10.0 - < 15.0 %	P-MDI
25686-28-6	>= 10.0 - < 15.0 %	Benzene, 1,1'-methylenebis[4-isocyanato-, homopolymer
26447-40-5	>= 1.0 - < 3.0 %	Methylenediphenyl diisocyanate
91-20-3	>= 0.3 - < 3.0 %	naphthalene
57636-09-6	>= 0.3 - < 1.0 %	Isocyanic acid, polymethylenepolyphenylene ester, polymer with.alpha.-hydro-.omega.-hydroxypoly(oxy-1,2- ethanediyl)
17589-24-1	>= 0.2 - < 0.3 %	1,3-Diazetidone-2,4-dione, 1,3-bis[4-[(4-isocyanatophenyl)methyl]phenyl]-
71-43-2	>= 0.0 - < 0.1 %	Benzene

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

CAS Number	Content (W/W)	Chemical name
101-68-8	51.0 %	Diphenylmethane-4,4'-diisocyanate (MDI)
64742-94-5	< 20.0 %	solvent naphtha
9016-87-9	< 15.0 %	P-MDI
	< 15.0 %	Modified MDI
26447-40-5	< 5.0 %	Methylenediphenyl diisocyanate
91-20-3	< 1.0 %	naphthalene
57636-09-6	< 1.0 %	Isocyanic acid, polymethylenepolyphenylene ester, polymer with.alpha.-hydro-.omega.-hydroxypoly(oxy-1,2- ethanediyl)
17589-24-1	< 1.0 %	1,3-Diazetidine-2,4-dione, 1,3-bis[4-[(4-isocyanatophenyl)methyl]phenyl]-
71-43-2	< 0.1 %	Benzene

4. **FIRST AID MEASURES**

Description of first aid measures

General advice:

Remove contaminated clothing.

If inhaled:

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

If on skin:

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

If in eyes:

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

If swallowed:

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.

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

Information on: solvent naphtha

Symptoms: Overexposure may cause:, unconsciousness, vomiting, lethargy, confusion, nausea, headache, dizziness

Information on: naphthalene

Symptoms: Overexposure may cause:, perspiration, methaemoglobinaemia, loss of appetite, hemoglobinuria, hemolytic anemia, corneal injury, nausea, headache

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.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, carbon dioxide, foam

Special hazards arising from the substance or mixture

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

Advice for fire-fighters

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.

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

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.

7. HANDLING & 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, vapors 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: 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. Segregate from 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: 60 - 80°F (16 - 27 °C)

Protect against moisture.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

Components with occupational exposure limits

naphthalene	OSHA PEL	PEL 10 ppm 50 mg/m ³ ; STEL value 15 ppm 75 mg/m ³ ; TWA value 10 ppm 50 mg/m ³ ;
	ACGIH TLV	TWA value 10 ppm ; STEL value 15 ppm ; Skin Designation ; The substance can be absorbed through the skin.
Diphenylmethane-4,4'-diisocyanate (MDI)	OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³ ; CLV 0.02 ppm 0.2 mg/m ³ ;
	ACGIH TLV	TWA value 0.005 ppm ;
P-MDI	OSHA PEL	CLV 0.02 ppm 0.2 mg/m ³ ; CLV 0.02 ppm 0.2 mg/m ³ ;
	ACGIH TLV	TWA value 0.005 ppm ;
solvent naphtha	OSHA PEL	PEL 100 ppm 400 mg/m ³ ; TWA value 100 ppm 400 mg/m ³ ;

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.

9. PHYSICAL / CHEMICAL PROPERTIES
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Form:	liquid	
Odor:	of hydrocarbons	
Odor threshold:		not applicable
Color:	brown	
pH value:		not applicable
Freezing point:	32°F (0.00 °C)	
Boiling point:	392°F (200.00 °C)	
Sublimation point:		No applicable information available.
Flash Point	142°F (61.11°C)	(closed cup)
Flammability:	Flammable liquid	
Lower explosion limit:		For liquids not relevant for classification and labelling. The lower explosion point may be 41 - 59°F (5 - 15 °C) below the flash point.
Upper explosion limit:		For liquids not relevant for classification and labelling.
Autoignition:	>482°F (> 250 °C)	
Vapor pressure:	0.01 mmHg	77°F (25.00 °C)
Density:	9.2600 lb/USg	77°F (25.00 °C)
Relative density:		No applicable information available.
Vapour density:		not applicable
Partitioning coefficient n-octanol/water (log Pow):		not applicable
Self-ignition temperature:		not self-igniting.
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated.	
Viscosity, dynamic:	200.000 mPa.s	77°F (25.00 °C)
Viscosity, kinematic:		No applicable information available.
Solubility in water:		Reacts with water.
Miscibility with water:		Reacts with water.
Solubility (quantitative):		No applicable information available.
Solubility (qualitative):	No applicable information available.	
Evaporation rate:		Value can be approximated from Henry's Law Constant or vapor pressure.
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.	

10. STABILITY & 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 alkalies. 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.

Hazardous decomposition products

Decomposition products:
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.

11. TOXICOLOGICAL INFORMATION

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.

Oral

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

Type of value: LD50

Species: rat (male/female)

Value: > 2,000 mg/kg (Directive 84/449/EEC, B.1)

Inhalation

Type of value: LC50

Species: rat (male/female)

Value: 2.0 mg/l (OECD Guideline 403)

An aerosol was tested.

Dermal

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

Type of value: LD50

Species: rabbit (male/female)

Value: > 9,400 mg/kg

Assessment other acute effects

Assessment of STOT single:

Causes temporary irritation of the respiratory tract.

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)

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)

Buehler test

Species: guinea pig

Result: sensitizing

Mouse Local Lymph Node Assay (LLNA)

Species: mouse

Result: sensitizing

Can cause skin sensitization

other

Species: guinea pig

Result: sensitizing

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

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.

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

Result: Lung tumors

Reproductive toxicity

Assessment of reproduction toxicity: Repeated inhalative uptake of the substance did not cause damage

to the reproductive organs.

Teratogenicity

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.

12. ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

Acutely harmful for aquatic organisms. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product has not been tested. The statement has been derived from the properties of the individual components.

Toxicity to fish

Information on: naphthalene

LC50 (48 h) 0.9 - 1.01 mg/l, Oncorhynchus gorboscha (other, Flowthrough.)

The statement of the toxic effect relates to the analytically determined concentration. Literature data.

LC50 (48 h) 9 mg/l, Oryzias latipes (JIS K 0102-71, semistatic)

Aquatic invertebrates

Information on: naphthalene

EC50 (48 h) 2.16 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

The details of the toxic effect relate to the nominal concentration. The product has low solubility in the test medium. A saturated solution has been tested. Literature data.

Aquatic plants

Information on: naphthalene

EC50 (72 h) approx. 0.4 mg/l (growth rate), Skeletonema costatum (static)

The details of the toxic effect relate to the nominal concentration. Literature data.

No observed effect concentration (8 d) \geq 16 mg/l (growth rate), Lemna minor (OECD guideline 221, static)

Literature data.

Chronic toxicity to fish

Information on: naphthalene

No observed effect concentration (40 d) 0.37 mg/l, Oncorhynchus kisutch (Flow through.)

Chronic toxicity to aquatic invertebrates

Information on: naphthalene

No observed effect concentration (125 d) 0.59 mg/l, Daphnia pulex (static)

Microorganisms/Effect on activated sludge

Toxicity to microorganisms

Information on: naphthalene

Oxygen consumption test aerobic microorganisms/EC50 (15 h): 670 mg/l

The details of the toxic effect relate to the nominal concentration.

Bacteria/EC50 (24 h): 29 mg/l

The details of the toxic effect relate to the nominal concentration.

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.

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.

14. TRANSPORTATION INFORMATION

Land Transport:

USDOT Classified as combustible liquid in containers greater than 119 gallons.

Sea Transport:

IMDG Not classified as a dangerous good under transport regulations

Air Transport:

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.

15. REGULATORY INFORMATION

Federal Regulations

Registration status:

Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories): Acute; Chronic; Fire

EPCRA 313:

CAS Number

101-68-8

9016-87-9

91-20-3

Chemical name

Diphenylmethane-4,4'-diisocyanate (MDI)

P-MDI

naphthalene

CERCLA RQ

5000 LBS

100 LBS

CAS Number

101-68-8; 9016-87-9

91-20-3

Chemical name

Diphenylmethane-4,4'-diisocyanate (MDI); P-MDI

naphthalene

State regulations

State RTK

MA, NJ, PA
MA, NJ, PA
MA, NJ, PA
NJ
MA, NJ, PA
MA, NJ, PA

CAS Number

101-68-8
64742-94-5
9016-87-9
26447-40-5
91-20-3
71-43-2

Chemical name

Diphenylmethane-4,4'-diisocyanate (MDI)
solvent naphtha
P-MDI
Methylenediphenyl diisocyanate
naphthalene
Benzene

CA Prop. 65:

WARNING: THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

NFPA Hazard codes:

Health : 2 Fire: 2 Reactivity: 1 Special:

HMIS III rating:

Health : 2[□] Flammability: 2 Physical Hazard: 1

16. OTHER INFORMATION

SDS Prepared by: Technical Services

IMPORTANT: WHILE THE DESCRIPTIONS, DESIGNS, DATA AND INFORMATION CONTAINED HEREIN ARE PRESENTED IN GOOD FAITH AND BELIEVED TO BE ACCURATE, IT IS PROVIDED FOR YOUR GUIDANCE ONLY. BECAUSE MANY FACTORS MAY AFFECT PROCESSING OR APPLICATION/USE, WE RECOMMEND THAT YOU MAKE TESTS TO DETERMINE THE SUITABILITY OF A PRODUCT FOR YOUR PARTICULAR PURPOSE PRIOR TO USE. NO WARRANTIES OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE MADE REGARDING PRODUCTS DESCRIBED OR DESIGNS, DATA OR INFORMATION SET FORTH, OR THAT THE PRODUCTS, DESIGNS, DATA OR INFORMATION MAY BE USED WITHOUT INFRINGING THE INTELLECTUAL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIDERED A PART OF OUR TERMS AND CONDITIONS OF SALE. FURTHER, YOU EXPRESSLY UNDERSTAND AND AGREE THAT THE DESCRIPTIONS, DESIGNS, DATA, AND INFORMATION FURNISHED BY OUR COMPANY HEREUNDER ARE GIVEN GRATIS AND WE ASSUME NO OBLIGATION OR LIABILITY FOR THE DESCRIPTION, DESIGNS, DATA AND INFORMATION GIVEN OR RESULTS OBTAINED, ALL SUCH BEING GIVEN AND ACCEPTED AT YOUR RISK.

END OF DATA SHEET

SAFETY DATA SHEET

Hi-Tech Spall FX2 "B"

Revised March 4, 2015

1. PRODUCT & COMPANY IDENTIFICATION

Recommended use of the chemical and restriction on use

Recommended use: Polyurethane component industrial chemicals
Suitable for use in industrial sector: Polymers industry; chemical industry

Company

Progressive Fastening Systems
1190 N. Del Rio Pl.
Ontario, CA 91764

Phone: (909) 945-5530
Fax: (909) 945-3009
www.hitechpolyurea.com

Emergency Telephone Number: Call CHEMTREC Day or Night, Within USA or Canada 1-800-424-9300
Outside USA or Canada: Call 1-703-527-3887 (collect calls accepted)

Use only for hazardous materials (or dangerous goods) incident - spill, leak, fire, exposure, or accident.

Chemical Family: Resin
Synonyms: Urethane System Resin Component

2. HAZARDS IDENTIFICATION

EXPOSURE LIMITS

According to Regulation 2012 OSHA Hazard Communication Standard: 29 CFR Part 1910.1200

Classification of the product

Flam. Liq.	3	Flammable liquid
Skin Corr./Irrit.	2	Skin corrosion/irritation
Eye Dam./Irrit.	2A	Serious eye damage/eye irritation
Carc.	2	Carcinogenicity
STOT SE	3	(Vapors may cause drowsiness and dizziness.)
Aquatic Acute	3	Hazardous to the aquatic environment - acute
Aquatic Chronic	3	Hazardous to the aquatic environment - chronic

Label elements

Pictogram:



Signal Word: Warning

Hazard Statement:

H226	Flammable liquid and vapor.
H319	Causes serious eye irritation.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H351	Suspected of causing cancer.
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P280	Wear protective gloves/protective clothing/eye protection/face protection.
P271	Use only outdoors or in a well-ventilated area.

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P273 Avoid release to the environment.
P243 Take precautionary measures against static discharge.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust/gas/mist/vapors.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P264 Wash with plenty of water and soap thoroughly after handling.
P242 Use only non-sparking tools.
P240 Ground/bond container and receiving equipment.

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.
P308 + P311 IF exposed or concerned: Call a POISON CENTER or doctor/physician.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P352 IF ON SKIN (on hair): Wash with plenty of soap and water.
P332 + P313 If skin irritation occurs: Get medical advice/attention.
P337 + P311 If eye irritation persists: Call a POISON CENTER or doctor/physician.
P362 + P364 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use water spray, dry powder, carbon dioxide, foam for extinction.

Precautionary Statements (Storage):

P403 + P235 Store in a well-ventilated place. Keep cool. P233
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.

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

Emergency overview

WARNING: COMBUSTIBLE LIQUID.
Causes severe skin and eye irritation.
SUSPECT CANCER HAZARD.

3. COMPOSITION / INFORMATION ON INGREDIENTS

According to Regulation 2012 OSHA Hazard Communication Standard: 29 CFR Part 1910.1200

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
91-20-3	>= 0.3 - < 3.0 %	naphthalene
102-60-3	>= 25.0 - < 50.0 %	Tetrahydroxypropylethyldiamine
64742-94-5	>= 25.0 - < 50.0 %	solvent naphtha

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

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
64742-94-5	< 65.0 % < 30.0 % < 10.0 %	Polyol solvent naphtha Drying agent
91-20-3	2.0 %	naphthalene
95-63-6	1.0 %	1,2,4-trimethylbenzene

The product contains:

<u>CAS Number</u>	<u>Content (W/W)</u>	<u>Chemical name</u>
7631-86-9	< 5.0 %	Silicon dioxide

4. FIRST AID MEASURES

Description of first aid measures

General advice:

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:

Keep patient calm, remove to fresh air, seek medical attention.

If on skin:

Wash thoroughly with soap and water.

If in eyes:

Wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

If swallowed:

Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

Most important symptoms and effects, both acute and delayed

Information on: solvent naphtha

Symptoms: Overexposure may cause:, unconsciousness, vomiting, lethargy, confusion, nausea, headache, dizziness

Information on: Naphthalene

Symptoms: Overexposure may cause:, perspiration, methaemoglobinaemia, loss of appetite, hemoglobinuria, hemolytic anemia, corneal injury, nausea, headache

Information on: 1,2,4-Trimethylbenzene

Symptoms: Overexposure may cause:, headache, tiredness, nausea, anxiety, asthma, bronchitis, noncardiogenic pulmonary edema

Indication of any immediate medical attention and special treatment needed

Note to physician

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media:
water spray, dry powder, carbon dioxide, foam

Special hazards arising from the substance or mixture

Hazards during fire-fighting: No particular hazards known.

Advice for fire-fighters

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

Further accidental release measures:

High risk of slipping due to leakage/spillage of product.

Personal precautions, protective equipment and emergency procedures

Use personal protective clothing.

Environmental precautions

Do not empty into drains. Do not discharge into the subsoil/soil.

Methods and material for containment and cleaning up

Spills should be contained, solidified, and placed in suitable containers for disposal.

7. HANDLING & STORAGE

Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Protect against moisture.

Protection against fire and explosion: No explosion proofing necessary.

Conditions for safe storage, including any incompatibilities

Segregate from foods and animal feeds. Segregate from acids. Segregate from oxidants.

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: No special precautions necessary. Avoid extreme heat. Store protected against freezing.

Storage stability:

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

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

Components with occupational exposure limits

naphthalene	OSHA PEL	PEL 10 ppm 50 mg/m ³ ;
	ACGIH TLV	TWA value 10 ppm ; STEL value 15 ppm ; Skin
	Designation ;	
		The substance can be absorbed through the skin.

1,2,4-trimethylbenzene	ACGIH TLV	TWA value 25 ppm ;
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Advice on system design:

Provide local exhaust ventilation to control vapours/mists.

Personal protective equipment Respiratory

protection:

Wear a NIOSH-certified (or equivalent) organic vapour/particulate respirator as needed.

Hand protection:

Chemical resistant protective gloves

Eye protection:

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

Body protection:

Standard work clothes and shoes.

General safety and hygiene measures:

Avoid contact with skin. Handle in accordance with good industrial hygiene and safety practice. Wear protective clothing as necessary to prevent contact. Avoid inhalation of vapours/mists. Wash soiled clothing immediately.

9. PHYSICAL / CHEMICAL PROPERTIES

Form:	liquid	
Odour:	of hydrocarbons	
Odour threshold:		not applicable
Colour:	clear to cloudy	
pH value:	7.0	
Freezing point:	0.00 °C (32°F)	
Boiling point:	200.00 °C (392°F)	
Sublimation point:		No applicable information available.
Flash point:	61.11 °C (142°F)	(closed cup)
Flammability:	not flammable	
Lower explosion limit:		For liquids not relevant for classification and labelling. The lower explosion point may be 5 - 15 °C (41 - 59°F) below the flash point.
Upper explosion limit:		For liquids not relevant for classification and labelling.
Autoignition:	> 250 °C (482°F)	
Vapor pressure:	0.01 mmHg	(25.00 °C) 77 °F
Density:	8.2200 lb/USg	(25.00 °C) 77°F
Relative density:		No applicable information available.
Autoignition:	> 250 °C (482°F)	
Vapor pressure:	0.01 mmHg	(25.00 °C) 77 °F
Density:	8.2200 lb/USg	(25.00 °C) 77°F
Relative density:		No applicable information available.
Vapor density:		not applicable
Partitioning coefficient n-octanol/water (log Pow):		not applicable
Self-ignition temperature:		not self-igniting
Thermal decomposition:	No decomposition if stored and handled as prescribed/indicated.	
Viscosity, dynamic:	200.000 mPa.s	(25.00 °C) 77°F
Viscosity, kinematic:		No applicable information available.
Solubility in water:		partly soluble
Solubility (quantitative):		No applicable information available.
Solubility (qualitative):	No applicable information available.	
Evaporation rate:		Value can be approximated from Henry's Law Constant or vapor pressure.
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.	

10. STABILITY & REACTIVITY

Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

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

No hazardous reactions if stored and handled as prescribed/indicated.

Conditions to avoid

Temperature: < 0 degrees Celsius

Incompatible materials

acids, oxidizing agents, isocyanates

Hazardous decomposition products

Decomposition products:

Hazardous decomposition products: carbon monoxide, carbon dioxide

Thermal decomposition:

No decomposition if stored and handled as prescribed/indicated.

11. TOXICOLOGICAL INFORMATION

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: No known acute effects.

Assessment other acute effects Assessment of STOT single:

Possible narcotic effects (drowsiness or dizziness).

Irritation / corrosion

Assessment of irritating effects: Eye contact causes irritation. Skin contact causes irritation.

Sensitization

Assessment of sensitization: The chemical structure does not suggest a sensitizing effect.

Aspiration Hazard

No aspiration hazard expected.

Chronic Toxicity/Effects

Repeated dose toxicity

Assessment of repeated dose toxicity: Repeated oral uptake of the substance did not cause substance-related effects. Repeated inhalative uptake of the substance did not cause substance-related effects. Repeated dermal

uptake of the substance did not cause substance-related effects.

Genetic toxicity

Assessment of mutagenicity: The chemical structure does not suggest a specific alert for such an effect.

Carcinogenicity

Assessment of carcinogenicity: Indication of possible carcinogenic effect in animal tests.

Reproductive toxicity

Assessment of reproduction toxicity: The chemical structure does not suggest a specific alert for such an effect.

Teratogenicity

Assessment of teratogenicity: The chemical structure does not suggest a specific alert for such an effect.

Other Information

The product has not been tested. The statement has been derived from the properties of the individual components.

Symptoms of Exposure

Medical conditions aggravated by overexposure

Data available do not indicate that there are medical conditions that are generally recognized as being aggravated by exposure to this substance/product.

12. ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms.

Persistence and degradability

Assessment biodegradation and elimination (H₂O) Poorly biodegradable.

Elimination information

Poorly biodegradable.

Bioaccumulative potential

Assessment bioaccumulation potential

Does not significantly accumulate in organisms.

Mobility in soil

Assessment transport between environmental compartments Adsorption to solid soil phase is not expected.

Additional information

Adsorbable organically-bound halogen (AOX):

This product contains no organically-bound halogen. Other

ecotoxicological advice:

The product has not been tested. Do not discharge product into the environment without control.

13. DISPOSAL CONSIDERATIONS

Waste disposal of substance:

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

Container disposal:

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.

14. TRANSPORTATION INFORMATION

Land Transport:

USDOT Classified as combustible liquid in containers greater than 119 gallons

Sea Transport:

IMDG Not classified as a dangerous good under transport regulations

Air Transport:

IATA/ICAO Not classified as a dangerous good under transport regulations

15. REGULATORY INFORMATION

Federal Regulations

Registration status:

Chemical TSCA, US released / listed

EPCRA 311/312 (Hazard categories):

Acute; Chronic; Fire

EPCRA 313:

<u>CAS Number</u>	<u>Chemical name</u>
1344-28-1	Aluminum oxide

CERCLA RQ

	<u>CAS Number</u>	<u>Chemical name</u>
10 LBS	71-43-2	Benzene
100 LBS	91-20-3	naphthalene

State regulations

<u>State RTK</u>	<u>CAS Number</u>	<u>Chemical name</u>
PA	64742-94-5	solvent naphtha
MA, NJ, PA	91-20-3	naphthalene
MA, NJ, PA	95-63-6	1,2,4-trimethylbenzene

CA Prop. 65:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

NFPA Hazard codes:

Health : 2 Fire: 2 Reactivity: 1 Special:

HMIS III rating

Health: 2 Flammability: 2 Physical hazard: 1

16. OTHER INFORMATION

SDS Prepared by:
Technical Services

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