SAFETY DATA SHEET
FG-PMDI001-DR500

SECTION 1 - IDENTIFICATION

Product identifier: FG-PMDI001-DR500 (A Side Component)

Recommended use and restriction on use

Component of a Polyurethane System

Manufacturer/ Importer/ Distributor Information		UltraTite Solutions 40 Cypress Creek Parkway #338 Houston, Texas 77090
Contact person	:	info@ultratite.com
Telephone	:	General information +1 832 - 827-2392
Emergency telephone number Supplier	:	CHEMTREC 800-424-9300

SECTION 2 – HAZARD IDENTIFICATION

Hazard classification:

Skin sensitization:	Category 1
Skin Irritation:	Category 1
Eyes:	Category 2 B
Acute toxicity (Inhalation):	Category 4
Ingestion:	Do not ingest.
Specific target organ toxicity - single exposure	Category 3 (Respiratory system)
Signal word:	Danger
Hazard statements:	Causes skin and eye irritation May cause an allergic skin reaction Harmful if inhaled May cause allergy or asthma symptoms or breathing difficulties if inhaled May cause respiratory irritation

PICTOGRAMS:

PRECAUTIONARY STATEMENTS

Prevention:

Avoid breathing dust/fume/gas/mist/vapors or spray. Contaminated work clothing must not be allowed out of workplace. Wear protective gloves/protective clothing/eye protection/face protection during application and use. Wash after handling. Use only outdoors or in a well-ventilated area. In case of inadequate ventilation wear respiratory protection

PRECAUTIONARY STATEMENTS - Cont

Response:

IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
IF IN EYES: Rinse continuously with water for several minutes. Remove Contact Lenses if present continue to rinse.
If eye irritation persists, Immediately call POISON CENTER and seek Medical Attention.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor
Take off contaminated clothing and wash before reuse

Disposal:

Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Storage:

Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Other hazards
None known

SECTION 3 – COMPOSITION

Substance / Mixture : Substance

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Diphenylmethanediisocyanate	9016-87-9	50 - 70 30 - 50
4,4'-methylenediphenyl diisocyanate	101-68-8	

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

SECTION 4 – FIRST AID MEASURES

4.1 Description of necessary first-aid measures

General advice: Move out of dangerous area.
Do not leave the victim unattended.
Get medical attention immediately if symptoms occur. Show this safety data sheet to the doctor in attendance.

If inhaled: If breathed in, move person into fresh air.
Call a physician or poison control center immediately. Keep patient warm and at rest.
Keep respiratory tract clear.
If breathing is difficult, give oxygen.
If breathing is irregular or stopped, administer artificial respiration.
If unconscious, place in recovery position and seek medical advice.
Consult a physician immediately if symptoms such as shortness of breath or asthma are ob served.
A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitized persons.
The exposed person may need to be kept under medical surveillance for 48 hours.
LC50 (rat) : ca. 490 mg/m³ (4 hours) : using experimegpsntally produced respirable aerosol having aerodynamic diameter <5microns.

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SECTION 4 – FIRST AID MEASURES - Cont

4.1 Description of necessary first-aid measures

If inhaled - Cont

Methods used to generate the exposure concentrations in the animal studies use extreme laboratory conditions and does not represent actual exposure conditions of the material in the workplace, storage, transportation or expected use on the market due to the very low vapor pressure. Therefore, these test results cannot be used to for hazard classification of the material. Rather, an acute toxicity estimate is calculated based on weight of evidence and expert judgment and is used to justify a modified classification for acute inhalation toxicity.

In caseof skincontact: In case of contact, immediately flush skin with soap and plenty of water.
Takeoffcontaminatedclothingandshoesimmediately.Washcontaminated clothing before reuse.
Thoroughly clean shoes before reuse.
Call a physician if irritation develops or persists.
AnMDIstudyhasdemonstratedthatapolyglycol-basedskincleanser (suchasD-Tam™,PEG-400)orcornoilmaybemoreeffectivethansoap and water.

In caseof eye contact: Rinseimmediatelywithplentyofwater,alsoundertheeyelids,foratleast 15 minutes.
If easy to do, remove contact lens, if worn. Protect unharmed eye.
Keep eye wide open while rinsing. Seek medical advice.

If swallowed: Gentlywipeorrinsetheinsideofthemouthwithwater.DONOTinduce vomiting unless directed to do so by a physician or poison control center.
Keep respiratory tract clear. Keep at rest.
If a person vomits when lying on his back, place him in the recovery position.
Nevergiveanythingbymouthtoanunconsciousperson.Takevictimimmediately to hospital.
If symptoms persist, call a physician.

Most important symptoms andeffects, both acute anddelayed: Severe allergic skin reactions, bronchiospasm and anaphylactic shock
This productisarespiratoryirritantandpotentialrespiratorysensitizers: repeated inhalation of vapo r o r aerosolatlevelsabovetheoccupationalexposurelimitcould cause respiratory sensitization.
Symptomsmayincludeirritationtotheeyes,nose,throatandlungs,possibly combined with dryness ofthethroat,tightnessofchestanddifficultyinbreathing.
The onsetoftherespiratorysymptomsmaybedelayedforseveralhours after exposure.
A hyper-reactiveresponsetoevenminimalconcentrationsofMDImay develop in sensitised persons.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
First Aid responders should pay attention to self-protection and use the recommended protective clothing

Notes to physician: Symptomatic and supportive therapy as needed. Following
severe exposure medical follow-up should be monitored for at least 48 hours.
The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

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SECTION 5 – FIRE-FIGHTING MEASURES

Suitable extinguishing media:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Foam Carbon dioxide (CO2) Dry powder
Unsuitable extinguishing media:	Water may be used if no other available and then in copious quantities. Reaction between water and hot isocyanate may be vigorous.
Specific hazards during firefighting:	Do not allow run-off from fire fighting to enter drains or water courses. The pressure in sealed containers can increase under the influence of heat. Exposure to decomposition products may be a hazard to health.
Hazardous combustion products:	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.
Specific extinguishing methods:	Cool containers/tanks with water spray
Further information:	Standard procedure for chemical fires. Due to reaction with water producing CO2-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Prevent fire extinguishing water from contaminating surface water or the ground water system. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters:	Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Immediately evacuate personnel to safe areas. Use personal protective equipment. If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Only qualified personnel equipped with suitable protective equipment may intervene. For additional precautions and advice on safe handling, see section 7. Never return spills in original containers for re-use. Make sure that there is a sufficient amount of neutralizing/ absorbent material near the storage area. The danger areas must be delimited and identified using relevant warning and safety signs.
Environmental precautions:	Do not allow uncontrolled discharge of product into the environment. Do not allow material to contaminate ground water system. Prevent product from entering drains Prevent further leakage or spillage if safe to do so. Local authorities should be advised if significant spillages cannot be contained. If the product contaminates rivers and lakes or drains inform respective authorities.

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SECTION 6 – ACCIDENTAL RELEASE MEASURES Cont

Methods and materials for containment and cleaning up:	Clean-up methods - small spillage Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Clean contaminated surface thoroughly. Sweep up or vacuum up spillage and collect in suitable container for disposal. Neutralize small spillages with decontaminant. The compositions of liquid decontaminants are given in Section 16. Remove and dispose of residues. Clean-up methods - large spillage If the product is in its solid form: Spilled MDI flakes should be picked up carefully. The area should be vacuum cleaned to remove remaining dust particles completely. If the product is in its liquid form: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Leave to react for at least 30 minutes. Shovel into open-top drums for further decontamination. Wash the spillage area with water. Test atmosphere for MDI vapor. Keep in suitable, closed containers for disposal.

SECTION 7 – HANDLING & STORAGE

Technical measures:	Ensure that eyewash stations and safety showers are close to the workstation location.
Local/Total ventilation:	Use only with adequate ventilation
Advice on protection against fire and explosion:	Normal measures for preventive fire protection
Advice on safe handling:	For personal protection see section 8. Avoid formation of aerosol. Do not breathe vapors or spray mist. Do not breathe vapors/dust. Do not swallow. Do not get in eyes or mouth or on skin. Do not get on skin or clothing. Avoid exposure - obtain special instructions before use. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Keep container closed when not in use. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used. Industrial use of aprotic polar solvents for cleaning can release hazardous primary aromatic amines (>0.1%)
Conditions for safe storage:	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Observe label precautions. Protect from moisture. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

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SECTION 7 – HANDLING & STORAGE

Materials to avoid: For incompatible materials please refer to Section 10 of this SDS.

Further information on storage stability: Stable under recommended storage conditions

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTIVE

Components with workplace control parameters:

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH
		TWA	0.005 ppm 0.05 mg/m3	NIOSH REL
		C	0.02 ppm 0.2 mg/m3	NIOSH REL
		C	0.02 ppm 0.2 mg/m3	OSHA Z-1

Personal protective equipment

Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. In emergency, non-routine and unknown exposure situations, including confined space entries, a NIOSH-certified full face-piece pressure demand self-contained breathing apparatus (SCBA)or a full face-piece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.

Hand protection:

Remarks The suitability for a specific workplace should be discussed with the producers of the protective gloves. Protective gloves should be worn when handling freshly made polyurethane products to avoid contact with trace residual materials which may be hazardous in contact with skin. Use chemical resistant gloves classified under Standard EN374: protective gloves against chemicals and microorganisms. Examples of glove materials that might provide suitable protection include: Butyl rubber, Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol copolymers laminated (“EVAL”), Polychloroprene (Neoprene*), Nitrile/butadiene rubber (“nitrile” or “NBR”), Polyvinyl chloride (“PVC” or “vinyl”), Fluoroelastomer (Viton*). When prolonged or frequently repeated contact may occur, a glove with protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN374) is recommended.

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SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTIVE Cont

Hand protection:

When only brief contact is expected, a glove with protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN374) is recommended.

Remarks

Notice: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all requisite workplace factors such as, but not limited to : other chemicals that may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), as well as instructions/specifications provided by the glove supplier
By industrial use of aprotic polar solvents for cleaning : Butyl rubber (0.7mm), Nitrile rubber (0.4mm), Chloroprene (0.5mm)

Eye protection:

Safety eye wear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.
Chemical splash goggles.
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection:

Impervious clothing

Choose body protection according to the amount and concentration of the dangerous substance at the work place. Recommended:
Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C' , Tyvek Pro 'F' disposable coverall.

Protective measures:

Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing
The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Ensure that eye flushing systems and safety showers are located close to the working place

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice.

Wash face, hands and any exposed skin thoroughly after handling.
Remove contaminated clothing and protective equipment before entering eating areas.
When using do not eat, drink or smoke.
Contaminated work clothing should not be allowed out of the workplace.
Wash hands before breaks and immediately after handling the product.
Wash hands before breaks and at the end of workday.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	liquid
Colour:	brown, Clear
Odour:	slight, musty
Odour Threshold:	No data is available on the product itself.
pH:	No data is available on the product itself.
Freezing point:	No data is available on the product itself.
Melting point:	No data is available on the product itself.
Boiling point:	No data is available on the product itself.
Flash point:	> 302 °F / > 150 °C Method: closed cup
Evaporation rate:	No data is available on the product itself.
Flammability (solid, gas):	No data is available on the product itself.

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SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES Cont

Flammability (liquids):	No data is available on the product itself.
Upper explosion limit / Upper flammability limit :	No data is available on the product itself.
Lower explosion limit / Lower flammability limit:	No data is available on the product itself.
Vapor pressure:	< 0.00001 hPa (68 °F / 20 °C)
Relative vapor density:	No data is available on the product itself.
Relative density :	1.23
Density :	1.23 g/cm3 (77 °F / 25 °C) Method: estimated
Solubility(ies) Water solubility:	Decomposes in contact with water. (68 °F / 20 °C)
Solubility in other solvents:	Method: Information given is based on data obtained from similar substances.
Partition coefficient: n- octanol/water:	No data is available on the product itself.
Auto-ignition temperature:	No data is available on the product itself.
Thermal decomposition:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT):	No data is available on the product itself.
Viscosity Viscosity, dynamic:	No data is available on the product itself.
Explosive properties:	200 mPa.s (77 °F / 25 °C)
	No data is available on the product itself.

SECTION 10 – STABILITY AND REACTIVITY

Reactivity Chemical stability Possibility of hazardous:	No dangerous reaction known under conditions of normal use. Stable under normal conditions. Reaction with water (moisture) produces CO2-gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.
Conditions to avoid:	Extremes of temperature and direct sunlight. Exposure to air or moisture over prolonged periods.
Incompatible materials:	Acids Amines Bases Metals Water
Hazardous decomposition products:	Combustion products may include: carbon monoxide, carbon dioxide, nitrogen oxides, hydrocarbons and HCN. In the event of extreme heat (>500 degrees C), aniline is suspected of being formed.

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SECTION 11 – TOXICOLOGICAL INFORMATION

Information on likely routes of exposure: No data is available on the product itself

Acute toxicity

Acute oral toxicity - Product: LD50 (Rat, male): > 10,000 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity - Product: Assessment: The substance/mixture is not toxic on inhalation as defined by dangerous goods regulations.

Acute toxicity estimate: 1.36 mg/l Exposure time: 4 h

Test atmosphere: dust/mist Method: Calculation method

Remarks: Methods used to generate the exposure concentrations in the animal studies use extreme laboratory conditions and does not represent actual exposure conditions of the material in the workplace, storage, transportation or expected use on the market due to the very low vapor pressure. Therefore, these test results cannot be used to for hazard classification of the material. Rather, an acute toxicity estimate is calculated based on weight of evidence and expert judgment and is used to justify a modified classification for acute inhalation toxicity.

Acute dermal toxicity - Product: LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402

Acute toxicity (other routes of administration): No data available

Skin corrosion/irritation

Components: Diphenylmethanediisocyanate:

Species: Rabbit

Assessment: Irritating to skin

Method: OECD Test Guideline 404

Result: Skin irritation

Components: 4,4'-methylenediphenyl diisocyanate

Species: Rabbit

Assessment: Irritating to skin

Method: OECD Test Guideline 404

Result: Skin irritation

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SECTION 11 – TOXICOLOGICAL INFORMATION Cont

Serious Eye Damage/Eye Irritation

Components:	Diphenylmethanediisocyanate:
Species:	Rabbit
Assessment:	Mild Irritating to Eye
Method:	OECD Test Guideline 405
Result:	Irritation to eyes, reversing within 7 days
Components:	4,4'-methylenediphenyl diisocyanate
Species:	Rabbit
Method:	OECD Test Guideline 405
Result:	Mild Irritating to Eye

Respiratory or skin sensitization

Components:	Diphenylmethanediisocyanate:
Exposure Routes:	Skin
Species:	Guinea Pig
Method:	OECD Test Guideline 406
Result:	sensitization by skin contact
Exposure Routes:	Respiratory Tract
Species:	Rat
Result:	May Cause sensitization by inhalation
Components:	4,4'-methylenediphenyl diisocyanate
Species:	Mouse
Method:	OECD Test Guideline 429
Result:	May cause sensitization by skin contact
Exposure Routes:	Respiratory Tract
Species:	Guinea Pig
Result:	May cause sensitization by inhalation
Assessment:	May cause an allergic skin reaction., May cause allergy or asthma symptoms or breathing difficulties if inhaled.

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SECTION 11 – TOXICOLOGICAL INFORMATION Cont

Germ cell mutagenicity

Product:
Genotoxicity in vitro

Concentration: 200 ug/plate
Metabolic activation: with and without metabolic activation
Method: Directive 67/548/EEC, Annex, B.13/14
Result: negative
Application Route: Inhalation
Result: Not classified due to inconclusive data.
Application Route: Inhalation
Exposure time: 3 Weeks Dose: 113 mg/m3
Method: OECD Test Guideline 474
Result: negative

Product:
Germ cell mutagenicity- Assessment

Tests on bacterial or mammalian cell cultures did not show mutagenic effects

Carcinogenicity

Product:

Remarks:

Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur.

Remarks:

Industrial use of aprotic polar solvents for cleaning can release hazardous primary aromatic amines (>0.1%)
Based on animal studies, primary aromatic amines are considered as potential carcinogen to humans. Some of those chemicals are proven carcinogens to humans
Provided the recommended personal protective equipment and hygiene measures are applied, no adverse effects to human health are to be expected

Species: Rat, male and female

Application Route: Inhalation Exposure time: 24 month(s)

Dose: 1mg/m³

Frequency of Treatment: 5daily Method: OECD

OECD Test Guideline 453 Result: Positive

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SECTION 11 – TOXICOLOGICAL INFORMATION Cont

Carcinogenicity

Species:	Rat, male and female
Application Route:	Inhalation Exposure time: 24 month(s)
Dose:	1mg/m³
Frequency of Treatment:	5daily Method:
OECD Test Guideline 453 Result:	Positive
Carcinogenicity - Assessment	No data available

IARC	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
OSHA	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Species: Rat, male and female
Application Route: Inhalation
Method: OECD Test Guideline 414
Remarks: No significant adverse effects were reported

Product: Effects on fetal development	Species: Rat, male and female Application Route: Inhalation General Toxicity Maternal: 4 mg/m³ Method: OECD Test Guideline 414 Result: No teratogenic effects
Product: Reproductive toxicity - Assessment	No toxicity to reproduction No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

Product:

Exposure routes: Inhalation
Target Organs: Respiratory Tract Assessment: May cause respiratory irritation.

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SECTION 11 – TOXICOLOGICAL INFORMATION Cont

STOT - repeated exposure

Product:

Assessment: The substance or mixture is not classified as specific target organ toxicant,repeated exposure.

Remarks: Lung decrement has been reported in some studies as a consequence of repeated exposure to MDI. However, this effect can only be observed after inhalation exposure in the tissue at the point of contact and does not represent systemic toxicity. It is a local effect that is already covered by respiratory irritation (STOT single exposure, Cat. 3) and respiratory sensitization (Category 1).

In some humans, but not all, epidemiological studies have found long term decreases in ventilatory function and respiratory symptoms (EU RA 2005). However, there is generally co- exposure to other materials and sometimes also to toluene diisocyanate which may have contributed to lung decrement. Therefore, it is concluded that possible lung effects do not qualify as specific target organ toxicity after repeated exposure in accordance to chapter 3.9.1.6 of the GHS (UNECE 2003). In addition, all warning and safety measures for local effects as well as for acute inhalation toxicity already provide for a protection of workers and professional users that are involved in the handling of MDI

Repeated dose toxicity

Product:

Species: Rat, male and female

NOEC: 0.2 mg/m3 Exposure time: 17,520 h

Number of exposures: 5 d

Method: OECD Test Guideline 453

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution No data available

Neurological effects: No data available

Further information

Ingestion: No data available

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SECTION 12 – ECOLOGICAL INFORMATION

Ecotoxicity

Toxicity to fish -

Product:	LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l Exposure time: 96 h
Test Type:	static test
Test substance:	Fresh water Method: OECD Test Guideline 203
Exposure time:	LC0: > 1,000 mg/l 96 h

Toxicity to daphnia and other aquatic invertebrates - Product	EC50 (Daphnia magna (Water flea)): > 1,000 mg/l Exposure time: 24 h
Test Type:	static test
Test substance:	Fresh water
Method:	OECD Test Guideline 202

Toxicity to algae/aquatic plants - Product	EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l
Exposure time:	72 h
Test Type:	static test
Test substance:	Fresh water
Method:	OECD Test Guideline 201

M-Factor (Acute aquatic toxicity):	No data available
Toxicity to fish (Chronic toxicity)	No data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) - Product	: NOEC (Daphnia magna (Water flea)): >= 10 mg/l
Exposure time:	21 d
Test Type:	semi-static test
Test substance:	Fresh water
Method:	OECD Test Guideline 211
M-Factor (Chronic aquatic toxicity)	No data available

Toxicity to microorganisms - Product	EC50 (activated sludge): > 100 mg/l
Exposure time:	3 h
Test Type:	static test
Test substance:	Fresh water
Method:	OECD Test Guideline 209

Toxicity to soil dwelling organisms Product	EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
Exposure time:	336 h
Method:	OECD Test Guideline 207
Plant toxicity	No data available
Sediment toxicity	No data available

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SECTION 12 – ECOLOGICAL INFORMATION

Toxicity to terrestrial organisms No data available

Ecotoxicology Assessment
Acute aquatic toxicity No data available
Chronic aquatic toxicity No data available
Toxicity Data on Soil No data available
Other organisms relevant to the environment No data available

Persistence and degradability

Biodegradability - Product
Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method:
Inherent Biodegradability: Modified MITI Test (II)
Biochemical Oxygen Demand (BOD) No data available
Chemical Oxygen Demand (COD) No data available
BOD/COD No data available
ThOD No data available
BOD/ThOD No data available
Dissolved organic carbon (DOC) No data available
Physico-chemical removability No data available

Components:

Diphenylmethanediisocyanate:
Stability in water
Method:
4,4'-methylenediphenyl diisocyanate: Degradation half life(DT50): 0.8 d (77 °F / 25 °C)
Stability in water No information available. Remarks: Fresh water
Degradation half life
Remarks:
Photodegradation (DT50): 20 hrs (77 °F / 25 °C)
Impact on Sewage Treatment Fresh water
No data available

Bioaccumulative potential

Bioaccumulation - Product : No data available

Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 200
Remarks: Bioaccumulation is unlikely.

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SECTION 12 – ECOLOGICAL INFORMATION

Components:

4,4'-methylenediphenyl diisocyanate

Partition coefficient: n- octanol/water	log Pow: 4.51 (68 °F / 20 °C) pH: 7
Method:	OECD Test Guideline 117

Mobility in soil

Mobility	No data available
Distribution among environmental compartments	No data available
Stability in soil	No data available

Other adverse effects

Environmental fate and pathways	No data available
Results of PBT and vPvB assessment	No data available
Endocrine disrupting potential	No data available
Adsorbed organic bound halogens (AOX)	No data available

Hazardous to the ozone layer

Ozone-Depletion Potential	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks:	This product neither contains, nor was manufactured with a Class I or ClassII ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt.A, App.A + B).
Additional ecological information	No data available
Global warming potential (GWP)	No data available

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

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SECTION 14 – TRANSPORT INFORMATION

International Regulations

IATA	Not regulated as dangerous goods
IMDG	Not regulated as dangerous goods
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable for product as supplied.

National Regulations

DOT Classification

UN/ID/NA number	NA 3082
Proper shipping name	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (Methylene Diphenyl Diisocyanate)
Class	9
Packing group	III
Labels	Class 9 - Miscellaneous dangerous substances and articles
ERG Code	171
Marine pollutant	no
Special precautions foruser	The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15 – REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
4,4'-methylenediphenyl diisocyanate	101-68-8	5000	11904
chlorobenzene	108-90-7	100	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation Respiratory or skin sensitization
Specific target organ toxicity (single or repeated exposure)

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Diphenylmethanediisocyanate	9016-87-9	>= 50 - < 70 %
4,4'-methylenediphenyl diisocyanate	101-68-8	>= 30 - < 50 %

FG-PMDI0001-DR500
A Side Component

SECTION 15 – REGULATORY INFORMATION

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61): 4,4'-methylenediphenyl diisocyanate 101-68-8

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

CH INV **DSL** **AICS** **NZIoC** **ENCS** **KECI** **PICCS** **IECSC** **TCSI** **TSCA** **Inventories**	On the inventory, or in compliance with the inventory All components of this product are on the Canadian DSL On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory On the inventory, or in compliance with the inventory

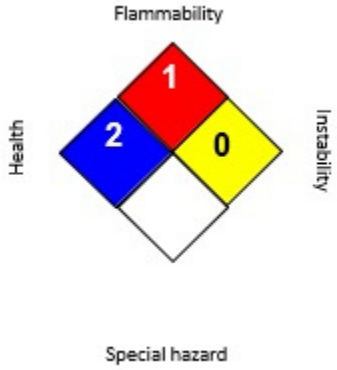
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

TSCA - 5(a) Significant New UseRuleListofChemicals	No substances are subject to a Significant New Use Rule.
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)	No substances are subject to TSCA 12(b) export notification requirements

SECTION 16 – OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Further information

NFPA 704:



HMIS® IV:

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

FG-PMDI0001-DR500
A Side Component

SECTION 16 – OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Liquid decontaminants (percentages by weight or volume) :
Decontaminant 1 : *- sodium carbonate : 5 - 10 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 2 : *- concentrated ammonia solution : 3 - 8 % *- liquid detergent : 0.2 - 2 % *- water : to make up to 100 %
Decontaminant 1 reacts slower with diisocyanates but is more environmentally friendly than decontaminant 2.
Decontaminant 2 contains ammonia. Ammonia presents health hazards. (See supplier safety information.)

Revision Date : 11/19/2019
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA : 8-hour, time-weighted average
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / C : Ceiling value not be exceeded at any time.
OSHA Z-1 / C : Ceiling
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