
Safety Data Sheet

OR90WPM, Part A

Section 1 – Identification

Oak Ridge Foam & Coating Systems, Inc
575 Commercial Ave
Green Lake, WI 54941
920-294-6800

Emergency Telephone: (800) 424-9300 Chemtrec
800-625-9577 (Oak Ridge Foam & Coating Systems, Inc)
BOTH NUMBERS ARE AVAILABLE DAYS, NIGHTS, WEEKENDS, & HOLIDAYS

GHS product identifier: OR90WPM, Part A
Other means of identification: Not available.
Product type: Liquid.

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

Product use: Component of a Polyurethane System

Supplier's details: Oak Ridge Foam & Coating Systems, Inc
575 Commercial Avenue
Green Lake, WI 54941

Email address of person responsible for this SDS: info@oakridgepoly.com

Emergency telephone number (24h/7 day): Chemtrec: (800) 424-9300 or (703) 527-3887

Section 2 – Hazards Identification

OSHA/HCS status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture:

Acute Toxicity: Inhalation	4
Skin corrosion	2
Eye irritation	2A
Respiratory Sensitization	1
Skin Sensitization	1
Specific Target Organ Toxicity	
- Single Exposure	3 (Respiratory System)

GHS Label Elements

Hazard pictograms:



Signal word: Danger

Hazard Statements: Causes skin irritation.
May cause an allergic skin reaction.
Causes serious eye irritation.
Harmful if inhaled.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause respiratory irritation.

Precautionary Statements:

Prevention:
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/ eye protection/ face protection.
Wear respiratory protection.

Response:
Wash with plenty of water.
Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If skin irritation or rash occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
Take off contaminated clothing and wash it before reuse.

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

Disposal:
Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards None known.

Section 3 – Composition/Information on Ingredients

Substance/Mixture: Mixture

Hazardous Components

Weight Percent	Components	CAS-No.
60-100%	4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	9048-57-1
30-40%	4,4'-methylenediphenyl diisocyanate	101-68-8
1-5%	4,4'-Methylenediphenyl diisocyanate, oligomers	25686-28-6

1-5%	Propylene carbonate	108-32-7
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Section 4 – First Aid Measures

General advice:	<p>Move out of dangerous area.</p> <p>Do not leave the victim unattended.</p> <p>Get medical attention immediately if symptoms occur.</p> <p>Show this safety data sheet to the doctor in attendance.</p>
If inhaled:	<p>If breathed in, move person into fresh air.</p> <p>Call a physician or poison control centre immediately.</p> <p>Keep patient warm and at rest.</p> <p>Keep respiratory tract clear.</p> <p>If breathing is difficult, give oxygen.</p> <p>If breathing is irregular or stopped, administer artificial respiration.</p> <p>If unconscious, place in recovery position and seek medical advice.</p> <p>Consult a physician immediately if symptoms such as shortness of breath or asthma are observed.</p> <p>A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitised persons.</p> <p>The exposed person may need to be kept under medical surveillance for 48 hours.</p> <p>LC50 (rat) : ca. 490 mg/m³ (4 hours) : using experimentally produced respirable aerosol having aerodynamic diameter <5microns.</p>
In case of skin contact:	<p>In case of contact, immediately flush skin with soap and plenty of water.</p> <p>Take off contaminated clothing and shoes immediately.</p> <p>Wash contaminated clothing before reuse.</p> <p>Thoroughly clean shoes before reuse.</p> <p>Call a physician if irritation develops or persists.</p> <p>An MDI study has demonstrated that a polyglycol-based skin cleanser (such as D-TamTM, PEG-400) or corn oil may be more effective than soap and water.</p>
In case of eye contact:	<p>Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.</p> <p>If easy to do, remove contact lens, if worn.</p> <p>Protect unharmed eye.</p> <p>Keep eye wide open while rinsing.</p> <p>If eye irritation persists, consult a specialist.</p>
If swallowed:	<p>Gently wipe or rinse the inside of the mouth with water.</p> <p>DO NOT induce vomiting unless directed to do so by a physician or poison control center.</p> <p>Keep respiratory tract clear.</p> <p>Keep at rest.</p> <p>If a person vomits when lying on his back, place him in the recovery position.</p> <p>Never give anything by mouth to an unconscious person.</p> <p>If symptoms persist, call a physician.</p>

Take victim immediately to hospital.

**Most important
symptoms and effects,**

both acute and delayed: Severe allergic skin reactions, bronchospasm and anaphylactic shock
This product is a respiratory irritant and potential respiratory sensitiser: 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.

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.

Section 5 – Fire Fighting Measures

Suitable extinguishing media:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Foam Carbon dioxide (CO ₂) 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 firefighting 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:	<p>Standard procedure for chemical fires.</p> <p>Due to reaction with water producing CO₂-gas, a hazardous build-up of pressure could result if contaminated containers are re-sealed.</p> <p>Collect contaminated fire extinguishing water separately. This must not be discharged into drains.</p> <p>Prevent fire extinguishing water from contaminating surface water or the ground water system.</p> <p>Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.</p>
Special protective equipment for firefighters:	Wear an approved positive pressure self-contained breathing apparatus in addition to standard firefighting gear.

Section 6 – Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:	<p>Immediately evacuate personnel to safe areas.</p> <p>Use personal protective equipment.</p> <p>If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials.</p> <p>Ensure adequate ventilation.</p> <p>Keep people away from and upwind of spill/leak.</p> <p>Only qualified personnel equipped with suitable protective equipment may intervene.</p> <p>For additional precautions and advice on safe handling, see section 7.</p> <p>Never return spills in original containers for re-use.</p> <p>Make sure that there is a sufficient amount of neutralizing/ absorbent material near the storage area.</p> <p>The danger areas must be delimited and identified using relevant warning and safety signs.</p> <p>Treat recovered material as described in the section "Disposal considerations".</p> <p>For disposal considerations see section 13.</p>
Environmental precautions:	<p>Do not allow uncontrolled discharge of product into the environment.</p> <p>Do not allow material to contaminate ground water system.</p> <p>Prevent product from entering drains.</p> <p>Prevent further leakage or spillage if safe to do so.</p> <p>Local authorities should be advised if significant spillages cannot be contained.</p>

If the product contaminates rivers and lakes or drains inform respective authorities.

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 vapour.
Keep in suitable, closed containers for disposal.

Section 7 – Storage and Handling

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 vapours or spray mist. Do not breathe vapours/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 sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage: Keep containers tightly closed in a dry, cool and well-ventilated place.
 Keep in properly labelled 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.

Materials to avoid: Acids
 Amines
 Bases
 Metals
 Water

Section 8 – Exposure Controls/Personal Protection

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
		C	0.02 ppm 0.2 mg/m ³	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 facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied air respirator (SAR) with auxiliary self-contained air supply, should be used.

Hand protection remarks:	<p>The suitability for a specific workplace should be discussed with the producers of the protective gloves.</p> <p>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.</p> <p>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*).</p> <p>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.</p> <p>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. Contaminated gloves should be decontaminated and disposed of.</p> <p>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.</p>
Eye protection:	<p>Safety eyewear 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.</p> <p>Chemical splash goggles.</p> <p>Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.</p> <p>Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.</p> <p>Ensure that eyewash stations and safety showers are close to the workstation location.</p>
Skin and body protection:	<p>Impervious clothing</p> <p>Choose body protection according to the amount and concentration of the dangerous substance at the work place.</p> <p>Recommended:</p> <p>Overall (preferably heavy cotton) or Tyvek-Pro Tech 'C' , Tyvek Pro 'F'</p>

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 Properties

Appearance:	liquid
Colour:	clear
Odour:	No data is available on the product itself.
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:	> 110 °C Method: Seta closed cup, closed cup
Evaporation rate:	No data is available on the product itself.
Flammability (solid, gas):	No data is available on the product itself.
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.
Vapour pressure:	No data is available on the product itself.
Relative vapour density:	No data is available on the product itself.
Relative density:	1.1
Density:	No data is available on the product itself.
Solubility(ies)	
Water solubility:	No data is available on the product itself.
Solubility in other solvents:	No data is available on the product itself.
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:	1,141 mPa.s (20 °C)
Explosive properties:	No data is available on the product itself.
Oxidizing properties:	No data is available on the product itself.
Particle size:	No data is available on the product itself.

Section 10 – Stability and Reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical stability:	Stable under normal conditions.
Possibility of hazardous reactions:	<p>Reaction with water (moisture) produces CO₂-gas. Exothermic reaction with materials containing active hydrogen groups.</p> <p>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.</p> <p>MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface.</p> <p>A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.</p>
Conditions to avoid:	<p>Extremes of temperature and direct sunlight.</p> <p>Exposure to air or moisture over prolonged periods.</p>
Incompatible materials:	<p>Acids</p> <p>Amines</p> <p>Bases</p> <p>Metals</p> <p>water</p>
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.

Section 11 – Toxicological Information

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

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

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

4,4'-methylenediphenyl diisocyanate:

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

4,4'-Methylenediphenyl diisocyanate, oligomers:

Acute oral: LD50 (Rat, female): > 5,000 mg/kg
Toxicity Components Method: OECD Test Guideline 425

propylene carbonate:

Acute oral: LD50 (Rat, male and female): 33,520 mg/kg
toxicity Components

Acute inhalation toxicity -

Product: Acute toxicity estimate: 1.46 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Acute dermal toxicity –

Product: Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Acute toxicity

(other routes of
administration): No data available

Skin corrosion/irritation

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Species: Rabbit

Assessment: Irritant

Method: OECD Test Guideline 404

Result: Irritating to skin.

4,4'-methylenediphenyl diisocyanate:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Irritating to skin.

4,4'-Methylenediphenyl diisocyanate, oligomers:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Irritating to skin.

propylene carbonate:

Species: Rabbit

Assessment: No skin irritation

Method: OECD Test Guideline 404

Result: No skin irritation

Serious eye damage/eye irritation

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Species: Rabbit

Result: slight irritation

Assessment: Mild eye irritant

4,4'-methylenediphenyl diisocyanate:

Species: Rabbit

Result: Mild eye irritation

4,4'-Methylenediphenyl diisocyanate, oligomers:

Species: Rabbit

Result: Mild eye irritation

Method: OECD Test Guideline 405

propylene carbonate:

Species: Rabbit

Result: Eye irritation

Assessment: Irritating to eyes.

Method: OPPTS 870.2400

Respiratory or skin sensitization**Components:**

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Exposure routes: Skin

Species: Mouse

Result: May cause sensitisation by skin contact.

Exposure routes: Respiratory Tract

Species: Guinea pig

Result: May cause sensitisation by inhalation.

4,4'-methylenediphenyl diisocyanate:

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

Exposure routes: Respiratory Tract

Species: Guinea pig

Result: May cause sensitisation by inhalation.

4,4'-Methylenediphenyl diisocyanate, oligomers:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Exposure routes: Respiratory Tract

Species: Guinea pig

Result: May cause sensitisation by inhalation.

propylene carbonate:
Exposure routes: Skin
Species: Humans
Result: Does not cause skin sensitisation.

Components:

4,4'-methylenediphenyl diisocyanate:
Assessment: May cause sensitisation by inhalation and skin contact.

Germ cell mutagenicity

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

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

4,4'-methylenediphenyl diisocyanate:

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

4,4'-Methylenediphenyl diisocyanate, oligomers:

Genotoxicity in vitro: Concentration: ca 50 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

propylene carbonate:

Genotoxicity in vitro: Concentration: 5000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Genotoxicity in vivo: Application Route: Inhalation
Exposure time: 3 Weeks
Dose: 118 mg/m3
Method: OECD Test Guideline 474
Result: negative

4,4'-methylenediphenyl diisocyanate:

Genotoxicity in vivo: Application Route: Inhalation
 Exposure time: 3 Weeks
 Dose: 118 mg/m³
 Method: OECD Test Guideline 474
 Result: negative

4,4'-Methylenediphenyl diisocyanate, oligomers:

Genotoxicity in vivo: Application Route: Inhalation
 Exposure time: 3 Weeks
 Dose: 118 mg/m³
 Method: OECD Test Guideline 474
 Result: negative

propylene carbonate:

Genotoxicity in vivo: Application Route: Intraperitoneal injection
 Dose: 1666 mg/kg
 Method: OECD Test Guideline 474
 Result: negative

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.

Carcinogenicity –

Assessment: No data available

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.

Reproductive toxicity

Components:

propylene carbonate:

Effects on fertility: Species: Rat
 Application Route: Oral
 Method: OECD Test Guideline 414
 Result: negative

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Effects on foetal

development: Species: Rat, male and female

Application Route: Inhalation
Method: OECD Test Guideline 414
Result: No teratogenic effects

4,4'-methylenediphenyl
diisocyanate:

Species: Rat, female
Application Route: Inhalation
General Toxicity Maternal: No observed adverse effect level: 4 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects

4,4'-Methylenediphenyl

diisocyanate, oligomers: Species: Rat, male and female
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: No teratogenic effects

propylene carbonate:

Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 1,000 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Reproductive toxicity –

Assessment: No data available

STOT - single exposure

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

4,4'-methylenediphenyl diisocyanate:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

4,4'-Methylenediphenyl diisocyanate, oligomers:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

STOT - repeated exposure

No data available

Repeated dose toxicity

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Species: Rat, male and female

NOEC: 0.2 mg/m3

Exposure time: 2 yr

Number of exposures: 5 d

Method: OECD Test Guideline 453

4,4'-methylenediphenyl diisocyanate:

Species: Rat, male and female

NOEC: 0.2 mg/m3

Exposure time: 2 yr

Number of exposures: 5 d

Method: OECD Test Guideline 453

4,4'-Methylenediphenyl diisocyanate, oligomers:

Species: Rat, male and female

NOEC: 0.2 mg/m3

Test atmosphere: dust/mist

Exposure time: 2 yr

Number of exposures: 5 d

Method: OECD Test Guideline 453

Repeated dose toxicity –

Assessment: No data available

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

Other health hazards

No data available

Section 12 – Ecological Information

Ecotoxicity

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Toxicity to fish: LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

4,4'-methylenediphenyl diisocyanate:

Toxicity to fish: LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 203

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to fish: 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

propylene carbonate:

Toxicity to fish: LC50 (Cyprinus carpio (Carp)): > 1,000 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.1.
Remarks: No-observed-effect level

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Toxicity to daphnia and other aquatic invertebrates: 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

4,4'-methylenediphenyl diisocyanate:

Toxicity to daphnia and other aquatic invertebrates: 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

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to daphnia and other aquatic invertebrates:

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

propylene carbonate:

Toxicity to daphnia and other aquatic invertebrates:

EC50 (Daphnia magna (Water flea)): > 1,000 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202
Remarks: No-observed-effect level

Components:

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to algae: 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

propylene carbonate:

Toxicity to algae:

ErC50 (Selenastrum capricornutum (green algae)): > 929 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

ErC50 (Desmodesmus subspicatus (green algae)): > 900 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

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Toxicity to daphnia and other aquatic

invertebrates (Chronic toxicity): 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

4,4'-methylenediphenyl diisocyanate:

Toxicity to daphnia and other aquatic

invertebrates (Chronic toxicity): 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

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to daphnia and other aquatic

invertebrates (Chronic toxicity): NOEC (Brachydanio rerio (zebrafish)): ≥ 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

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Toxicity to microorganisms: EC50 (activated sludge): > 100 mg/l

Exposure time: 3 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 209

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to microorganisms: EC50 (activated sludge): > 100 mg/l

Exposure time: 3 h

Test Type: static test

Test substance: Fresh water

Method: OECD Test Guideline 209

propylene carbonate:

Toxicity to microorganisms: EC50 (Pseudomonas putida): 25,619 mg/l

Exposure time: 16 h

Test Type: static test

Test substance: Fresh water

Method: DIN 38 412 Part 8

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Toxicity to soil dwelling
organisms:

NOEC (Eisenia fetida (earthworms)): $\geq 1,000$ mg/kg

Exposure time: 336 h

Method: OECD Test Guideline 207

4,4'-methylenediphenyl diisocyanate:

Toxicity to soil dwelling organisms: NOEC (*Eisenia fetida* (earthworms)): $\geq 1,000$ mg/kg
Exposure time: 336 h
Method: OECD Test Guideline 207

4,4'-Methylenediphenyl diisocyanate, oligomers:

Toxicity to soil dwelling organisms: 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

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

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Biodegradability: Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II)

4,4'-methylenediphenyl diisocyanate:

Biodegradability: Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d

Method: Inherent Biodegradability: Modified MITI Test (II)

4,4'-Methylenediphenyl diisocyanate, oligomers:

Biodegradability: Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II)

propylene carbonate:

Biodegradability:	Concentration: 20 mg/l Result: Readily biodegradable. Biodegradation: 83.5 % Exposure time: 29 d Method: OECD Test Guideline 301B
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Biochemical Oxygen

Demand (BOD):	No data available
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Chemical Oxygen

Demand (COD):	No data available
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BOD/COD:	No data available
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ThOD:	No data available
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BOD/ThOD:	No data available
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Dissolved organic
carbon (DOC):

No data available

Physico-chemical
removability:

No data available

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Stability in water:	Degradation half life(DT50): 6 d Remarks: Fresh water
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4,4'-methylenediphenyl diisocyanate:

Stability in water:	Degradation half life(DT50): 20 hrs (25 °C) Remarks: Fresh water
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Photodegradation:	No data available
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Impact on Sewage Treatment:	No data available
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Bioaccumulative potential

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Bioaccumulation:	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Remarks: Bioaccumulation is unlikely.
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4,4'-methylenediphenyl diisocyanate:

Bioaccumulation:	Species: Cyprinus carpio (Carp) Bioconcentration factor (BCF): 200 Remarks: Bioaccumulation is unlikely.
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4,4'-Methylenediphenyl diisocyanate, oligomers:

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

Components:

4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Partition coefficient:

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

4,4'-methylenediphenyl diisocyanate:

Partition coefficient:

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

4,4'-Methylenediphenyl diisocyanate, oligomers:

Partition coefficient:

n-octanol/water: log Pow: 8.56 (20 °C)

propylene carbonate:

Partition coefficient:

n-octanol/water: log Pow: -0.5 (20 °C)

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 Not applicable

Additional ecological
information: No data available

Global warming
potential (GWP): No data available

Section 13 – Disposal Consideration

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.

Section 14 – Transportation Information

International Regulations

TDG

Not regulated as dangerous goods

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

TDG

Not regulated as dangerous goods

Section 15 – Regulatory Information

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

CH INV:	The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory.
DSL:	All components of this product are on the Canadian DSL
AICS:	On the inventory, or in compliance with the inventory
NZIoC:	Not in compliance with the inventory
ENCS:	On the inventory, or in compliance with the inventory
KECI:	On the inventory, or in compliance with the inventory
PICCS:	On the inventory, or in compliance with the inventory
IECSC:	On the inventory, or in compliance with the inventory
TCSI:	On the inventory, or in compliance with the inventory
TSCA:	On the inventory, or in compliance with the inventory

Inventories

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

Canada. CEPA 1999 Significant New Activity (SNAc) List

No substances are subject to a Significant New Activity Notification.

Section 16 – Other Information

Hazardous Material Information System (USA)

Health = 2

Flammability = 1

Physical hazards = 0

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.

National Fire Protection Association (USA)

Health = 2

Flammability = 1

Instability = 0

Special = 0

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.)

ACGIH:	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1:	USA. Occupational Exposure Limits (OSHA) - Table Z-1
	Limits for Air Contaminants
ACGIH / TWA:	8-hour, time-weighted average
OSHA Z-1 / C:	Ceiling

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