Safety Data Sheet

OR811

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: **OR811**

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/irritation	2
Serious eye damage/eye irritation	2A
Respiratory Sensitization	1
Skin Sensitization	1
Specific Target Organ Toxicity (Single Exposure) [Respiratory Tract irritation]	3

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.
In case of inadequate ventilation wear respiratory protection.

Response:
IF ON SKIN: Wash with plenty of soap and water.
IF INHALED: 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 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: Not available.

Section 3 – Hazards Identification

Substance / Mixture: Mixture

Hazardous Components

Weight Percent	Components	CAS-No.
30-50%	Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]	53862-89-8
10-20%	4,4'-methylenediphenyl diisocyanate	101-68-8
10-20%	Diphenylmethanediisocyanate	9016-87-9
10-20%	Propylene carbonate	108-32-7
5-10%	Diphenylmethane-2,4’-diisocyanate	5873-54-1
1-5%	Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	70644-56-3

The specific chemical identity and/or exact percentage (concentration) of composition may be

withheld as a trade secret.

Section 4 – 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 centre 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 observed. A hyper-reactive response to even minimal concentrations of diisocyanates may develop in sensitised persons. The exposed person may need to be kept under medical surveillance for 48 hours. LC50 (rat) : ca. 490 mg/m³ (4 hours) : using experimentally produced respirable aerosol having aerodynamic diameter <5microns.
In case of skin contact:	In case of contact, immediately flush skin with soap and plenty of water. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before reuse. Thoroughly clean shoes before reuse. Call a physician if irritation develops or persists. 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.
In case of eye contact:	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If easy to do, remove contact lens, if worn. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed:	Gently wipe or rinse the inside of the mouth with water. DO NOT induce 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. Never give anything by mouth to an unconscious person.

If symptoms persist, call a physician.
Take victim immediately to hospital.

Most important symptoms and effects, both acute and delayed:

Severe allergic skin reactions, bronchiospasm 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 (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: Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).
Nitrogen oxides (NOx)
Hydrogen cyanide (hydrocyanic acid)

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 specialised 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.
Treat recovered material as described in the section "Disposal considerations".
For disposal considerations see section 13.

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.

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

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.

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.

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.

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.

Eye protection: 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.
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 Properties

Appearance:	liquid
Colour:	No data is available on the product itself.
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: 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:	No data is available on the product itself.

Lower explosion 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: No data is available on the product itself.
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: No data is available on the product itself.
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: 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: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke. Hydrocarbons Hydrogen cyanide (hydrocyanic acid) Burning produces noxious and toxic fumes.

Section 11 – Toxicological Information

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

Acute toxicity

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:

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

propylene carbonate:

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

4,4'-methylenediphenyl diisocyanate:

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

Diphenylmethanediisocyanate:

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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

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

Acute inhalation toxicity - Product: Acute toxicity estimate: 1.71 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:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation

propylene carbonate:
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

4,4'-methylenediphenyl diisocyanate:

Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.

Diphenylmethanediisocyanate:
Species: Rabbit
Assessment: Irritating to skin.
Method: OECD Test Guideline 404
Result: Skin irritation

Diphenylmethane-2,4'- diisocyanate:
Species: Rabbit
Assessment: Irritant
Method: OECD Test Guideline 404
Result: Irritating to skin.

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Species: Rabbit
Method: OECD Test Guideline 404
Result: Skin irritation
GLP: no

Serious eye damage/eye irritation

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
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

4,4'-methylenediphenyl diisocyanate:
Species: Rabbit
Result: Mild eye irritation

Diphenylmethanediisocyanate:
Species: Rabbit
Result: Irritation to eyes, reversing within 7 days
Assessment: Mild eye irritant
Method: OECD Test Guideline 405

Diphenylmethane-2,4'- diisocyanate:
Species: Humans
Result: Irritation to eyes, reversing within 7 days
Assessment: Mild eye irritant
Method: OECD Test Guideline 405
Remarks: Mild eye irritation

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Species: Rabbit
Result: Mild eye irritation
Method: OECD Test Guideline 405
GLP: yes

Respiratory or skin sensitization

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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.

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

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.

Diphenylmethanediisocyanate:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Exposure routes: Respiratory Tract
Species: Rat
Result: May cause sensitisation by inhalation.

Diphenylmethane-2,4'- diisocyanate:
Exposure routes: Skin
Species: Mouse
Assessment: May cause sensitisation by skin contact.

Result: Causes sensitisation.

Exposure routes: Respiratory Tract
Species: Guinea pig
Assessment: May cause sensitisation by inhalation.
Result: Causes sensitisation.

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: May cause sensitisation by skin contact.

Exposure routes: Respiratory Tract
Species: Rat
Result: May cause sensitisation by inhalation.

Components:

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

Diphenylmethanediisocyanate:
Assessment: May cause an allergic skin reaction., May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Diphenylmethane-2,4'- diisocyanate:
Assessment: Mild eye irritation

Germ cell mutagenicity

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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

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

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

Diphenylmethanediisocyanate:
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

Diphenylmethane-2,4'- diisocyanate:
Genotoxicity in vitro: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.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

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:

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

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

Diphenylmethanediisocyanate:

Genotoxicity in vivo: 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

Diphenylmethane-2,4'- diisocyanate:

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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Genotoxicity in vivo: 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

Components:

Diphenylmethanediisocyanate:
Germ cell mutagenicity-
Assessment: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Germ cell mutagenicity-
Assessment: No data available

Carcinogenicity

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453
Result: positive
Target Organs: Lungs

propylene carbonate:
Species: Mouse, (male)
Application Route: Dermal
Exposure time: 104 weeks
Dose: 1500 - 2000 mg/kg
Frequency of Treatment: 2 daily
Method: OECD Test Guideline 451
Result: negative

4,4'-methylenediphenyl diisocyanate:
Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453
Result: positive
Target Organs: Lungs

Diphenylmethanediisocyanate:
Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453
Result: positive

Diphenylmethane-2,4'- diisocyanate:
Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453
Result: positive

Target Organs: Lungs

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Species: Rat, (male and female)
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 1 mg/m³
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453
Result: negative

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 identified as a carcinogen or potential carcinogen by OSHA.

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

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

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

Diphenylmethane-2,4'- diisocyanate:
Species: Rat, female
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: Animal testing did not show any effects on fertility.
Species: Rat, male and female
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: Animal testing did not show any effects on fertility.

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Effects on foetal development: 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

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

Diphenylmethanediisocyanate:
Species: Rat, male and female
Application Route: Inhalation
General Toxicity Maternal: 4 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects

Diphenylmethane-2,4'- diisocyanate:
Species: Rat, male and female
Application Route: Inhalation
General Toxicity Maternal: No observed adverse effect level: 4 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Species: Rat, male and female
Application Route: Inhalation
General Toxicity Maternal: No observed adverse effect level: 4 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects

Components:
Diphenylmethanediisocyanate:
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

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Exposure routes: inhalation (dust/mist/fume)

Target Organs: Respiratory system
Assessment: May cause respiratory irritation.

4,4'-methylenediphenyl diisocyanate:
Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

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

Diphenylmethane-2,4'- diisocyanate:
Exposure routes: Inhalation
Target Organs: Respiratory system
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Exposure routes: inhalation (dust/mist/fume)
Target Organs: Respiratory system
Assessment: May cause respiratory irritation.

STOT - repeated exposure
No data available

Repeated dose toxicity

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Species: Rat, male and female
: 0.2 mg/m3
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

propylene carbonate:
Species: Rat, male and female
: > 5000 mg/kg, 100 mg/m3
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 2,232 h
Number of exposures: 6 h
Method: OECD Test Guideline 413

4,4'-methylenediphenyl diisocyanate:
Species: Rat, male and female
: 0.2 mg/m3
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Diphenylmethanediisocyanate:
Species: Rat, male and female
: 0.2 mg/m3
Test atmosphere: dust/mist
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Diphenylmethane-2,4'- diisocyanate:
Species: Rat, male and female
: 0.2 mg/m3
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Species: Rat, male and female
: 0.2 mg/m3
Test atmosphere: dust/mist
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Species: Rat, male and female
LOEC: 1.1 mg/m3
Test atmosphere: dust/mist
Exposure time: 336 h
Number of exposures: 6 h
Method: OECD Test Guideline 412

Components:
Diphenylmethane-2,4'- diisocyanate:
Repeated dose toxicity –
Assessment: Mild eye irritation

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

Product:
Remarks: No data available

Ecotoxicity

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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

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

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

Diphenylmethanediisocyanate:

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
LC0: > 1,000 mg/l
Exposure time: 96 h

Diphenylmethane-2,4'- diisocyanate:

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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.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
Test substance: Fresh water
Method: OECD Test Guideline 203

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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

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

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

Diphenylmethanediisocyanate:
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

Diphenylmethane-2,4'- 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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.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

Components:
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 (Scenedesmus subspicatus)): > 900 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Toxicity to algae: EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 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

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
Toxicity to fish (Chronic toxicity): NOEC (Oncorhynchus mykiss (rainbow trout)): > 10000 mg/kg
Exposure time: 112 d
Test Type: static test
Test substance: Fresh water

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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

Diphenylmethanediisocyanate:
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

Diphenylmethane-2,4'- 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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.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
NOEC (Daphnia magna (Water flea)): > 10,000 mg/l
Exposure time: 112 d
Test Type: static test
Test substance: Fresh water

M-Factor (Chronic aquatic toxicity): No data available

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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

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

Diphenylmethanediisocyanate:
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

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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

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

Diphenylmethanediisocyanate:
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

Diphenylmethane-2,4'- diisocyanate:
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

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.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

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Toxicity to soil dwelling organisms: NOEC (Eisenia fetida (earthworms)): >= 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)): >= 1,000 mg/kg
Exposure time: 336 h
Method: OECD Test Guideline 207

Diphenylmethanediisocyanate:
Toxicity to soil dwelling organisms: EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
Exposure time: 336 h
Method: OECD Test Guideline 207

Diphenylmethane-2,4'- diisocyanate:
Toxicity to soil dwelling organisms: NOEC (Eisenia fetida (earthworms)): >= 1,000 mg/kg
Exposure time: 336 h
Method: OECD Test Guideline 207

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):
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:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-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)

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

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)

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

Diphenylmethane-2,4'- 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)

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.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)

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:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:

Stability in water: Degradation half life(DT50): 6 d
Method: No information available.
Remarks: Fresh water

4,4'-methylenediphenyl diisocyanate:

Stability in water: Degradation half life(DT50): 20 hrs (25 °C)
Method: No information available.
Remarks: Fresh water

Diphenylmethanediisocyanate:

Stability in water: Degradation half life(DT50): 0.8 d (25 °C)
Method: No information available.
Remarks: Fresh water

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-methyl-.omega.-hydroxypoly(oxy-1,2-ethanediyl):

Stability in water: Degradation half life(DT50): 0.8 d (25 °C)
Method: No information available.
Remarks: Fresh water

Photodegradation: No data available

Impact on Sewage Treatment: No data available

Bioaccumulative potential

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:

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

4,4'-methylenediphenyl diisocyanate:

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

Diphenylmethanediisocyanate:

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

Diphenylmethane-2,4'- diisocyanate:

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

Bioaccumulative potential

Components:

Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:

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

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

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

Diphenylmethane-2,4'- diisocyanate:
Bioaccumulation: Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 200
Remarks: Bioaccumulation is unlikely.

Components:
Isocyanic acid, polymethylenepolyphenylene ester, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(methyl-1,2-ethanediyl)]:
Partition coefficient:
n-octanol/water: log Pow: 4.51 (20 °C)
pH: 7
Method: OECD Test Guideline 117

propylene carbonate:
Partition coefficient:
n-octanol/water: log Pow: -0.5 (20 °C)

4,4'-methylenediphenyl diisocyanate:
Partition coefficient:
n-octanol/water: log Pow: 4.51 (20 °C)
pH: 7
Method: OECD Test Guideline 117

Diphenylmethane-2,4'- diisocyanate:
Partition coefficient:
n-octanol/water: log Pow: 4.51 (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 Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information - Product: 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

Proper shipping name

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
Not regulated as dangerous goods

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	31885
chlorobenzene	108-90-7	100	*
ethylene oxide	75-21-8	10	*
Formaldehyde	50-00-0	100	*
1,4-dioxane	123-91-1	100	*
acetaldehyde	75-07-0	1000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 311/312 Hazards: Acute Health Hazard

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

4,4'-methylenediphenyl diisocyanate	101-68-8	10 - 20 %
Diphenylmethanediisocyanate	9016-87-9	10 - 20 %

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	15.681 %

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

ethylene oxide	75-21-8
formaldehyde	50-00-0
1,4-dioxane	123-91-1
Acetaldehyde	75-07-0

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

ethylene oxide	75-21-8
Ethylene glycol mono methyl ether	109-86-4

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:	On the inventory, or in compliance with the inventory
ENCS:	Not in compliance with the inventory
KECI:	On the inventory, or in compliance with the inventory
PICCS:	Not 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
TSCA0:	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)

TSCA - 5(a) Significant New Use Rule List of Chemicals

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.

Hazardous Material Information System (USA)

Health = 2 Flammability = 1 Physical hazards = 1 Personal protection = H

The customer is responsible for determining the PPE code for this material.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

National Fire Protection Association (USA)

Health = 2 Flammability = 1 Instability = 1 Special = 0

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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.)
Literature reference: PU 193-1: 'MDI-Based Compositions: Hazards and Safe Handling Procedures.'
PU 181-15: Recommended melting procedures for MDI-based isocyanates. ISOPA Guidelines for safe Loading/Unloading, Transportation, Storage of TDI and MDI, Ref.03-96 PSC-0005-GUIDL. SPI PMDI User Guidelines for the Chemical Protective Clothing Selection. References of methods used in the Physico-Chemical Properties section are reported in Annex V part A to Commission Directive 92/69/EEC of 31 July 1992 adapting to technical progress for the Seventeenth time Council Directive 67/548/EEC.

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behavior of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behavior should be determined by the user and made known to handlers, processors and end users.