Safety Data Sheet

OR80JF, 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: **OR80JF, 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 Identifiation

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 irritation	2
Eye irritation	2B
Respiratory Sensitization	1
Skin Sensitization	1
Specific Target Organ Toxicity (Single Exposure) [Respiratory system]	3

GHS Label Elements
Hazard pictograms:

Signal word: Danger

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

Precautionary Statements: 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.
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.

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

Hazardous Components

Weight Percent	Components	CAS-No.
50-70%	4,4'-Methylenediphenyl diisocyanate, oligomeric reaction products with .alpha -hydro-.omega.-hydroxypoly(oxy-1,2-ethanediyl)	9048-57-1
30-50%	4,4'-methylenediphenyl diisocyanate	101-68-8
10-20%	Homopolymer of methylenediphenyl diisocyante	25686-28-6
0.1-1%	Diphenylmethane-2,4'- diisocyanate	5873-54-1

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

Physical state:	Liquid
Color:	Not available
Odor:	musty
Odor threshold:	Not available
pH:	Not available
Melting Point:	Not available
Freezing Point:	Not available
Boiling point:	Not available
Flash point:	>110°C Method: closed cup
Evaporation rate:	Not available
Flammability (solid, gas):	Not available
Flammability (liquids):	Not available
Upper explosion limit:	Not available
Lower explosion:	Not available
Vapour pressure:	Not available
Relative vapour density:	Not available
Relative density:	1.12 (25°C)
Density:	Not available
Solubility(ies)	
Water solubility:	Not available
Solubility in other solvents:	Not available
Partition coefficient: n-octanol/water:	Not available
Auto-ignition temperature:	Not available
Thermal decomposition:	Not available
Self-Accelerating decomposition temperature (SADT):	Not available
Viscosity	
Viscosity, dynamic:	1,200 - 1,300 mPa.s (25 °C)
Explosive properties:	Not available
Oxidizing properties:	Not available
Particle size:	Not available

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:

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

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

4,4'-methylenediphenyl diisocyanate:

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

Homopolymer of methylenediphenyl diisocyanate:

Acute oral toxicityComponents:	LD50 (Rat, female): > 5,000 mg/kg Method: OECD Test Guideline 425
Acute inhalation toxicity - Product:	Acute toxicity estimate: 1.51 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method

Components:

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

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

4,4'-methylenediphenyl diisocyanate:

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

Diphenylmethane-2,4'- diisocyanate:

Acute dermal toxicity:	LD50 (Rabbit, male and female): > 9,400 mg/kg Method: OECD Test Guideline 402
Acute toxicity (other routes of administration):	No data available

Skin corrosion/irritation

Components:

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.

Homopolymer of methylenediphenyl diisocyanate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Irritating to skin.

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

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

Homopolymer of methylenediphenyl diisocyanate:
Species: Rabbit
Result: Mild eye irritation
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

Respiratory or skin sensitisation

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.

Homopolymer of methylenediphenyl diisocyanate:
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.

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.

Components:
4,4'-methylenediphenyl diisocyanate:
Assessment: May cause sensitisation by inhalation and skin contact.
Diphenylmethane-2,4'- diisocyanate:
Assessment: Mild eye irritation

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

Homopolymer of methylenediphenyl diisocyanate:

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

Diphenylmethane-2,4'- diisocyanate:

Genotoxicity in vitro: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
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

Homopolymer of methylenediphenyl diisocyanate:

Genotoxicity in vivo: Application Route: Inhalation
Exposure time: 3 Weeks
Dose: 118 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

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

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:
Diphenylmethane-2,4'- diisocyanate:
Effects on fertility: 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:
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
Homopolymer of methylenediphenyl diisocyanate:
Species: Rat, male and female
Application Route: Inhalation
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

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.

Homopolymer of methylenediphenyl diisocyanate:
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.

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
: 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
: 0.2 mg/m3
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Homopolymer of methylenediphenyl diisocyanate:
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

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

Ingestion:	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

Homopolymer of methylenediphenyl 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

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

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

Homopolymer of 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

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

Components:

Homopolymer of methylenediphenyl diisocyanate:

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

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

Homopolymer of methylenediphenyl diisocyanate:

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

Homopolymer of methylenediphenyl 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

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

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)): >= 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

Homopolymer of methylenediphenyl diisocyanate:

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
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)

Homopolymer of methylenediphenyl diisocyanate:

Biodegradability:	Inoculum: Domestic sewage Concentration: 30 mg/l Result: Not biodegradable Biodegradation: 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)
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:

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

4,4'-methylenediphenyl diisocyanate:

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

Homopolymer of methylenediphenyl diisocyanate:

Stability in water:	Method: No information available.
Photodegradation:	No data available
Impact on Sewage Treatment:	No data available

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.

4,4'-methylenediphenyl diisocyanate:

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

Homopolymer of methylenediphenyl diisocyanate:

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:

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

Homopolymer of methylenediphenyl diisocyanate:

Partition coefficient:

n-octanol/water:	log Pow: 8.56 (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

International Regulations

IATA
Not regulated as dangerous goods

IMDG
Not regulated as dangerous goods

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

National Regulations

DOT Classification

UN/ID/NA number:	NA 3082
Proper shipping name:	OTHER REGULATED SUBSTANCES, LIQUID, N.O.S. (Methylene Diphenyl Diisocyanate)
Class:	9
Packing group:	III
Labels:	CLASS 9
ERG Code:	171
Marine pollutant:	no

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	14072

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 30 - 50 %

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 35.53 %

California Prop. 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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

CH INV:	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:	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)

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.

Section 16 – Other Information

NFPA:
Health = 2
Flammability = 1
Physical hazards = 0

HMIS IV:
Health = *2
Flammability = 1
Instability = 0
Special = 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.

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.)

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

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

Safety Data Sheet

OR80JF, Part B

Section 1 – Identification

Oak Ridge Foam & Coating Systems, Inc
575 Commercial Ave
Green Lake, WI 54941

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

Section 2 – Hazards Identification

GHS Classification
Eye irritation: Category 2B

GHS Label Elements
Hazard pictograms:

Signal word: Warning

Hazard Statements: Causes eye irritation.

Precautionary statements:

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Wash skin thoroughly after handling.
Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
IF exposed or concerned: Get medical advice/ attention.
Wash contaminated clothing before reuse.

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

Store in a well-ventilated place. Keep cool. Store locked up.

Disposal:

Dispose of contents/ container to an approved waste disposal plant.

Section 3 – Composition and Information on Ingredients

Weight Percent	Components	CAS-No.	Classification
<5%	3-Ethyl-2-methyl-2-(3-methylbutyl)1,3-oxazoldine	143860-04-2	Combustible Liquid Category 4. Skin corrosion Category 1A. Serious eye damage Category 1. Reproductive toxicity Category 1B
70-80%	Castor oil	8001-79-4	Eye Irritation Catetory 2B
10-20%	Trade secret	Trade Secret	Not available

The specific chemical identity and/or exact percentage of component(s) have been withheld as a trade secret.

Section 4 – First Aid Measures

Description of first aid measures

General advice: Remove contaminated clothing.

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

In case of skin contact: Wash affected areas thoroughly with soap and water. Immediate medical attention required.

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

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

Most important symptoms and effects, both acute and delayed

Indication of any immediate medical attention and special treatment needed

Note to physician:

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote. Pulmonary edema prophylaxis. Medical monitoring for at least 24 hours.

Section 5 – Fire Fighting Measures

Extinguishing media: Suitable extinguishing media: water spray, dry powder, alcohol-resistant foam, carbon dioxide

Special hazards arising from the substance or mixture: Hazards during fire-fighting: toxic gases/vapors Depolymerization and liberation of the mentioned substances/groups of substances.

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

Further information: If exposed to fire, keep containers cool by spraying with water. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

Impact Sensitivity: Remarks: Based on the chemical structure there is no shock-sensitivity.

Section 6 – Accidental Release Measures

Personal precautions, protective equipment and emergency procedures:

General Measures: Caution: this product can cause the floor to be very slippery. Wear appropriate respiratory protection. Use personal protective clothing. Ensure adequate ventilation.

Environmental precautions

Do not discharge into drains/surface waters/groundwater.

Methods and material for containment and cleaning up

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

Spill and Leak Procedures

Implement site emergency response plan. Evacuate non-emergency personnel. The magnitude of the evacuation depends upon the quantity released, site conditions, and the ambient temperature. Isolate the area and prevent access of unauthorized personnel. Notify management. Call CHEMTREC at 1-800-424-9300 for assistance and advice.

Wear necessary personal protective equipment (PPE) as specified in the SDS or the site emergency response plan. Ventilate and remove ignition sources. Control the source of the leak. Contain the released material by damming, diking, retaining, or diverting into an appropriate containment area. Absorb or pump off as much of the spilled material as possible. When using absorbent, completely cover the spill area with suitable absorbent material (e.g., vermiculite, kitty litter, Oil-Dri®, etc…). Allow for the absorbent material to absorb the spilled liquid. Shovel the absorbent material into an approved metal container (i.e., 55-gallon salvage drum). Do not fill the container more than 2/3 full to allow for expansion, and do not tighten the lid on the container. Repeat application of absorbent material until all liquid has been removed from the surface.

Section 7 – Storage and Handling

Technical measures:

Ensure that eyewash stations and safety showers are close to the workstation location.

Precautions for safe handling

Ensure thorough ventilation of stores and work areas. Handle in accordance with good industrial hygiene and safety practice. Remove contaminated clothing and protective equipment before entering eating areas. Hands and/or face should be washed before breaks and at the end of the shift. When using do not eat, drink or smoke. Keep away from sources of ignition - No smoking. Keep container tightly sealed.

Protection against fire and explosion:

Prevent electrostatic charge - sources of ignition should be kept well clear - fire extinguishers should be kept handy.

Conditions for safe storage, including any incompatibilities

Segregate from acids and acid forming substances.

Further information on storage conditions:

Keep container tightly closed in a cool, well-ventilated place.

Section 8 – Exposure Controls/Personal Protection

No occupational exposure limits known for components.

Advice on system design: Provide local exhaust ventilation to control vapors/mists.

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

State of Matter:	liquid
Appearance:	liquid
Color:	pale yellow
Odor:	characteristic
Odor Threshold:	No Data Available
pH:	No Data Available
Boiling Point:	>300 °C (572°F)
Flash Point:	>200 °C (392 °F)
Evaporation Rate:	No Data Available
Lower explosion limit:	No Data Available
Upper explosion limit:	No Data Available
Vapor Pressure:	No Data Available
Vapor Density:	No Data Available
Density:	No Data Available
Relative Vapor Density:	No Data Available
Specific Gravity:	1.00
Solubility in Water:	Insoluble
Partition Coefficient: n-octanol/water:	No Data Available
Auto-ignition Temperature:	No Data Available

Decomposition Temperature:	Not established
Dynamic Viscosity:	No data available
Kinematic Viscosity:	No Data Available
Bulk Density:	1,002 kg/m3
Self Ignition:	Not applicable
Self-ignition temperature:	Based on its structural properties the product is not classified as self-igniting.
Thermal decomposition:	No data available
Viscosity, dynamic:	No data available
Viscosity, kinematic:	No data available
Particle size:	The substance / product is marketed or used in a non solid or granular form.
Miscibility with water:	Not miscible
Molar mass:	No data available
Evaporation rate:	Value can be approximated from Henry's Law Constant or vapor pressure.
Other Information:	If necessary, information on other physical and chemical parameters is indicated in this section.

Section 10 – Stability and Reactivity

Reactivity

Corrosion to metals: Corrosive effects to metal are not anticipated.

Oxidizing properties: Based on its structural properties the product is not classified as oxidizing.

Formation of flammable gases: Remarks: Forms no flammable gases in the presence of water.

Chemical stability

Possibility of hazardous reactions: Evolution of heat under influence of acids.

Conditions to avoid

Incompatible materials: Avoid contact with acids, isocyanates, oxidizing agents and moisture

Hazardous decomposition products: carbon dioxide, carbon monoxide, nitrogen oxides

Thermal decomposition: Not data available.

Section 11 – Toxicological Information

Primary routes of exposure

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

Toxicity data for components

Components	Result	Species	Dose	Exposure
3-Ethyl-2-methyl-2-(3-methylbutyl)1,3-oxazoldine (CAS# 143860-04-2)	LD50 oral	Rat, male	4,400 mg/kg	--
	LD50 oral	Rat, female	3,000 mg/kg	--
	LD50 dermal	Rat, male and female	> 2,000 mg/kg	--

Toxicity of other components not established

Acute Toxicity/Effects
Acute toxicity Assessment of acute toxicity: Product: not established
Assessment other acute effects Assessment of STOT single: Product: not established.

Irritation / corrosion Assessment of irritating effects: Corrosive! Damages skin and eyes.

Sensitization Assessment of sensitization: No data available.

Aspiration Hazard No aspiration hazard expected.

Chronic Toxicity/Effects
Repeated dose toxicity Assessment of repeated dose toxicity: Product: not established

Genetic toxicity Assessment of mutagenicity: Product: not established.

Carcinogenicity Assessment of carcinogenicity: No data available concerning carcinogenic effects.

Reproductive toxicity Assessment of reproduction toxicity: Product: not established.

Teratogenicity Assessment of teratogenicity: Product: not established.

Other Information No experimental evidence available for genotoxicity in vitro (Ames test negative). Literature data.

Section 12 – Ecological Information

Ecology: Harmful to aquatic life

Ecological Data for components

Components	Acute Toxicity	Time	Species	Exposure
3-Ethyl-2-methyl-2-(3-methylbutyl)1,3-oxazoldine (CAS# 143860-04-2)	LC50 (129 mg/L)	96.0 h	Rainbow trout	--
	EC50 (52.00 mg/L)	48.0 hg	Water flea	--
	EbC50 (0.99 mg/L End point: Biomass)	72 h	Green algae	--
	EC50 (> 100 mg/L)	3 h	activated sludge	--

Bioaccumulation
Not established for product.

Persistence and degradability
Not available for product.

Section 13 – Disposal Consideration

Waste Disposal Method:
Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions
Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are removed prior to disposal.

Section 14 – Transportation Information

Land transport
USDOT
Not regulated

Sea transport
Not regulated. Not a marine pollutant

Air transport
Not regulated

Section 15 – Regulatory Information

United States Federal Regulations
US Toxic Substances Control Act: Listed on the TSCA Inventory

U.S. EPA EPCRA 311/312 (Hazard categories): Acute;

NFPA Hazard codes:
Health: 1 Fire: 2 Reactivity: 1 Special:

HMIS III rating
Health: 1 Flammability: 2 Physical hazard: 0

Assessment of the hazard classes according to UN GHS criteria (most recent version):

Skin Corr./Irrit. 1C		Skin corrosion/irritation
Aquatic Acute	3	Hazardous to the aquatic environment - acute
Aquatic Chronic	2	Hazardous to the aquatic environment - chronic
Eye Dam./Irrit.	1	Serious eye damage/eye irritation

Section 16 – Other Information

The method of hazard communication for Oak Ridge Foam & Coating Systems, Inc is comprised of Product Labels and Safety Data Sheets.

Contact:	Product Safety Department
Telephone:	800-625-9577
Version Date:	02/18/2018
SDS Version:	1.0

This information is furnished without warranty, expressed or implied. This information is believed to be accurate to the best knowledge of Oak Ridge Foam & Coating Systems, Inc. The information in this SDS relates only to the specific material designated herein. Oak Ridge Foam & Coating Systems, Inc assumes no legal responsibility for use of or reliance upon the information in this SDS.