

1-Part PermaFlash®

Version 1.2

Revision Date 12/03/2021

Print Date 01/11/2022

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : 1-Part PermaFlash®

Manufacturer or supplier's details

Company : Johns Manville
Address : P.O. Box 5108
Denver, CO USA 80127
Telephone : +1-303-978-2000
Emergency telephone : 24-Hour Number: +1-800-424-9300 (CHEMTREC)
number

Company : Johns Manville Canada Inc.
Address : 5301 42 Avenue
Innisfail, AB Canada T4G 1A2
Telephone : +1-303-978-2000
Emergency telephone : 24-Hour Number: +1-800-424-9300 (CHEMTREC)
number

Recommended use of the chemical and restrictions on use

Restrictions on use : For professional users only.
Prepared by : productsafety@jm.com

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with 29 CFR 1910.1200 (OSHA HCS 2012) and the Hazardous Products Regulations (WHMIS 2015)**

Flammable liquids : Category 2
Skin irritation : Category 2
Serious eye damage : Category 1
Respiratory sensitisation : Category 1
Skin sensitisation : Category 1
Carcinogenicity : Category 2
Reproductive toxicity : Category 2
Specific target organ toxicity : Category 3 (Respiratory system)
- single exposure
Specific target organ toxicity : Category 2 (Bladder, hearing organs, Kidney, Liver, Respiratory
- repeated exposure system)

GHS label elements

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Hazard pictograms

:



Signal word

: Danger

Hazard statements

 : H225 Highly flammable liquid and vapour.
 H315 Causes skin irritation.
 H317 May cause an allergic skin reaction.
 H318 Causes serious eye damage.
 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 H335 May cause respiratory irritation.
 H351 Suspected of causing cancer.
 H361d Suspected of damaging the unborn child.
 H373 May cause damage to organs (Bladder, hearing organs, Kidney, Liver, Respiratory system) through prolonged or repeated exposure.

Precautionary statements

 : **Prevention:**
 P201 Obtain special instructions before use.
 P202 Do not handle until all safety precautions have been read and understood.
 P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 P233 Keep container tightly closed.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
 P264 Wash skin thoroughly after handling.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing must not be allowed out of the workplace.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P285 In case of inadequate ventilation wear respiratory protection.
Response:
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
 P305 + P351 + P338 + P310 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/doctor.
 P308 + P313 IF exposed or concerned: Get medical advice/ attention.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

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P362 Take off contaminated clothing and wash before reuse.
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

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

P405 Store locked up.

Disposal:

P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS
Chemical nature

Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (%)
toluene	108-88-3	>= 10 - < 30
4,4'-methylenediphenyl diisocyanate	101-68-8	>= 5 - <= 10
calcium oxide	1305-78-8	>= 5 - <= 10
2-butanone	78-93-3	>= 5 - < 10
titanium dioxide	13463-67-7	>= 1 - <= 5
o-(p-isocyanatobenzyl)phenyl isocyanate	5873-54-1	>= 1 - < 5
benzene, 1,1'-methylenebis[isocyanato-, homopolymer	39310-05-9	>= 1 - < 5
4-isocyanatosulphonyltoluene	4083-64-1	>= 0.1 - < 1
ethylbenzene	100-41-4	>= 0.1 - < 1

Actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
 Show this safety data sheet to the doctor in attendance.
 Do not leave the victim unattended.
 Symptoms of poisoning may appear several hours later.
- If inhaled : Remove to fresh air immediately. Get medical attention immediately.
 If breathing is irregular or stopped, administer artificial respiration.
- In case of skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
 Call a physician if irritation develops or persists.
- In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 30 minutes.
 If easy to do, remove contact lens, if worn.
 Protect unharmed eye.

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If swallowed	:	Continue rinsing eyes during transport to hospital. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Gently wipe or rinse the inside of the mouth with water. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician or Poison Control Centre immediately.
Most important symptoms and effects, both acute and delayed	:	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation. Suspected of causing cancer. Suspected of damaging the unborn child. May cause damage to organs through prolonged or repeated exposure.
Protection of first-aiders	:	If potential for exposure exists refer to Section 8 for specific personal protective equipment.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	:	Carbon dioxide (CO2) Dry chemical Dry sand Alcohol-resistant foam
Unsuitable extinguishing media	:	Water
Specific hazards during firefighting	:	The product reacts with water and generates heat. In the event of a fire, toxic gases or vapors may be released. Vapours may form flammable mixture with air Vapours are heavier than air and may spread along floors. Flash back possible over considerable distance. Cool closed containers exposed to fire with water spray.
Hazardous combustion products	:	carbon oxides nitrogen oxides isocyanates calcium oxides titanium/titanium oxides hydrogen cyanide
Specific extinguishing methods	:	Use a water spray to cool fully closed containers. Remove undamaged containers from fire area if it is safe to do so. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Further information	:	Standard procedure for chemical fires.
Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Use personal protective equipment. Ensure adequate ventilation. Immediately evacuate personnel to safe areas.
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- Environmental precautions : Prevent further leakage or spillage if safe to do so.
The product should not be allowed to enter drains, water courses or the soil.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Recovered material should be stored in a vented container.
The vent must prevent the ingress of water as further reaction with spilled materials can take place which could lead to overpressurization of the container.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Use only in area provided with appropriate exhaust ventilation.
Electrical equipment should be protected to the appropriate standard.
Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limits.
Vapours are heavier than air and may spread along floors.
Take measures to prevent the build up of electrostatic charge.
Keep away from open flames, hot surfaces and sources of ignition.
- Advice on safe handling : Provide sufficient air exchange and/or exhaust in work rooms.
Do not breathe vapours/dust.
Avoid formation of aerosol.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
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.
For personal protection see section 8.
- Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.
To maintain product quality, do not store in heat or direct sunlight.
- Materials to avoid : Never allow product to get in contact with water during storage.
- Recommended storage temperature : 4 - 35 °C
- Storage period : 12 Months
- Further information on storage stability : Do not freeze.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type	Control	Basis
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		(Form of exposure)	parameters / Permissible concentration	
toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m3	NIOSH REL
		ST	150 ppm 560 mg/m3	NIOSH REL
		TWA	200 ppm	OSHA
		CEIL	300 ppm	OSHA
		Peak	500 ppm (10 minutes)	OSHA
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH
		TWA	0.005 ppm 0.05 mg/m3	NIOSH REL
		C	0.02 ppm 0.2 mg/m3	NIOSH REL
		C	0.02 ppm 0.2 mg/m3	OSHA
calcium oxide	1305-78-8	TWA	2 mg/m3	ACGIH
		TWA	2 mg/m3	NIOSH REL
		TWA	5 mg/m3	OSHA
2-butanone	78-93-3	TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH
		TWA	200 ppm 590 mg/m3	NIOSH REL
		ST	300 ppm 885 mg/m3	NIOSH REL
		TWA	200 ppm 590 mg/m3	OSHA
titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m3	OSHA
		TWA	10 mg/m3 (Titanium dioxide)	ACGIH
o-(p-isocyanatobenzyl)phenyl isocyanate	5873-54-1	C	0.02 ppm 0.2 mg/m3	OSHA
		C	0.02 ppm 0.2 mg/m3	OSHA
		TWA	0.005 ppm 0.05 mg/m3	NIOSH REL
		C	0.02 ppm 0.2 mg/m3	NIOSH REL
ethylbenzene	100-41-4	TWA	20 ppm	ACGIH
		TWA	100 ppm 435 mg/m3	NIOSH REL
		ST	125 ppm 545 mg/m3	NIOSH REL
		TWA	100 ppm 435 mg/m3	OSHA

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis

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toluene	108-88-3	Toluene	In blood	Prior to last shift of workweek	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure ceases)	0.3 mg/g Creatinine	ACGIH BEI
2-butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure ceases)	2 mg/l	ACGIH BEI
ethylbenzene	100-41-4	Sum of mandelic acid and phenyl glyoxylic acid	Urine	End of shift (As soon as possible after exposure ceases)	0.15 g/g creatinine	ACGIH BEI

Personal protective equipment

- Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.
- Hand protection
Material : Protective gloves
- Remarks : Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Eye protection : Wear safety glasses with side shields or goggles. Wear a faceshield or other full face protection if there is a

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Skin and body protection	:	potential for direct contact to the face with dusts, mists, or aerosols. Wear protective clothing, such as long-sleeved shirts and pants. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Remove and wash contaminated clothing before re-use.
Hygiene measures	:	Ensure adequate ventilation, especially in confined areas. Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Wash hands before breaks and at the end of workday. Written instructions for handling must be available at the work place.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	brown
Odour	:	solvent-like
Odour Threshold	:	No data available
pH	:	No data available
Melting point/freezing point	:	No data available
Initial boiling point and boiling range	:	No data available
Flash point	:	10.5 °C Method: closed cup
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapour pressure	:	No data available
Relative vapour density	:	> 1 (Air = 1.0)
Relative density	:	1.07
Solubility(ies)		
Water solubility	:	insoluble
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	No data available
Thermal decomposition	:	No data available
Viscosity		
Viscosity, dynamic	:	30,000 mPa.s (25 °C)
Viscosity, kinematic	:	> 20.5 mm ² /s (40 °C)

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SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Container can be pressurized by carbon dioxide due to reaction with humid air and/or water.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Mixture reacts slowly with water resulting in evolution of carbon dioxide. Gives off hydrogen by reaction with metals. Polymerisation is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers.
Conditions to avoid	:	Do not expose to temperatures above: 177 °C Exposure to moisture If contained in exposed to high heat (> 350 °F), it can be pressurized and possibly rupture. Methylene diisocyanate reacts slowly with water to form carbon dioxide gas. This gas can cause sealed container to expand and possibly rupture.
Incompatible materials	:	Water Strong bases Acids Alcohols Metals Amines
Hazardous decomposition products	:	carbon oxides nitrogen oxides Isocyanates calcium oxides titanium/titanium oxides Hydrogen cyanide (hydrocyanic acid)

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

Acute oral toxicity	:	Acute toxicity estimate : > 5,000 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate : > 5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: Calculation method

Components:

toluene:

Acute oral toxicity	:	LD50 Oral (Rat, male): 5,580 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): 28.1 mg/l Exposure time: 4 h Test atmosphere: vapour
Acute dermal toxicity	:	LD50 (Rabbit): > 12,267 mg/kg

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4,4'-methylenediphenyl diisocyanate:

- Acute oral toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
- Acute inhalation toxicity : LC50 (Rat): 2.24 mg/l
 Exposure time: 1 h
 Test atmosphere: dust/mist
 Assessment: The component/mixture is moderately toxic after short term inhalation.
- Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
 Method: OECD Test Guideline 402

2-butanone:

- Acute oral toxicity : LD50 (Rat, male and female): 2,193 mg/kg
 Method: OECD Test Guideline 423
- Acute inhalation toxicity : Assessment: The substance or mixture has no acute inhalation toxicity
- Acute dermal toxicity : LD50 (Rabbit, male): > 8,054 mg/kg
 Method: OECD Test Guideline 402
 GLP: no

titanium dioxide:

- Acute oral toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
- Acute inhalation toxicity : LC50 (Rat, male and female): > 5.09 mg/l
 Exposure time: 4 h
 Test atmosphere: dust/mist
 Method: OECD Test Guideline 403
- Acute dermal toxicity : Method: Expert judgement
 Assessment: The substance or mixture has no acute dermal toxicity

o-(p-isocyanatobenzyl)phenyl isocyanate:

- Acute oral toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
 Assessment: The substance or mixture has no acute oral toxicity
 Remarks: Information given is based on data obtained from similar substances.
- Acute inhalation toxicity : LC50 (Rat, male): 3.6795 mg/l
 Exposure time: 4 h
 Test atmosphere: dust/mist
 Method: OECD Test Guideline 403
- Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
 Method: OECD Test Guideline 402
 Remarks: Information given is based on data obtained from similar substances.

benzene, 1,1'-methylenebis[isocyanato-, homopolymer:

- Acute inhalation toxicity : Assessment: The component/mixture is moderately toxic after short term inhalation.

4-isocyanatosulphonyltoluene:

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Acute oral toxicity	: LD50 (Rat): 2,330 mg/kg
Acute dermal toxicity	: LD50 (Rat, male and female): > 2,000 mg/kg Method: OECD Test Guideline 402 Remarks: No mortality was observed.
ethylbenzene:	
Acute oral toxicity	: LD50 (Rat, male and female): ca. 3,500 mg/kg Method: standard acute method GLP: no
Acute inhalation toxicity	: LC50 (Rat, male): 17.8 mg/l Exposure time: 4 h Test atmosphere: vapour Method: standard acute method
Acute dermal toxicity	: LD50 (Rabbit, male): ca. 15,400 mg/kg Method: standard acute method

Skin corrosion/irritation**Components:****toluene:**

Species: Rabbit
Result: Irritating to skin.

Skin corrosion/irritation**4,4'-methylenediphenyl diisocyanate:**

Species: Rabbit
Method: Draize Test
Result: Mild skin irritant

Species: Human
Result: irritating

Skin corrosion/irritation

Not classified based on available information.

calcium oxide:

Species: Human
Result: Severe skin irritation

Skin corrosion/irritation**o-(p-isocyanatobenzyl)phenyl isocyanate:**

Species: Rabbit
Result: irritating

Skin corrosion/irritation**benzene, 1,1'-methylenebis[isocyanato-, homopolymer:**

Result: Skin irritation

Skin corrosion/irritation**4-isocyanatosulphonyltoluene:**

Species: Rabbit

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Exposure time: 24 h
Assessment: Irritating to skin.
Method: OECD Test Guideline 404
GLP: no

Serious eye damage/eye irritation**Components:****4,4'-methylenediphenyl diisocyanate:**

Species: Rabbit
Result: Moderate eye irritation
Method: Draize Test

Species: Human
Result: irritating

Serious eye damage/eye irritation

Not classified based on available information.

calcium oxide:

Species: Rabbit
Result: Risk of serious damage to eyes.
Method: OECD Test Guideline 405

Serious eye damage/eye irritation**2-butanone:**

Species: Rabbit
Result: irritating
Method: OECD Test Guideline 405

Serious eye damage/eye irritation**o-(p-isocyanatobenzyl)phenyl isocyanate:**

Species: Rabbit
Result: Eye irritation

Serious eye damage/eye irritation**benzene, 1,1'-methylenebis[isocyanato-, homopolymer:**

Result: Eye irritation

Serious eye damage/eye irritation**4-isocyanatosulphonyltoluene:**

Species: Rabbit
Assessment: Irritating to eyes.
Method: OECD Test Guideline 405
GLP: no

Respiratory or skin sensitisation**Components:****4,4'-methylenediphenyl diisocyanate:**

Exposure routes: Dermal
Species: Mouse
Assessment: May cause sensitisation by skin contact.

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Method: OECD Test Guideline 429
 Result: positive

Exposure routes: Inhalation
 Species: Guinea pig
 Assessment: May cause sensitisation by inhalation.
 Result: positive

Respiratory or skin sensitisation
o-(p-isocyanatobenzyl)phenyl isocyanate:

Assessment: Probability of respiratory sensitisation in humans based on animal testing
 Result: May cause sensitisation by skin contact.

Respiratory or skin sensitisation
benzene, 1,1'-methylenebis[isocyanato-, homopolymer:

Exposure routes: Inhalation
 Result: Probability of respiratory sensitisation in humans based on animal testing

Exposure routes: Skin contact
 Result: May cause sensitisation by skin contact.

Respiratory or skin sensitisation
4-isocyanatosulphonyltoluene:

Exposure routes: Inhalation
 Result: May cause sensitisation by inhalation.

Carcinogenicity
Components:
o-(p-isocyanatobenzyl)phenyl isocyanate:

Carcinogenicity - : Limited evidence of carcinogenicity in animal studies
 Assessment

Carcinogenicity
benzene, 1,1'-methylenebis[isocyanato-, homopolymer:

Carcinogenicity - : Suspected human carcinogens
 Assessment

IARC

Group 2B: Possibly carcinogenic to humans

titanium dioxide	13463-67-7
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ethylbenzene	100-41-4
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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 (29 CFR 1910 Subpart Z, Toxic and Hazardous Substances).

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.

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Reproductive toxicity**Components:****toluene:**

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

STOT - single exposure**Components:****toluene:**

Assessment: May cause drowsiness or dizziness.

STOT - single exposure**4,4'-methylenediphenyl diisocyanate:**

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

STOT - single exposure

Not classified based on available information.

calcium oxide:

Assessment: May cause respiratory irritation.

STOT - single exposure**2-butanone:**

Exposure routes: Inhalation

Target Organs: Central nervous system

Assessment: May cause drowsiness or dizziness.

STOT - single exposure**o-(p-isocyanatobenzyl)phenyl isocyanate:**

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

STOT - single exposure**benzene, 1,1'-methylenebis[isocyanato-, homopolymer:**

Exposure routes: Inhalation

Target Organs: Respiratory system

Assessment: May cause respiratory irritation.

STOT - single exposure**4-isocyanatosulphonyltoluene:**

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

STOT - repeated exposure**Product:**

Target Organs: Bladder, hearing organs, Kidney, Liver, Respiratory system

Assessment: May cause damage to organs through prolonged or repeated exposure.

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STOT - repeated exposure**Components:****toluene:**

Assessment: May cause damage to organs through prolonged or repeated exposure.

STOT - repeated exposure**4,4'-methylenediphenyl diisocyanate:**

Exposure routes: Inhalation

Target Organs: Respiratory system

Assessment: May cause damage to organs through prolonged or repeated exposure.

STOT - repeated exposure**o-(p-isocyanatobenzyl)phenyl isocyanate:**

Assessment: Shown to produce significant health effects in animals at concentrations of >0.02 to 0.2 mg/l/6h/d.

STOT - repeated exposure**benzene, 1,1'-methylenebis[isocyanato-, homopolymer:**

Exposure routes: Inhalation

Target Organs: Respiratory system

Assessment: May cause damage to organs through prolonged or repeated exposure.

STOT - repeated exposure**ethylbenzene:**

Exposure routes: Inhalation

Target Organs: hearing organs

Assessment: May cause damage to organs through prolonged or repeated exposure.

Aspiration toxicity**Components:****toluene:**

May be fatal if swallowed and enters airways.

ethylbenzene:

May be fatal if swallowed and enters airways.

Experience with human exposure**Components:****toluene:**

Skin contact:

Remarks:

Prolonged skin contact may defat the skin and produce dermatitis.

Further information**Product:**

Remarks: Contains isocyanates. May produce an allergic reaction.

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SECTION 12. ECOLOGICAL INFORMATION
Ecotoxicity
Components:
calcium oxide:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 1,070 mg/l
 Exposure time: 96 h

2-butanone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l
 End point: mortality
 Exposure time: 96 h
 Test Type: static test
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l
 End point: Immobilization
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l
 Exposure time: 96 h
 Test Type: static test
 Method: OECD Test Guideline 201

o-(p-isocyanatobenzyl)phenyl isocyanate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 1,000 mg/l
 End point: mortality
 Exposure time: 96 h
 Test Type: static test
 Method: OECD Test Guideline 203
 Remarks: Information taken from reference works and the literature.

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
 Method: OECD Test Guideline 211
 Remarks: Information taken from reference works and the literature.

4-isocyanatosulphonyltoluene:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 45 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Method: OECD Test Guideline 203
 GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
 Exposure time: 48 h

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 Test Type: static test
 Method: OECD Test Guideline 202
 GLP: yes

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 30 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201
 GLP: no

Persistence and degradability

Components:

o-(p-isocyanatobenzyl)phenyl isocyanate:

Biodegradability : Result: Not biodegradable
 Method: OECD Test Guideline 302
 Remarks: Information taken from reference works and the literature.

4-isocyanatosulphonyltoluene:

Biodegradability : Result: Readily biodegradable.
 Biodegradation: 100 %

ethylbenzene:

Biodegradability : Result: Readily biodegradable.

Bioaccumulative potential

Components:

toluene:

Partition coefficient: n-octanol/water : Pow: 2.7

4,4'-methylenediphenyl diisocyanate:

Partition coefficient: n-octanol/water : log Pow: 4.51 (20 °C)
 pH: 7

2-butanone:

Partition coefficient: n-octanol/water : log Pow: 0.3 (40 °C)
 Method: OECD Test Guideline 117

o-(p-isocyanatobenzyl)phenyl isocyanate:

Partition coefficient: n-octanol/water : log Pow: 4.51 (22 °C)
 pH: 7
 Method: OECD Test Guideline 117

4-isocyanatosulphonyltoluene:

Partition coefficient: n-octanol/water : log Pow: 0.6

ethylbenzene:

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Bioaccumulation : Bioconcentration factor (BCF): 110

Partition coefficient: n-
octanol/water : log Pow: 3.6 (20 °C)
pH: 7.84**Mobility in soil**

No data available

Other adverse effects**Product:**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 : Harmful to aquatic life.
Harmful to aquatic life with long lasting effects.**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**Waste from residues : Dispose of contents/container to an approved facility in
accordance with local, regional, national and international
regulations.Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.**SECTION 14. TRANSPORT INFORMATION****International transport regulations**

Land transport

USDOT: UN1263, Paint related material, 3, III

TDG: UN1263, Paint related material, 3, III

LIMITED QUANTITY if shipped in inner packagings not over 5.0 L (1.3 gallons) net capacity each,
packed in a strong outer packaging.

Sea transport

IMDG: UN1263, Paint related material, 3, III

Air transport

IATA/ICAO: UN1263, Paint related material, 3, III

SECTION 15. REGULATORY INFORMATION**TSCA list**

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TSCA - 5(a) Significant New Use Rule List of Chemicals : No substances are subject to a Significant New Use Rule.

U.S. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpart D) : No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
toluene	108-88-3	1000	*

*: Calculated RQ exceeds reasonably attainable upper limit.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
 Skin corrosion or irritation
 Serious eye damage or eye irritation
 Respiratory or skin sensitisation
 Carcinogenicity
 Reproductive toxicity
 Specific target organ toxicity (single or repeated exposure)

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

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

toluene	108-88-3	10 - 30 %
4,4'-methylenediphenyl diisocyanate	101-68-8	5 - 10 %
ethylbenzene	100-41-4	0.1 - 1 %

Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

toluene	108-88-3	10 - 30 %
4,4'-methylenediphenyl diisocyanate	101-68-8	5 - 10 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

toluene	108-88-3	10 - 30 %
4,4'-methylenediphenyl diisocyanate	101-68-8	5 - 10 %
2-butanone	78-93-3	5 - 10 %


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California Prop. 65

 **WARNING:** This product can expose you to chemicals including ethylbenzene, which is/are known to the State of California to cause cancer, and toluene, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

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

TSCA : All substances listed as active on the TSCA inventory

DSL : All components of this product are on the Canadian DSL

SECTION 16. OTHER INFORMATION**Further information**

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.