SAFETY DATA SHEET

SECTION 1 : Identification

A. Product Name : TOOLWAY PU FOAM 750 ㎖(A)

B. Other means of identification :

C. Recommended use of the chemical and restrictions on use

Recommended use : Building materials for fixing and filling window frames, insulation and sound insulation, insect repellent and other hole filling

Restrictions on use : Use for recommended use only.

D. Supplier's details

Company name : Toolway Industries Ltd

Address : 280 Hunter's Valley Rd #1, Woodbridge, ON L4H 3V9

Telephone number : (905) 326-5450

SECTION 2 : Hazard identification

A. Classification of the substance or mixture

FLAMMABLE GASES : Category 1A

AEROSOLS : Category 1

GASES UNDER PRESSURE : Liquefied gas

SKIN CORROSION/IRRITATION : Category 2

EYE DAMAGE/IRRITATION : Category 2

RESPIRATORY SENSITIZATION : Category 1

CARCINOGENICITY : Category 2

SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE - respiratory irritation) : Category 3

SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) : Category 2

B. GHS label elements, including precautionary statements

Pictogram and symbol

Signal word

Danger

Hazard statements

H220 Extremely flammable gas
H222 Extremely flammable aerosol
H229 Pressurized container: may burst if heated
H280 Contains gas under pressure; may explode if heated
H282 Extremely flammable chemical under pressure: May explode if heated
H315 Causes skin irritation
H319 Causes serious eye irritation
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H335 May cause respiratory irritation
H351 Suspected of causing cancer
H373 May cause damage to organs through prolonged or repeated exposure

Precautionary statements

Precaution

P203 Obtain, read and follow all safety instructions before use.

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P211 Do not spray on an open flame or other ignition source.

P251 Do not pierce or burn, even after use.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash handling area thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

P284 [In case of inadequate ventilation] wear respiratory protection.

Treatment

P302+P352 IF ON SKIN: Wash with plenty of water.

P304+P340 IF INHALED:Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 IF IN EYES:Rinse cautiously with water for several minutes.Remove contact lenses, if present and easy to do.Continue rinsing.

P318 IF exposed or concerned, get medical advice.

P319 Get medical help if you feel unwell.

P321 Specific treatment (see on this label).

P332+P317 If skin irritation occurs: Get medical help.

P337+P317 If eye irritation persists: Get medical help.

P342+P316 If experiencing respiratory symptoms: Get emergency medical help immediately.

P362+P364 Take off contaminated clothing and wash it before reuse.

P370+P378 In case of fire:Use suitable extinguishing media to extinguish.

P376 Stop leak if safe to do so.

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 In case of leakage, eliminate all ignition sources.

Storage

P403 Store in a well-ventilated place.

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

P405 Store locked up.

P410+P403 Protect from sunlight. Store in a well-ventilated place.

P410+P412 Protect from sunlight. Do not expose to temperatures exceeding 50℃/122℉.

Disposal

P501 Dispose of contents/container accordance with local/regional/national/international regulations as applicable.

C. Other hazard which do not result in classification

Not available

SECTION 3: Composition/information on ingredients

Chemical Name	Common Name(Synonyms)	CAS Number	EC Number	Content(%)
Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate	Polymethylene polyphenylene isocyanate	9016-87-9	618-498-9	25 ~ 35
Diphenylmethane 4,4'-diisocyanate	4,4'-methylenediphenyl diisocyanate	101-68-8	202-966-0	15 ~ 25
Tris(1-chloro-2-propyl) phosphate	2-Propanol, 1-chloro-, 2,2',2''-phosphate, TCPP	13674-84-5	237-158-7	5 ~ 15
α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol	Polyoxypropylene glycerol triether	25791-96-2	500-044-5	10 ~ 20

Chemical Name	Common Name(Synonyms)	CAS Number	EC Number	Content(%)
triether				
1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]	Diethylene glycol, phthalic anhydride polymer	32472-85-8	608-744-3	1 ~ 10
Oxybismethane; Dimethyl ether	Dimethyl ether	115-10-6	204-065-8	5 ~ 15
2-Methylpropane; Isobutane	Isobutane	75-28-5	200-857-2	5 ~ 15
Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate	Methyl pentachlorooctadecanoate	26638-28-8	247-864-7	5 ~ 15
Propane	Dimethylmethane	74-98-6	200-827-9	1 ~ 10
Butane	2-Methylpropane	106-97-8	203-448-7	~ 1

SECTION 4: First-aid measures

A. Description of necessary first-aid measures

After eye contact

In case of contact with substance, immediately Rinse your eyes with running water for at least 20 minutes.

Get immediate medical advice/attention.

After skin contact

For hot material, immediately immerse in or rinse the affected area with large amounts of cold water to dissipate heat.

In case of contact with substance, immediately Rinse your skin with running water for at least 20 minutes.

Remove and isolate contaminated clothing and shoes.

Wash contaminated clothing and shoes before reuse.

Get immediate medical advice/attention.

After inhalation

If exposed to excessive levels of dusts or fumes, remove those with fresh air and get medical attention if coughing or other symptoms develop.

Get immediate medical attention.

Remove to a place with fresh air.

When not breathing, start artificial respiration.

If breathing is difficult, supply oxygen.

After ingestion

Do not let him/her eat anything, if unconscious.

Get immediate medical advice/attention.

B. Most important symptoms and effects, both acute and delayed

C. Indication of immediate medical attention and notes for physician, if necessary

Exposures require specialized first aid with contact and medical follow-up .

Ensure that doctor/physician are aware about the substance when they take medical action

SECTION 5: Fire-fighting measures

A. Suitable extinguishing media

Use alcohol foam, carbon dioxide, or water spray when fighting fires involving this material.

Use dry sand or earth to smother fire.

Suitable extinguishing media: Large fire: water spray/fog, regular foam

B. Specific hazards arising from the chemical

May violently polymerize and result in fire and explosion.

It may produce irritating and highly toxic gases from heat decomposition and combustion during burning

May be decomposed at high temperatures into forming toxic gases.

Heat/spark/flame could cause ignition.

Containers may explode when heated.

Some of these materials may burn, but none ignite readily.

Fire could produce irritating and/or toxic gases.

If inhaled, it may be harmful.

Some liquids produce vapors that may cause dizziness or suffocation.

C. Special protective actions for fire-fighters

Evacuate area and fight fire from a safe distance.

Rescuers should put on appropriate protective gear.

Move containers from fire area if you can do it without risk

Some may be transported in high temperature.

Leaked substance could cause contamination.

Contact may cause burns to skin and eyes.

Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks; Cool containers with flooding quantities of water until well after fire is out.

Fire involving Tanks; Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

Fire involving Tanks; Always stay away from tanks engulfed in fire.

SECTION 6: Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

Due to very fine particles causing a fire or explosion, eliminate all ignition sources.
Clean up spills immediately, observing precautions in protective equipment section.
Eliminate all ignition sources.
Stop leakage if you can do it without risk.
Take caution of substances and conditions that should be avoided.
Ventilate the contaminated area.
Do not touch the effluents or walk around the area.
Prevent dust cloud.

B. Environmental precautions

Prevent entering into waterways, sewers, basements or confined areas.

C. Methods and materials for containment and cleaning up

Dike and collect water used to fight fire.
Absorb spills with inert material (e.g., dry sand or earth), then place in a chemical waste container.
Absorb the liquid and scrub the contaminated area with detergent and water.
In case of small exposure, flush the area with flooding quantities of water.
In case of small exposure, take up with sand or other non-combustible absorbent material and place them into containers.
In case if large exposure, dike far ahead for later disposal.
Place leaked substance into clean, dry container and cover loosely with clean shovel and move containers away from leaked area.
In case of powder exposure, cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

SECTION 7: Handling and storage

A. Precautions for safe handling

Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static, electricity, or other sources of ignition
Follow all MSDS/label precautions even after the container is emptied, because they may retain product residues.
Avoid prolonged or repeated contact with skin.
Use only in a well-ventilated area.
Be cautious with handling/storage when used.
Open lid cautiously before opening.
Do not breathe vapors from heated material.
Do not enter storage area unless it is adequately ventilated.

Take caution of substances and conditions that should be avoided.
Wash thoroughly after handling.
Please work with reference to engineering controls and personal protective equipment.
Be cautious of high temperature.

B. Conditions for safe storage, including any incompatibilities

Keep away from heat source when loading.
Containers can build up pressure when exposed to heat (fire).
Empty drums should be completely drained, properly bunged, and promptly returned to a drum reconditioner, or properly disposed of.
Empty containers retaining product residue (liquid and/or vapor) can be hazardous.
Store in a closed container.
Store in cool and dry place.
Take caution of substances and conditions that should be avoided.

SECTION 8: Exposure controls/personal protection

A. Control parameters

Korean regulation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

ACGIH regulation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

OSHA regulation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

NIOSH regulation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

EU regulation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

B. Appropriate engineering controls

Facilities for storing or utilizing this substance should be equipped with an eyewash facility and a safety shower.
If user operations generate dust, fume, or mist, use ventilation to keep exposure to airborne contaminants below the recommended exposure limit.
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.
Install local exhaust ventilation system, and maintain the appropriate control speed of air-flow.
(If the substance has legal suitability of exposure level) Install local exhaust ventilation system.
Provide local exhaust ventilation system or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value.

C. Individual protection measures, such as personal protective equipment.(PPE)

Respiratory protection

Rescuers should put on appropriate protective gear.

If exposure consentration of the substance exceeds the permitted exposure standards, Wear NIOSH or European Standard EN 149 approved respireatory protective equipment.

In lack of oxygen(<19.6%), wear the supplied-air respiratior or self-contained breathing apparatus.

In case exposured to particulate material, the respiratory protective equipments as follow are recommended -facepiece filtering respirator or air-putifying respirator, high-efficiency

particulate air(HEPA) filter media or resporator equipped with powered fan, filter media of use(dust, mist, fume)

In case exposured to gaseous/liquid material, the respiratory protective equipments as follow are recommended -escape full facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or escape half facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or direct full facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) half facepiece gas mask (of use for acid gas, in case of acid gas for organic compounds) or powered air-purifying gas mask

Eye protection

Rescuers should put on appropriate protective gear.

An eye wash unit and safety shower station should be available nearby work place.

Wear facepiece with goggles to protect.

Wear safety goggles as follow if eye irritation or other disorder occur. -In case of particulate material:breathable safety goggles -In case of vapour state organic material: safety goggles or breathable safety goggles -In case of gaseous state organic material: enclosed safety goggles

Hand protection

Rescuers should put on appropriate protective gear.

Wear appropriate protective gloves by considering physical and chemical properties of chemicals.

Body protection

Rescuers should put on appropriate protective gear.

Wear appropriate protective clothing by considering physical and chemical properties of chemicals.

SECTION 9: Physical and chemical properties and safety characteristics

A. Appearance : Liquid / Ivory (Spray out)

B. Odor : Not available

C. Odor threshold : Not available

D. Melting point/freezing point : Not available

E. Boiling point or initial boiling point and boiling range : Not available

F. Flammability: Not available

G. Lower and upper explosion limit/ flammability limit : Not available

H. Flash point : Not available

I. Auto-ignition temperature :

J. Decomposition temperature : Not available

K.pH : Not available

L. Kinematic viscosity : Not available

M. Solubility : Not available

N. Partition coefficient n-octanol/water(log value) : Not available

O. Vapor pressure : Not available

P. Density and/or relative density : Not available

Q. Relative vapor density : Not available

R. Particle characteristics : Not available

S. Evaporation rate : Not available

T. Molecular weight : Not available

SECTION 10: Stability and reactivity

A. Reactivity

May violently polymerize and result in fire and explosion.
May be decomposed at high temperatures into forming toxic gases.
Stable under normal temperatures and pressures.
Containers may explode when heated.
Fire could produce irritating and/or toxic gases.
Some of these materials may burn, but none ignite readily.
If inhaled, it may be harmful.
Some liquids produce vapors that may cause dizziness or suffocation.

B. Chemical stability

May violently polymerize and result in fire and explosion.
May be decomposed at high temperatures into forming toxic gases.
Stable under normal temperatures and pressures.
Containers may explode when heated.
Fire could produce irritating and/or toxic gases.
Some of these materials may burn, but none ignite readily.
If inhaled, it may be harmful.
Some liquids produce vapors that may cause dizziness or suffocation.

C. Possibility of hazardous reactions : Please refer to section 10(F).

D. Conditions to avoid

(Generally) heat, sparks or flames

E. Incompatible materials

(Generally) Flammable material

F. Hazardous decomposition products

It may produce irritating and highly toxic gases from heat decomposition and combustion during burning

(Generally) irritating and/or toxic gases

SECTION 11: Toxicological information

A. Information on the likely routes of exposure

B. Acute toxicity

Oral(Product : ATEmix = 13738.3 mg/kg)

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Rat_LD50=49000mg/kg

Diphenylmethane 4,4'-diisocyanate : Rat_LD50> 2000mg/kg

Tris(1-chloro-2-propyl) phosphate : Rat_LD50=1500mg/kg

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Rat_LD50> 5000mg/kg

Oxybismethane; Dimethyl ether : Not available

2-Methylpropane; Isobutane : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : Not available

Butane : Not available

Dermal(Product : ATEmix = 11000mg/kg)

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Rabbit_LD50> 9500mg/kg

Diphenylmethane 4,4'-diisocyanate : Rabbit_LD50> 9400mg/kg

Tris(1-chloro-2-propyl) phosphate : Rabbit_LD50> 5000mg/kg

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Rat_LD50> 2000mg/kg

Oxybismethane; Dimethyl ether : Not available

2-Methylpropane; Isobutane : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : Not available

Butane : Not available

Inhalation Vapour (mixture : ATEmix = 1.488mg/L)

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Rat_LC50=0.49mg/L/4hr/ Vapour

Diphenylmethane 4,4'-diisocyanate : Rat_LC50=0.49mg/L/4hr

Tris(1-chloro-2-propyl) phosphate : Rat_LC50> 4.6mg/L

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not available

Oxybismethane; Dimethyl ether : Rat_LC50=308.5mg/L/4hr/ Gas

2-Methylpropane; Isobutane : Rat_LC50=658mg/L/4hr

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : Rat_LC50=800000ppm/ Gas

Butane : Rat_LC50> 800000ppm/ Gas

C. Skin corrosion/irritation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate :Not available

Diphenylmethane 4,4'-diisocyanate :Not available

Tris(1-chloro-2-propyl) phosphate :Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether :Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] :Not available

Oxybismethane; Dimethyl ether :Not available

2-Methylpropane; Isobutane :Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate :Not available

Propane :Not available

Butane :Not available

D. Serious eye damage/irritation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate :Not available

Diphenylmethane 4,4'-diisocyanate :Not available

Tris(1-chloro-2-propyl) phosphate :Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether :Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] :Not available

Oxybismethane; Dimethyl ether :Not available

2-Methylpropane; Isobutane :Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate :Not available

Propane :Not available

Butane :Not available

E. Respiratory or skin sensitization

Respiratory sensitization

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate :Not available

Diphenylmethane 4,4'-diisocyanate :Not available

Tris(1-chloro-2-propyl) phosphate :Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether :Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] :Not available

Oxybismethane; Dimethyl ether :Not available

2-Methylpropane; Isobutane :Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate :Not available

Propane :Not available

Butane :Not available

Skin sensitization

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not available

Diphenylmethane 4,4'-diisocyanate : Not available

Tris(1-chloro-2-propyl) phosphate : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not available

Oxybismethane; Dimethyl ether : Not available

2-Methylpropane; Isobutane : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : Not available

Butane : Not available

F. Germ cell mutagenicity

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
in vivo : Not available
in vitro : Not available

Diphenylmethane 4,4'-diisocyanate
in vivo : Not available
in vitro : Not available

Tris(1-chloro-2-propyl) phosphate
in vivo : Not available
in vitro : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
in vivo : Not available
in vitro : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
in vivo : Not available
in vitro : Not available

Oxybismethane; Dimethyl ether
in vivo : Not available
in vitro : Not available

2-Methylpropane; Isobutane
in vivo : Not available
in vitro : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
in vivo : Not available
in vitro : Not available

Propane

in vivo : Not available
in vitro : Not available

Butane
in vivo : Not available
in vitro : Not available

G. Carcinogenicity

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
Carcinogenicity : Not applicable

Diphenylmethane 4,4'-diisocyanate
Carcinogenicity : Not applicable

Tris(1-chloro-2-propyl) phosphate
Carcinogenicity : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
Carcinogenicity : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Carcinogenicity : Not applicable

Oxybismethane; Dimethyl ether
Carcinogenicity : Not applicable

2-Methylpropane; Isobutane
Carcinogenicity : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Carcinogenicity : Not applicable

Propane
Carcinogenicity : Not applicable

Butane
Carcinogenicity : Not applicable

H. Reproductive toxicity

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
General toxicity : Not available
Maternal toxicity : Not available

Diphenylmethane 4,4'-diisocyanate
General toxicity : Not available
Maternal toxicity : Not available

Tris(1-chloro-2-propyl) phosphate

General toxicity : Not available
Maternal toxicity : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
General toxicity : Not available
Maternal toxicity : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
General toxicity : Not available
Maternal toxicity : Not available

Oxybismethane; Dimethyl ether
General toxicity : Not available
Maternal toxicity : Not available

2-Methylpropane; Isobutane
General toxicity : Not available
Maternal toxicity : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
General toxicity : Not available
Maternal toxicity : Not available

Propane
General toxicity : Not available
Maternal toxicity : Not available

Butane
General toxicity : Not available
Maternal toxicity : Not available

I. STOT-single exposure

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate :Not available

Diphenylmethane 4,4'-diisocyanate :Not available

Tris(1-chloro-2-propyl) phosphate :Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether :Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] :Not available

Oxybismethane; Dimethyl ether :Not available

2-Methylpropane; Isobutane :Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate :Not available

Propane :Not available

Butane :Not available

J. STOT-repeated exposure

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate :Not available

Diphenylmethane 4,4'-diisocyanate :Not available

Tris(1-chloro-2-propyl) phosphate : Mouse_800ppm90

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether :Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Rat_1000mg/kg bw 4 weeks

Oxybismethane; Dimethyl ether :Not available

2-Methylpropane; Isobutane :Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate :Not available

Propane :Not available

Butane :Not available

K. Aspiration hazard

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate :Not available

Diphenylmethane 4,4'-diisocyanate :Not available

Tris(1-chloro-2-propyl) phosphate :Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether :Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] :Not available

Oxybismethane; Dimethyl ether :Not available

2-Methylpropane; Isobutane :Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate :Not available

Propane :Not available

Butane :Not available

SECTION 12: Ecological information

A. Toxicity

Fish

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate

Acute toxicity : Not available
Chronic toxicity : Not available

Diphenylmethane 4,4'-diisocyanate
Acute toxicity : 96hr_LC50> 3000 mg/L
Chronic toxicity : Not available

Tris(1-chloro-2-propyl) phosphate
Acute toxicity : 96hr_LC50(Fathead minnow)=51 mg/L
Chronic toxicity : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
Acute toxicity : 96hr_LC50(etc)=218000 mg/L
Chronic toxicity : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Acute toxicity : 2hr_LC50(Danio rerio)≥ 100 mg/L
Chronic toxicity : Not available

Oxybismethane; Dimethyl ether
Acute toxicity : Not available
Chronic toxicity : Not available

2-Methylpropane; Isobutane
Acute toxicity : Not available
Chronic toxicity : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Acute toxicity : Not available
Chronic toxicity : Not available

Propane
Acute toxicity : 96hr_LC50(etc)> 100 mg/L
Chronic toxicity : Not available

Butane
Acute toxicity : 96hr_LC50(etc)=27.98 mg/L
Chronic toxicity : Not available

Crustaceans

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
Acute toxicity : Not available
Chronic toxicity : Not available

Diphenylmethane 4,4'-diisocyanate
Acute toxicity : Not available
Chronic toxicity : Not available

Tris(1-chloro-2-propyl) phosphate
Acute toxicity : 48hr_EC50 mg/L
Chronic toxicity : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
Acute toxicity : 48hr_LC50(etc)=193000 mg/L
Chronic toxicity : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Acute toxicity : 24hr_EC50(Daphnia magna)≥ 100 mg/L
Chronic toxicity : Not available

Oxybismethane; Dimethyl ether
Acute toxicity : Not available
Chronic toxicity : Not available

2-Methylpropane; Isobutane
Acute toxicity : Not available
Chronic toxicity : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Acute toxicity : Not available
Chronic toxicity : Not available

Propane
Acute toxicity : 48hr_LC50=52.157 mg/L
Chronic toxicity : Not available

Butane
Acute toxicity : 48hr_LC50(Daphnia sp.)=69.43 mg/L
Chronic toxicity : Not available

Algae

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
Acute toxicity : Not available
Chronic toxicity : Not available

Diphenylmethane 4,4'-diisocyanate
Acute toxicity : EC50(Scenedesmus subspicatus)> 1640 mg/L
Chronic toxicity : Not available

Tris(1-chloro-2-propyl) phosphate
Acute toxicity : ErC50(Selenastrum capricornutum)=73 mg/L
Chronic toxicity : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether

Acute toxicity : 96hr_EC50(etc)=103000 mg/L
Chronic toxicity : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Acute toxicity : 72hr_ErC50(Desmodesmus subspicatus)=157.4 mg/L
Chronic toxicity : Not available

Oxybismethane; Dimethyl ether
Acute toxicity : Not available
Chronic toxicity : Not available

2-Methylpropane; Isobutane
Acute toxicity : Not available
Chronic toxicity : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Acute toxicity : Not available
Chronic toxicity : Not available

Propane
Acute toxicity : 96hr_LC50=32.252 mg/L
Chronic toxicity : Not available

Butane
Acute toxicity : 96hr_EC50(etc)=16.47 mg/L
Chronic toxicity : Not available

B. Persistence and degradability

Persistence

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Log Kow = 10.46

Diphenylmethane 4,4'-diisocyanate : Log Kow = 4.51

Tris(1-chloro-2-propyl) phosphate : Log Kow = 3.33

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Log Kow ≥ 0.9, ≤ 1.9

Oxybismethane; Dimethyl ether : Log Kow = 0.1

2-Methylpropane; Isobutane : Log Kow = 2.76

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : Log Kow = 2.36

Butane : Log Kow = 2.89

Degradability

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not available

Diphenylmethane 4,4'-diisocyanate : Not available

Tris(1-chloro-2-propyl) phosphate : Not available

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not available

Oxybismethane; Dimethyl ether : Not available

2-Methylpropane; Isobutane : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : Not available

Butane : Not available

C. Bioaccumulative potential

Bioaccumulation

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not available

Diphenylmethane 4,4'-diisocyanate : Not available

Tris(1-chloro-2-propyl) phosphate : BCF=9.57

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : BCF=3.162

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not available

Oxybismethane; Dimethyl ether : Not available

2-Methylpropane; Isobutane : ≥ 1.57, ≤ 1.97

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not available

Propane : BCF=13

Butane : Not available

Bioaccumulation

D. Mobility in soil

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not available

Diphenylmethane 4,4'-diisocyanate : Not available

Tris(1-chloro-2-propyl) phosphate : KOC=3372.87

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not available

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not available

Oxybismethane; Dimethyl ether : KOC=27

2-Methylpropane; Isobutane : Not available

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : KOC=899200

Propane : Not available

Butane : Not available

E. Other adverse effects(Ozone layer)

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

SECTION 13: Disposal considerations

A. Disposal methods

Waste and containers should be disposed complying with the Waste Control Act

B. Disposal considerations

If specified in the Waste Control Act, consider the precautions specified in the regulations.

SECTION 14: Transport information

A. UN Number : 1950

B. UN Proper shipping name : AEROSOLS

C. Transport hazard class(es) : 2.1 (See Special Provision 63)

D. Packing group, if applicable : -

E. Environmental hazards : No

F. Special precautions for user

In case of fire : F-D

In case of leakage : S-U

G. Transport in bulk according to IMO instruments : Not available

SECTION 15: Regulatory information

Regulatory Information

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate

Not applicable

Diphenylmethane 4,4'-diisocyanate

Not applicable

Tris(1-chloro-2-propyl) phosphate

Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether

Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]

Not applicable

Oxybismethane; Dimethyl ether

Not applicable

2-Methylpropane; Isobutane

Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate

Not applicable

Propane

Not applicable

Butane

Not applicable

Korean Regulatory information

Occupational Safety and Health Act

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
Not applicable

Diphenylmethane 4,4'-diisocyanate
Not applicable

Tris(1-chloro-2-propyl) phosphate
Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Not applicable

Oxybismethane; Dimethyl ether
Not applicable

2-Methylpropane; Isobutane
Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Not applicable

Propane
Not applicable

Butane
Not applicable

Chemicals Control Act

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
Not applicable

Diphenylmethane 4,4'-diisocyanate
Not applicable

Tris(1-chloro-2-propyl) phosphate
Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Not applicable

Oxybismethane; Dimethyl ether
Not applicable

2-Methylpropane; Isobutane
Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Not applicable

Propane
Not applicable

Butane
Not applicable

Safety Control of Dangerous Substances Act :

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not applicable

Propane : Not applicable

Butane : Not applicable

Wastes Control Act

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate : Not applicable

Diphenylmethane 4,4'-diisocyanate : Not applicable

Tris(1-chloro-2-propyl) phosphate : Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether : Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol] : Not applicable

Oxybismethane; Dimethyl ether : Not applicable

2-Methylpropane; Isobutane : Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate : Not

applicable

Propane : Not applicable

Butane : Not applicable

Persistent Organic Pollutants Act

Isocyanic acid polymethylenepolyphenylene ester; Polymethylene polyphenylene isocyanate
Not applicable

Diphenylmethane 4,4'-diisocyanate
Not applicable

Tris(1-chloro-2-propyl) phosphate
Not applicable

α,α',α''-1,2,3-Propanetriyltris[ω-hydroxypoly[oxy(methyl-1,2-ethanediyl)]]; Polyoxypropylene glycerol triether
Not applicable

1,3-Isobenzofurandione polymer with 2,2'-oxybis[ethanol]
Not applicable

Oxybismethane; Dimethyl ether
Not applicable

2-Methylpropane; Isobutane
Not applicable

Pentachlorooctadecanoic acid methyl ester; Methyl pentachlorooctadecanoate
Not applicable

Propane
Not applicable

Butane
Not applicable

SECTION 16: Other information

A. Information sources and references

ACGIH : https://www.acgih.org/
IARC : http://monographs.iarc.fr/ENG/Classification/latest_classif.php
NTP : http://ntp.niehs.nih.gov/index.cfm
OSHA : https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.119AppA
KOMDI : https://www.komdi.or.kr/ukiwi/biz/info/ukiwiBizInfoIMDGCodeList.do
Exposure criteria for chemicals and physical factors
Occupational Safety and Health Act Enforcement Regulation [Annex 19]

Occupational Safety and Health Act Enforcement Ordinance [Annex 13]
Designation of restricted·prohibited substances [Annex 2]
Designation of restricted·prohibited substances [Annex 4]
Designation of toxic substances [Act on the Registration and Evaluation, etc. of Chemical Substances, Chemical control Act Enforcement Regulation [Annex 10]]
KFI : http://hazmat.mpss.kfi.or.kr/material.do
Rotterdam Convention :
http://www.pic.int/TheConvention/Chemicals/AnnexIIIChemicals/tabid/1132/language/en-US/Default.aspx
http://chm.pops.int/TheConvention/ThePOPs/ListingofPOPs/tabid/2509/Default.aspx
Montreal Protocol : https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances
Persistant Organic Pollutants Act : [Annex 1] Persistant Organic Pollutants (Article 2)
KOSHA : http://msds.kosha.or.kr/kcic/msdssearchLaw.do

B. Issuing date

2025-03-30

C. Revision number and date

Revision number : 0
Date of the latest revision : Not applicable

D. Others

This SDS is based on the “Globally Harmonized System of Classification and Labelling of Chemicals (GHS) Eight revised edition” and Material Safety Data Sheets Notification No. 2020-130 in accordance with Article 110 of the Occupational Safety and Health Act.
This SDS is intended to help the purchaser, handler, or a third party handling the product. Therefore it cannot be used except for special use or purpose/recommended use, cannot include any circumstances that may arise in the process of using with other products, and has no technical or legal responsibility.
The contents included in the SDS may be subjected differently depending on the country and specific region, so purchaser, handler, or third party handling the product should verify and comply with the relevant country and regulations.
This SDS is specific to a particular product and may not be applicable when used with other substances and other manufacturing process that are not specified separately, so there is no guarantee that the user comply with all regulations related to the action.