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RENCAST® 6403-1 US

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SECTION 1. IDENTIFICATION

Product name : RENCAST® 6403-1 US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : 2795 Slough Avenue
Mississauga, ON L4T 1G2,
Canada
Telephone : +1 905 678 9150

E-mail address of person responsible for the SDS : MSDS@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Component of a Polyurethane System.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the Hazardous Products Regulations

Acute toxicity (Inhalation) : Category 4

Skin irritation : Category 2

Eye irritation : Category 2A

Respiratory sensitisation : Category 1

Skin sensitisation : Category 1

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

Acute aquatic toxicity : Category 3

Chronic aquatic toxicity : Category 2

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.

H332 Harmful if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 May cause respiratory irritation.
H402 Harmful to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P261 Avoid breathing 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 should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
P284 Wear respiratory protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of water.
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 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P362 + P364 Take off contaminated clothing and wash it before reuse.
P391 Collect spillage.
Storage:
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
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

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
4,4'-methylenediphenyl diisocyanate	101-68-8	60 - 70
Benzene, 1,1'-methylenebis[isocyanato-, homopolymer	39310-05-9	20 - 30

Terphenyl, hydrogenated	61788-32-7	2.5 - 5
Methylenediphenyldiisocyanate (mixed isomers)	26447-40-5	1 - 5
triethyl phosphate	78-40-0	1 - 5
terphenyl	26140-60-3	0.25 - 1

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. FIREFIGHTING 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. HANDLING AND STORAGE

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. 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

Recommended storage temperature : 2 - 40 °C

Further information on storage stability : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
4,4'-methylenediphenyl diisocyanate	101-68-8	TWA	0.005 ppm	ACGIH
		C	0.02 ppm 0.2 mg/m3	OSHA Z-1
Terphenyl, hydrogenated	61788-32-7	TWA	0.5 ppm	ACGIH
terphenyl	26140-60-3	C	1 ppm 9 mg/m3	OSHA Z-1
		C	5 mg/m3	ACGIH

Engineering measures : Maintain air concentrations below occupational exposure standards.

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 AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	amber
Odour	:	aromatic
Odour Threshold	:	No data is available on the product itself.
pH	:	No data is available on the product itself.
Freezing point	:	No data is available on the product itself.
Melting point		No data is available on the product itself.
Boiling point		No data is available on the product itself.
Flash point	:	> 110 °C Method: closed cup
Evaporation rate	:	No data is available on the product itself.
Flammability (solid, gas)	:	No data is available on the product itself.
Flammability (liquids)	:	No data is available on the product itself.
Upper explosion limit / Upper flammability limit	:	No data is available on the product itself.
Lower explosion limit / Lower flammability limit	:	No data is available on the product itself.
Vapour pressure	:	0.14663 hPa (71 °C)
Relative vapour density	:	0.01

Relative density	:	1.17 - 1.21
Density	:	1.17 - 1.21 g/cm3
Solubility(ies)		
Water solubility	:	Water reactive
Solubility in other solvents	:	No data is available on the product itself.
Partition coefficient: n-octanol/water	:	No data is available on the product itself.
Auto-ignition temperature	:	No data is available on the product itself.
Thermal decomposition	:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity	:	No data is available on the product itself.
Explosive properties	:	No data is available on the product itself.
Oxidizing properties	:	No data is available on the product itself.
Particle size	:	No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Reaction with water (moisture) produces CO2-gas. Exothermic reaction with materials containing active hydrogen groups. The reaction becomes progressively more vigorous and can be violent at higher temperatures if the miscibility of the reaction partners is good or is supported by stirring or by the presence of solvents. MDI is insoluble with, and heavier than water and sinks to the bottom but reacts slowly at the interface. A solid water-insoluble layer of polyurea is formed at the interface by liberating carbon dioxide gas.
Conditions to avoid	:	Extremes of temperature and direct sunlight. Exposure to air or moisture over prolonged periods.
Incompatible materials	:	Acids Amines Bases Metals water
Hazardous decomposition	:	Carbon dioxide (CO2), carbon monoxide (CO), oxides of

products	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

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

Acute inhalation toxicity - Product : Acute toxicity estimate: 1.61 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Calculation method

Components:

4,4'-methylenediphenyl diisocyanate:
Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Acute dermal toxicity : LD50 (Rabbit, male and female): > 9,400 mg/kg
Method: OECD Test Guideline 402

Terphenyl, hydrogenated:
Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: no
Assessment: The substance or mixture has no acute dermal toxicity

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

triethyl phosphate:
Acute dermal toxicity : LD50 (Rabbit): > 20,000 mg/kg

terphenyl:
Acute dermal toxicity : LD50 (Rabbit, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
GLP: yes
Assessment: The substance or mixture has no acute dermal

toxicity

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation

Product:

Remarks: May cause skin irritation and/or dermatitis.

Serious eye damage/eye irritation

Product:

Remarks: Vapours may cause irritation to the eyes, respiratory system and the skin.

Respiratory or skin sensitisation

Product:

Remarks: Causes sensitisation.

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Assessment: May cause sensitisation by inhalation and skin contact.

Terphenyl, hydrogenated:
Assessment: Does not cause skin sensitisation.

Germ cell mutagenicity

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Genotoxicity in vitro : Concentration: ca 50 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Terphenyl, hydrogenated:
Genotoxicity in vitro : Test Type: unscheduled DNA synthesis assay
Test system: rat hepatocytes
Concentration: 0.1 - 1000 µg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 482
Result: negative
GLP: yes

Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 0.01 - 10.0 µl/plate
Metabolic activation: with and without metabolic activation
Method: see user defined free text
Result: negative
GLP: no

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: In vitro mammalian cell gene mutation test
Result: negative
GLP: yes

Methylenediphenyldiisocyanate (mixed isomers):
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

triethyl phosphate:
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Method: OECD Test Guideline 482
Result: negative

terphenyl:
Genotoxicity in vitro : Test Type: unscheduled DNA synthesis assay
Test system: mammalian liver cells
Concentration: 0.1 - 2ug/ml
Method: OECD Test Guideline 482
Result: negative
GLP: yes
Remarks: In vitro tests did not show mutagenic effects

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Genotoxicity in vivo : Application Route: Inhalation
Exposure time: 3 Weeks
Dose: 118 mg/m3
Method: OECD Test Guideline 474
Result: negative

Terphenyl, hydrogenated:

Genotoxicity in vivo : Test Type: in vivo assay
Species: Rat (male and female)
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Exposure time: Single administration
Dose: 250, 1250, 2500 mg/kg bw
Method: OECD Test Guideline 475
Result: negative
GLP: yes

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

triethyl phosphate:
Genotoxicity in vivo : Application Route: Intraperitoneal injection
Method: OECD Test Guideline 478
Result: negative

terphenyl:
Genotoxicity in vivo : Test Type: in vivo assay
Species: Rat (male and female)
Cell type: Bone marrow
Application Route: Subcutaneous
Exposure time: 6-24 h
Dose: 0-500 mg/kg bw
Method: OECD Test Guideline 475
Result: In vivo tests did not show any chromosomal changes.
GLP: yes

Components:

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Germ cell mutagenicity-Assessment : Animal testing did not show any mutagenic effects.

Terphenyl, hydrogenated:
Germ cell mutagenicity-Assessment : Animal testing did not show any mutagenic effects.

Germ cell mutagenicity-Assessment : No data available

Carcinogenicity

Product:

Remarks: Rats have been exposed for two years to a respirable aerosol of polymeric MDI which resulted in a chronic pulmonary irritation at high concentrations. Only at the top level (6 mg/m3), there was a significant incidence of a benign tumour of the lung (adenoma) and one malignant tumour (adenocarcinoma). There were no lung tumours at 1 mg/m3 and no effects at 0.2 mg/m3. Overall, the tumour incidence, both benign and malignant, and the number of animals with the tumours were not different from controls. The increased incidence of lung tumours is associated with prolonged respiratory irritation and the concurrent accumulation of yellow material in the

lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumour formation will occur.

Carcinogenicity - Assessment : No data available

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Reproductive toxicity

Components:

Terphenyl, hydrogenated:
Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Frequency of Treatment: 7 days/week
General Toxicity - Parent: No observed adverse effect level: 1,000 ppm
General Toxicity F1: No observed adverse effect level: 300 ppm
Method: OECD Test Guideline 416
Result: Animal testing did not show any effects on fertility.
GLP: yes

Methylenediphenyldiisocyanate (mixed isomers):
Species: Rat, male and female
Application Route: Inhalation
Method: OECD Test Guideline 414
Result: No effects on fertility and early embryonic development were detected.

Components:

4,4'-methylenediphenyl diisocyanate:
Effects on foetal development : 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

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

Terphenyl, hydrogenated:
Species: Rat, female
Application Route: Oral
Dose: 125, 500, 1500 mg/kg bw/d

Frequency of Treatment: 1 daily
General Toxicity Maternal: No observed adverse effect level: 125 mg/kg body weight
Embryo-foetal toxicity: No observed adverse effect level: 500 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

Methylenediphenyldiisocyanate (mixed isomers):
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

triethyl phosphate:
Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 125 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Components:

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Terphenyl, hydrogenated:
Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Exposure routes: inhalation (dust/mist/fume)
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

Methylenediphenyldiisocyanate (mixed isomers):
Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

STOT - repeated exposure

No data available

Repeated dose toxicity

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Species: Rat, male and female
NOEC: 0.2 mg/m3
Test atmosphere: dust/mist
Exposure time: 2 yr
Number of exposures: 5 d
Method: OECD Test Guideline 453

Terphenyl, hydrogenated:
Species: Rat, male and female
NOAEL: 12 mg/kg
LOAEL: 120 mg/kg
Application Route: oral (feed)
Exposure time: 14 weeks
Number of exposures: 7 days/week
Method: OECD Test Guideline 408
GLP: yes

Species: Rat, male and female
NOAEL: 0.1 mg/l
LOAEL: 0.5 mg/l
Application Route: Inhalation
Exposure time: 90 days
Number of exposures: 6 hours/day, 5 days/week (67 n
Dose: 0, 10, 100, 500 mg/m³
Method: OECD Test Guideline 413
GLP: yes

Species: Rabbit, male and female
NOAEL: 2,000 mg/kg
Application Route: Dermal
Exposure time: 21 days
Number of exposures: 6 hours/day, 5 days/week
Dose: 125, 500, 2000 mg/kg bw/d
Method: Subacute toxicity
GLP: yes
Target Organs: Skin

Methylenediphenyldiisocyanate (mixed isomers):
Species: Rat, male and female

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

triethyl phosphate:
Species: Rat, male and female
NOEC: 1000 mg/kg, 366 mg/m3
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 4 Weeks
Number of exposures: 7 d
Method: Subacute toxicity

Components:

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Repeated dose toxicity - Assessment : No adverse effect has been observed in chronic toxicity tests.

Terphenyl, hydrogenated:
Repeated dose toxicity - Assessment : No adverse effect has been observed in chronic toxicity tests.

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Product:

Remarks: No data available

Other health hazards

No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

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

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

Terphenyl, hydrogenated:

Toxicity to fish	:	LC50: > 100 mg/l Exposure time: 96 h

Methylenediphenyldiisocyanate (mixed isomers):

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

triethyl phosphate:

Toxicity to fish	:	LC50 (Pimephales promelas (fathead minnow)): > 100 mg/l Exposure time: 96 h Test Type: static test Test substance: Fresh water

terphenyl:

Toxicity to fish	:	LC50 (Oncorhynchus mykiss (rainbow trout)): 27 mg/l Exposure time: 96 h Test Type: static test GLP: yes NOEC (Oncorhynchus mykiss (rainbow trout)): 10 mg/l Exposure time: 96 h Test Type: static test GLP: yes

Components:

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

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

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

Methylenediphenyldiisocyanate (mixed isomers):

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

triethyl phosphate:

Toxicity to daphnia and other aquatic invertebrates : LC50: > 100 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water

(Daphnia magna (Water flea)):

terphenyl:

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 0.27 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Components:

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

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

Terphenyl, hydrogenated:

Toxicity to algae : EC50: 56 mg/l
Exposure time: 96 h

Methylenediphenyldiisocyanate (mixed isomers):

Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): > 1,640 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water

Method: OECD Test Guideline 201

triethyl phosphate:
Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 901 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water

terphenyl:
Toxicity to algae : EC50 (Selenastrum capricornutum (green algae)): 15-29 µg/l
Exposure time: 96 h
Test Type: Growth inhibition
GLP: no

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

Components:

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Toxicity to fish (Chronic toxicity) : GLP: no

terphenyl:
Toxicity to fish (Chronic toxicity) : see user defined free text (Pimephales promelas (fathead minnow)): 0.049 mg/l
Exposure time: 34 d
GLP: yes

Components:

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

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

Terphenyl, hydrogenated:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOELR (Daphnia magna (Water flea)): < 1 mg/l
Exposure time: 21 d
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes

Methylenediphenyldiisocyanate (mixed isomers):
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

triethyl phosphate:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 31.6 mg/l
Exposure time: 21 d
Test substance: Fresh water
Method: OECD Test Guideline 211

terphenyl:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : see user defined free text (Daphnia magna (Water flea)): 0.0048 - 0.0070 mg/L
Exposure time: 21 d
Test Type: flow-through test
GLP: yes

Components:

terphenyl:
M-Factor (Chronic aquatic toxicity) : 10

Components:

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

Terphenyl, hydrogenated:
Toxicity to microorganisms : NOEC (activated sludge): 103 mg/l
Exposure time: 3 h
Test Type: static test
Method: OECD Test Guideline 209

Methylenediphenyldiisocyanate (mixed isomers):
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

triethyl phosphate:
Toxicity to microorganisms : (Pseudomonas putida): 2,985 mg/l
Exposure time: 0.5 h
Test Type: static test
Test substance: Fresh water

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Toxicity to soil dwelling organisms : EC50 (Eisenia fetida (earthworms)): > 1,000 mg/kg
Exposure time: 336 h

Method: OECD Test Guideline 207

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

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

Components:

Terphenyl, hydrogenated:
Acute aquatic toxicity : This product has no known ecotoxicological effects.

terphenyl:
Acute aquatic toxicity : Very toxic to aquatic life.

Components:

Terphenyl, hydrogenated:
Chronic aquatic toxicity : May cause long lasting harmful effects to aquatic life.

terphenyl:
Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability

Components:

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)

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Biodegradability : Inoculum: Domestic sewage
Concentration: 30 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: Inherent Biodegradability: Modified MITI Test (II)

Methylenediphenyldiisocyanate (mixed isomers):

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

triethyl phosphate:

Biodegradability : Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

Inoculum: activated sludge
Result: Inherently biodegradable.
Biodegradation: 98 %
Exposure time: 28 d
Method: OECD Test Guideline 302B

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:

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

triethyl phosphate:

Stability in water : Degradation half life(DT50): 5.5 yr (25 °C) pH: 7
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage : No data available

Treatment

Bioaccumulative potential

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 200
Remarks: Bioaccumulation is unlikely.

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

Bioconcentration factor (BCF): 439
Remarks: Bioaccumulation is unlikely.

triethyl phosphate:
Bioaccumulation : Species: Cyprinus carpio (Carp)
Bioconcentration factor (BCF): 0.5 - 0.8
Exposure time: 42 d
Test substance: Fresh water
Method: semi-static test

Components:

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

Benzene, 1,1'-methylenebis[isocyanato-, homopolymer:
Partition coefficient: n-octanol/water : log Pow: 8.56 (20 °C)

Terphenyl, hydrogenated:
Partition coefficient: n-octanol/water : log Pow: 6.5

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

triethyl phosphate:
Partition coefficient: n-octanol/water : log Pow: 1.11
Method: Partition coefficient

Mobility in soil

Mobility	:	No data available
Distribution among environmental compartments	:	No data available
Stability in soil	:	No data available

Other adverse effects

Environmental fate and pathways	:	No data available
Results of PBT and vPvB assessment	:	No data available
Endocrine disrupting potential	:	No data available
Adsorbed organic bound halogens (AOX)	:	No data available

Hazardous to the ozone layer

Ozone-Depletion Potential		Not applicable
Additional ecological information	:	No data available
Global warming potential (GWP)	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

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. TRANSPORT INFORMATION

International Regulations

TDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.
(Terphenyl)

Class	:	9
Packing group	:	III
Labels	:	9

IATA

UN/ID No.	:	UN 3082
Proper shipping name	:	Environmentally hazardous substance, liquid, n.o.s. (Terphenyl)
Class	:	9
Packing group	:	III
Labels	:	Miscellaneous
Packing instruction (cargo aircraft)	:	964
Packing instruction (passenger aircraft)	:	964

IMDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Terphenyl)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

TDG

UN number	:	UN 3082
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Terphenyl)
Class	:	9
Packing group	:	III
Labels	:	9
ERG Code	:	171
Marine pollutant	:	yes(Terphenyl)

SECTION 15. REGULATORY INFORMATION

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

CH INV	:	The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL

AICS	:	On the inventory, or in compliance with the inventory
NZIoC	:	not determined
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

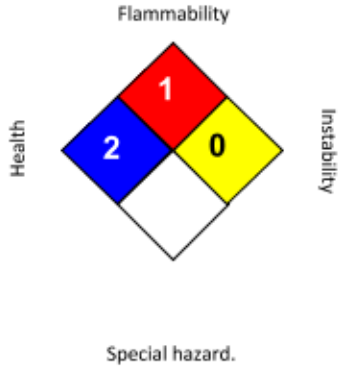
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

Canada. CEPA 1999 Significant New Activity (SNAc) List
No substances are subject to a Significant New Activity Notification.

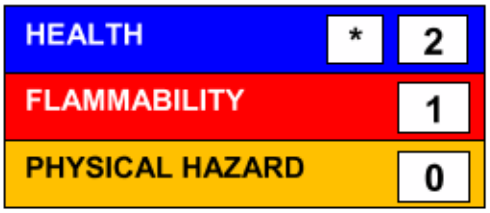
SECTION 16. OTHER INFORMATION

Further information

NFPA:



HMIS® IV:



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.)

Revision Date	:	07/20/2017
ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average

ACGIH / C	:	Ceiling limit
OSHA Z-1 / C	:	Ceiling

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.

REN® 6403-3 US

Version	Revision Date:	SDS Number:	Date of last issue: 02/10/2016
1.1	01/21/2019	400000002063	Date of first issue: 02/10/2016

SECTION 1. IDENTIFICATION

Product name : REN® 6403-3 US

Manufacturer or supplier's details

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547

E-mail address of person responsible for the SDS : SDS@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with 29 CFR 1910.1200

Acute toxicity (Oral) : Category 4

Serious eye damage : Category 1

Specific target organ toxicity - single exposure : Category 2 (Kidney, Central nervous system)

Specific target organ toxicity - repeated exposure : Category 2 (Kidney, Central nervous system, Liver)

GHS label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H302 Harmful if swallowed.
H318 Causes serious eye damage.
H371 May cause damage to organs (Kidney, Central nervous system).
H373 May cause damage to organs (Kidney, Central nervous system, Liver) through prolonged or repeated exposure.

Precautionary statements : **Prevention:**
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear eye protection/ face protection.

Response:
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
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 + P311 IF exposed or concerned: Call a POISON CENTER/doctor.
Storage:
P405 Store locked up.
Disposal:
P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
2,2'-phenyliminodiethanol	120-07-0	5 - 10
Ethylene glycol	107-21-1	5 - 10
PHENYLMERCURIC SUBSTANCE	Not Assigned	0.1 - 0.25

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	:	Do not leave the victim unattended.
If inhaled	:	If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
In case of eye contact	:	Remove contact lenses. Protect unharmed eye. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.
Most important symptoms and effects, both acute and delayed	:	None known.

SECTION 5. FIREFIGHTING MEASURES

Specific extinguishing methods	:	No data is available on the product itself.
Further information	:	Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
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	:	Not applicable for product as supplied.
Methods and materials for containment and cleaning up	:	Wipe up with absorbent material (e.g. cloth, fleece). Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Advice on safe handling	:	For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area.
Conditions for safe storage	:	Electrical installations / working materials must comply with the technological safety standards.
Materials to avoid	:	No materials to be especially mentioned.
Further information on storage stability	:	No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Ethylene glycol	107-21-1	TWA (Vapour)	25 ppm	ACGIH
		STEL (Vapour)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m3	ACGIH

Personal protective equipment

Respiratory protection	:	No personal respiratory protective equipment normally required.
Respiratory protection	:	No personal respiratory protective equipment normally required.
Eye protection	:	Safety glasses
Skin and body protection	:	Protective suit
Hygiene measures	:	General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	liquid
Colour	:	white
Odour	:	No data is available on the product itself.
Odour Threshold	:	No data is available on the product itself.
pH	:	No data is available on the product itself.
Freezing point	:	No data is available on the product itself.
Melting point	:	No data is available on the product itself.
Boiling point	:	No data is available on the product itself.
Flash point	:	> 230 °F / > 110 °C
Evaporation rate	:	No data is available on the product itself.
Flammability (solid, gas)	:	No data is available on the product itself.
Flammability (liquids)	:	No data is available on the product itself.
Upper explosion limit / Upper flammability limit	:	No data is available on the product itself.
Lower explosion limit / Lower flammability limit	:	No data is available on the product itself.
Vapour pressure	:	No data is available on the product itself.
Relative vapour density	:	No data is available on the product itself.
Relative density	:	No data is available on the product itself.
Density	:	No data is available on the product itself.
Solubility(ies)		
Water solubility	:	No data is available on the product itself.

Solubility in other solvents	:	No data is available on the product itself.
Partition coefficient: n-octanol/water	:	No data is available on the product itself.
Auto-ignition temperature	:	No data is available on the product itself.
Thermal decomposition	:	No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	:	No data is available on the product itself.
Viscosity	:	No data is available on the product itself.
Explosive properties	:	No data is available on the product itself.
Oxidizing properties	:	No data is available on the product itself.
Particle size	:	No data is available on the product itself.

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No decomposition if stored and applied as directed.
Chemical stability	:	No decomposition if stored and applied as directed.
Possibility of hazardous reactions	:	Stable under recommended storage conditions. No hazards to be specially mentioned.
Conditions to avoid	:	No data available

SECTION 11. TOXICOLOGICAL INFORMATION

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

Acute toxicity

Acute oral toxicity - Product	:	Acute toxicity estimate : 1,976 mg/kg Method: Calculation method
Acute inhalation toxicity - Product	:	Acute toxicity estimate: > 40 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Calculation method
Acute dermal toxicity - Product	:	Acute toxicity estimate : 2,500 mg/kg Method: Calculation method
Acute toxicity (other routes of	:	No data available

administration)

Skin corrosion/irritation

Components:

2,2'-phenyliminodiethanol**:**
Species: Rabbit
Result: No skin irritation

Ethylene glycol**:**
Species: Rabbit
Exposure time: 20 h
Result: No skin irritation

PHENYLMERCURIC SUBSTANCE**:**
Result: Corrosive after 4 hours or less of exposure

Serious eye damage/eye irritation

Components:

2,2'-phenyliminodiethanol**:**
Species: Rabbit
Assessment: Risk of serious damage to eyes.

Ethylene glycol**:**
Result: Mild eye irritation

PHENYLMERCURIC SUBSTANCE**:**
Result: Corrosive

Respiratory or skin sensitisation

Components:

2,2'-phenyliminodiethanol**:**
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Method: OECD Test Guideline 442B
Result: May cause sensitisation by skin contact.

Ethylene glycol**:**
Test Type: Maximisation Test
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Not a skin sensitizer.

Assessment: No data available

Germ cell mutagenicity

Components:

2,2'-phenyliminodiethanol**:**
Genotoxicity in vitro : Result: negative

Ethylene glycol**:**

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Components:

Ethylene glycol**:**
Genotoxicity in vivo : Test Type: dominant lethal test
Species: Rat (male and female)
Cell type: Germ
Application Route: Oral
Dose: 40/200/1000 mg/kg
Result: negative

Carcinogenicity

Components:

Ethylene glycol**:**
Species: Rat, male and female
Application Route: Oral
Exposure time: 24 month(s)
Dose: 40/200/1000 mg/kg
Frequency of Treatment: 7 d/Weeks daily
NOAEL: 1,000 mg/kg bw/day

Result: negative

Species: Mouse, male and female
Application Route: Oral
Exposure time: 103 weeks
Frequency of Treatment: 7 d/Weeks daily
NOAEL: 1,500 mg/kg bw/day

Result: negative

Carcinogenicity - Assessment : No data available

IARC No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

OSHA No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

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:

Ethylene glycol**:**
Effects on fertility : Species: Mouse, male and female
Application Route: Oral
Dose: 40/200/1000 milligram per kilogram
Frequency of Treatment: 7 days/week
General Toxicity - Parent: No-observed-effect level: 1,000 mg/kg body weight
General Toxicity F1: No-observed-effect level: 1,000 mg/kg body weight

Species: Rat, male and female
Application Route: Oral
Dose: 40/200/1000 milligram per kilogram
Frequency of Treatment: 7 days/week
General Toxicity - Parent: No observed adverse effect level: 1,000 mg/kg body weight

Components:

Ethylene glycol**:**
Effects on foetal development : Test Type: Embryo-foetal development
Species: Rat, female
Application Route: Oral
Duration of Single Treatment: 336 h
Frequency of Treatment: 7 days/week
General Toxicity Maternal: No observed adverse effect level: 250 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 250 mg/kg body weight
Method: No information available.
Result: No teratogenic effects

Reproductive toxicity - Assessment : No data available

STOT - single exposure

Components:

2,2'-phenyliminodiethanol**:**
Target Organs: Blood
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.

Ethylene glycol**:**
Target Organs: Kidney, Central nervous system
Remarks: Not classified due to data which are conclusive although insufficient for classification.

STOT - repeated exposure

Components:

Ethylene glycol**:**

Exposure routes: Ingestion
Target Organs: Kidney, Central nervous system, Liver
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

PHENYLMERCURIC SUBSTANCE**:**
Target Organs: Central nervous system, Kidney
Assessment: May cause damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Ethylene glycol**:**
Species: Rat, male
NOEL: 150 mg/kg/d
Application Route: oral (feed)
Exposure time: 16 Weeks
Number of exposures: 7 d/weeks
Dose: 50/150/500/1000 mg/kg bw
Method: OECD Test Guideline 408

Species: Rat, male and female
NOAEL: 200 mg/kg/d
Application Route: oral (gavage)
Exposure time: 33 d
Number of exposures: 7 d/weeks
Dose: 220/660/2000 mg/kg bw
Method: Chronic toxicity
Target Organs: Kidney

Species: Mouse, male and female
NOAEL: 12500 ppm
Application Route: oral (feed)
Exposure time: 13 Weeks
Dose: 3200/6300/12500/25000/50000 pp
Method: Subchronic toxicity

Species: Rat, male
NOAEL: 150 mg/kg/d
Application Route: oral (feed)
Exposure time: 52 Weeks
Number of exposures: 7 d/weeks
Dose: 50/150/300/400 mg/kg/bw
Method: OECD Test Guideline 452

Species: Dog, male
NOAEL: ca. 2200 mg/kg
Application Route: Skin contact
Exposure time: 4 Weeks
Number of exposures: 7 d/ weeks
Dose: 0,5/2,0/8,0 ml/kg bw
Method: OECD Test Guideline 410

Species: Dog, male
NOAEL: ca. 2200 - 4400 mg/kg
Application Route: Skin contact

Exposure time: 4 Weeks
Number of exposures: 7 d/weeks
Dose: 2,0/4,0 ml/kg bw
Method: OECD Test Guideline 410

Repeated dose toxicity - Assessment : No data available

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Product:

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

2,2'-phenyliminodiethanol**:**
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 735 mg/l
Exposure time: 96 h

Ethylene glycol**:**
Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 72,860 mg/l
Exposure time: 96 h

Test Type: static test
Test substance: Fresh water

Components:

2,2'-phenyliminodiethanol:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 94.4 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Ethylene glycol:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Components:

2,2'-phenyliminodiethanol:
Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 393 mg/l
Exposure time: 72 h
Method: DIN 38 412 Part 8

Ethylene glycol:
Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (algae)): 6,500 - 13,000 mg/l
Exposure time: 96 h
Test Type: static test

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

Components:

Ethylene glycol:
Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 32,000 mg/l
Exposure time: 7 d
Test Type: static test
Test substance: Fresh water

Components:

Ethylene glycol:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (Water flea)): 8,590 mg/l
Exposure time: 7 d
Test Type: semi-static test
Test substance: Fresh water

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

Components:

Ethylene glycol:
Toxicity to microorganisms : EC20 (activated sludge): > 1,995 mg/l
Exposure time: 30 min

Test Type: static test
Test substance: Fresh water
Method: ISO 8192

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

Components:

PHENYLMERCURIC SUBSTANCE**:**
Acute aquatic toxicity : Very toxic to aquatic life.

Components:

PHENYLMERCURIC SUBSTANCE**:**
Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Persistence and degradability

Components:

2,2'-phenyliminodiethanol**:**
Biodegradability : Result: Not biodegradable

Ethylene glycol**:**
Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 90 - 100 % (Dissolved organic carbon (DOC))
Exposure time: 10 d
Method: OECD Test Guideline 301A

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

Bioaccumulative potential

Bioaccumulation	:	No data available

Components:

Ethylene glycol**:**		
Partition coefficient: n-octanol/water	:	log Pow: -1.36

Mobility in soil

Mobility	:	No data available

Components:

Ethylene glycol**:**		
Distribution among environmental compartments	:	Adsorption/Soil Medium: Soil Koc: 0 - 1 Method: Calculation method
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 CONSIDERATIONS

Disposal methods

Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14. TRANSPORT 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
Not regulated as dangerous goods

SECTION 15. REGULATORY INFORMATION

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

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Ethylene glycol	107-21-1	5000	84882

SARA 311/312 Hazards : Acute toxicity (any route of exposure)
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

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

Ethylene glycol	107-21-1	5.8905 %

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

Ethylene glycol	107-21-1

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.
WARNING: This product can expose you to chemicals including aniline, acetaldehyde, styrene, 1,4-dioxane, ethylene oxide, acrylonitrile, which is/are known to the State of California to cause cancer, and Ethylene glycol, ethylene oxide, 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:

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

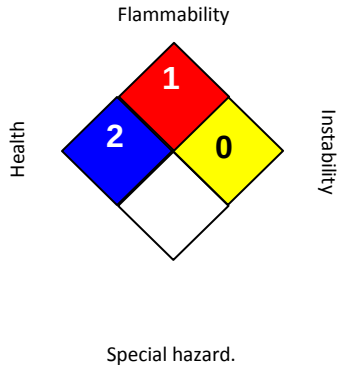
TSCA - 5(a) Significant New Use Rule List of Chemicals
No substances are subject to a Significant New Use Rule.

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.

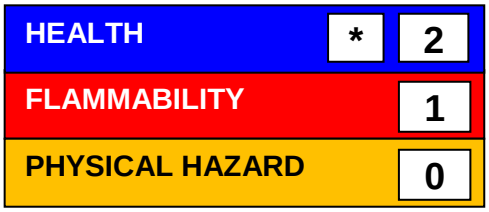
SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:



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

Revision Date : 01/21/2019

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit

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.