SAFETY DATA SHEET

COSMO PU-160.190

(COSMOPUR 814)

Section 1. Identification

GHS product identifier : COSMO PU-160.190

(COSMOPUR 814)

Product code : Not available.

Other means of identification : Not available.

Product type : Liquid.

Relevant identified uses of the substance or mixture and uses advised against

Product use : Adhesive.

Area of application : Professional applications.

Supplier's details : Weiss USA LLC
P.O. Box: 509
USA, Monroe, NC 28111-0509
Telephone no.: (001) 704 282 4496

e-mail address of person responsible for this SDS : Stephen@weiss-usa.com

Emergency telephone number (with hours of operation) : +1 872 5888271 (WIC)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture :

H332	ACUTE TOXICITY (inhalation) - Category 4
H315	SKIN IRRITATION - Category 2
H319	EYE IRRITATION - Category 2A
H334	RESPIRATORY SENSITIZATION - Category 1
H317	SKIN SENSITIZATION - Category 1
H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
H372	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

GHS label elements

Hazard pictograms :

Signal word : Danger

United States

Section 2. Hazards identification

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.
H372 - Causes damage to organs through prolonged or repeated exposure. (respiratory tract)

Precautionary statements

Prevention : P280 - Wear protective gloves: 4 - 8 hours (breakthrough time): Nitrile gloves. (>=0.35 mm) Protective hand cream.. Wear eye or face protection.
P284 - Wear respiratory protection: Recommended: No personal respiratory protective equipment normally required. Use appropriate respiratory protection if there is a risk of exceeding any exposure limits. Filter A2 P2.
P271 - Use only outdoors or in a well-ventilated area.
P260 - Do not breathe vapor.
P270 - Do not eat, drink or smoke when using this product.
P264 - Wash thoroughly after handling.
P272 - Contaminated work clothing must not be allowed out of the workplace.

Response : P314 - Get medical advice or attention if you feel unwell.
P304 + P340, P312 - IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor if you feel unwell.
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor.
P362 + P364 - Take off contaminated clothing and wash it before reuse.
P363 - Wash contaminated clothing before reuse.
P302 + P352 - IF ON SKIN: Wash with plenty of water.
P333 + P313 - If skin irritation or rash occurs: Get medical advice or attention.
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 - If eye irritation persists: Get medical advice or attention.

Storage : P405 - Store locked up.
P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

Ingredient name	Other names	%	CAS number
4,4'-methylenediphenyl diisocyanate	-	≥15 - ≤35	101-68-8
Isocyanic acid, polymethylenepolyphenylene ester	-	≥15 - ≤35	9016-87-9
o-(p-isocyanatobenzyl)phenyl isocyanate	-	≥5 - ≤20	5873-54-1
γ-butyrolactone	-	≥1 - <3	96-48-0
2,2'-methylenediphenyl diisocyanate	-	≥0 - <1	2536-05-2

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

Section 3. Composition/information on ingredients

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health and hence require reporting in this section.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact : Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.

Inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.

Skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Ingestion : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Section 4. First aid measures

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments : No specific treatment.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO_2). Powder. Use water spray, fog or foam.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : In a fire or if heated, a pressure increase will occur and the container may burst.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
Isocyanate
Hydrogen cyanide (HCN).
Toxic gases

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Remark : Not considered to be a product presenting a risk of explosion.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store between the following temperatures: 15 to 25°C (59 to 77°F). Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for

Section 7. Handling and storage

incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
4,4'-methylenediphenyl diisocyanate	**ACGIH TLV (United States, 3/2019).** TWA: 0.005 ppm 8 hours. **NIOSH REL (United States, 10/2016).** TWA: 0.05 mg/m³ 10 hours. TWA: 0.005 ppm 10 hours. CEIL: 0.2 mg/m³ 10 minutes. CEIL: 0.02 ppm 10 minutes. **OSHA PEL (United States, 5/2018).** CEIL: 0.02 ppm CEIL: 0.2 mg/m³
Isocyanic acid, polymethylenepolyphenylene ester	None.
o-(p-isocyanatobenzyl)phenyl isocyanate	None.
γ-butyrolactone	None.
2,2'-methylenediphenyl diisocyanate	None.

Appropriate engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face 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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

Skin protection

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. 4 - 8 hours (breakthrough time): Nitrile gloves. (>=0.35 mm) Protective hand cream.

Section 8. Exposure controls/personal protection

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Safety shoes. Long-sleeved protective clothing.

Other skin protection : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: No personal respiratory protective equipment normally required. Use appropriate respiratory protection if there is a risk of exceeding any exposure limits. Filter A2 P2

Section 9. Physical and chemical properties

Appearance

Physical state : Liquid.

Color : According to specification

Odor : Characteristic.

Odor threshold : Not available.

pH : Not available.

Melting point : Not available.

Boiling point : Not available.

Flash point : Closed cup: 111°C (231.8°F)

Evaporation rate : Not available.

Flammability (solid, gas) : Not applicable.

Lower and upper explosive (flammable) limits : Not available.

Vapor pressure : Not available.

Vapor density : Not available.

Relative density : Not available.

Density : ~ 1.14 g/cm³ [20°C (68°F)]

Solubility : Insoluble in the following materials: cold water and hot water.

Partition coefficient: n-octanol/water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

SADT : Not available.

Viscosity : ~ Dynamic (room temperature): 4300 mPa·s (4300 cP)

Flow time (ISO 2431) : Not available.

Section 10. Stability and reactivity

Reactivity : No specific test data related to reactivity available for this product or its ingredients.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.
May polymerize on exposure or in contact to the following: heat [T>~260°C (>~500°F)]
Under normal conditions of storage and use, hazardous polymerization will not occur.

Conditions to avoid : Keep away from heat and direct sunlight. T > 50°C (>122°F). Protect from moisture.

Incompatible materials : Keep away from the following materials to prevent strong exothermic reactions: acids. alkalis. amines. alcohols. water.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
4,4'-methylenediphenyl diisocyanate	LD50 Dermal	Rabbit	>9400 mg/kg	-
	LD50 Oral	Rat	9200 mg/kg	-
Isocyanic acid, polymethylenepolyphenylene ester	LC50 Inhalation Dusts and mists	Rat	490 mg/m³	4 hours
	LD50 Dermal	Rabbit	>9400 mg/kg	-
	LD50 Oral	Rat	49 g/kg	-
o-(p-isocyanatobenzyl)phenyl isocyanate	LD50 Dermal	Rabbit	>9400 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
γ-butyrolactone	LC50 Inhalation Dusts and mists	Rat	>5.1 mg/l	4 hours
	LD50 Oral	Rat	1540 mg/kg	-
2,2'-methylenediphenyl diisocyanate	LD50 Dermal	Rabbit	>9400 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
4,4'-methylenediphenyl diisocyanate	Eyes - Moderate irritant	Rabbit	-	100 mg	-
	Skin - Irritant	Rabbit	-	-	-
Isocyanic acid, polymethylenepolyphenylene ester	Eyes - Mild irritant	Rabbit	-	100 mg	-
	Skin - Irritant	Rabbit	-	-	-
o-(p-isocyanatobenzyl)phenyl isocyanate	Skin - Irritant	Rabbit	-	-	-

Section 11. Toxicological information

γ-butyrolactone	Skin - Severe irritant	Rabbit	-	500 Ul	-
2,2'-methylenediphenyl diisocyanate	Skin - Irritant	Rabbit	-	-	-
	Eyes - Irritant	Rabbit	-	-	-

Sensitization

Product/ingredient name	Route of exposure	Species	Result
4,4'-methylenediphenyl diisocyanate	skin	Mouse	Sensitizing
	Respiratory	Guinea pig	Sensitizing
Isocyanic acid, polymethylenepolyphenylene ester	skin	Guinea pig	Sensitizing
o-(p-isocyanatobenzyl)phenyl isocyanate	skin	Mouse	Sensitizing
2,2'-methylenediphenyl diisocyanate	skin	Mouse	Sensitizing

Mutagenicity

Product/ingredient name	Test	Experiment	Result
2,2'-methylenediphenyl diisocyanate	OECD 471 Bacterial Reverse Mutation Test	Subject: Bacteria	Negative

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
4,4'-methylenediphenyl diisocyanate	-	3	-
Isocyanic acid, polymethylenepolyphenylene ester	-	3	-
γ-butyrolactone	-	3	-

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
4,4'-methylenediphenyl diisocyanate	Category 3	-	Respiratory tract irritation
Isocyanic acid, polymethylenepolyphenylene ester	Category 3	-	Respiratory tract irritation
o-(p-isocyanatobenzyl)phenyl isocyanate	Category 3	-	Respiratory tract irritation
γ-butyrolactone	Category 3	-	Narcotic effects
2,2'-methylenediphenyl diisocyanate	Category 3	-	Respiratory tract irritation

Section 11. Toxicological information

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
4,4'-methylenediphenyl diisocyanate	Category 1	inhalation	respiratory tract
Isocyanic acid, polymethylenepolyphenylene ester	Category 1	-	respiratory tract
o-(p-isocyanatobenzyl)phenyl isocyanate	Category 1	-	respiratory tract
2,2'-methylenediphenyl diisocyanate	Category 1	-	respiratory tract

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
wheezing and breathing difficulties
asthma

Skin contact : Adverse symptoms may include the following:
irritation
redness

Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Not available.

Section 11. Toxicological information

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
COSMO PU-160.190	8076.2	17289.1	N/A	N/A	2.3
4,4'-methylenediphenyl diisocyanate	9200	N/A	N/A	N/A	1.5
Isocyanic acid, polymethylenepolyphenylene ester	49000	N/A	N/A	N/A	1.5
o-(p-isocyanatobenzyl)phenyl isocyanate	2500	N/A	N/A	N/A	1.5
γ-butyrolactone	1540	N/A	N/A	N/A	N/A
2,2'-methylenediphenyl diisocyanate	2500	N/A	N/A	N/A	1.5

Other information : Adverse symptoms may include the following: Skin contact: inflammation. dryness skin lesion/eczema.
Inhalation: headache. drowsiness/fatigue. dizziness/vertigo. unconsciousness.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
4,4'-methylenediphenyl diisocyanate	NOEC 1640 mg/l	Algae - Desmodesmus subspicatus	72 hours
	Acute EC50 1640 mg/l	Algae - Desmodesmus subspicatus	72 hours
	Acute LC50 >1000 mg/l	Fish - Brachydanio rerio	96 hours
Isocyanic acid, polymethylenepolyphenylene ester	NOEC >10 mg/l	Daphnia - Daphnia magna	21 days
	Acute EC50 >1640 mg/l	Algae - Scenedesmus subspicatus	72 hours
	Acute LC50 >1000 mg/l	Fish - Brachydanio rerio	96 hours
o-(p-isocyanatobenzyl)phenyl isocyanate	Acute LC50 >1000 mg/l	Fish - Brachydanio rerio	96 hours
	Acute NOEC >10 mg/l	Daphnia - Daphnia magna	21 days
γ-butyrolactone	Acute EC50 >1000 mg/l	Algae	72 hours
	Acute EC50 >500 mg/l	Daphnia - Daphnia magma	48 hours
	Acute LC50 56 mg/l	Fish - Lepomis macrochirus	96 hours
2,2'-methylenediphenyl diisocyanate	NOEC >10 mg/l	Daphnia - Daphnia magna	21 days
	Acute EC50 >1640 mg/l	Algae - Scenedesmus subspicatus	72 hours

Section 12. Ecological information

	Acute LC50 >1000 mg/l	Fish - Brachydanio rerio	96 hours

Conclusion/Summary : Not available.

Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
4,4'-methylenediphenyl diisocyanate	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	0 % - 28 days	-	-
Isocyanic acid, polymethylenepolyphenylene ester	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	0 % - 28 days	-	-
o-(p-isocyanatobenzyl)phenyl isocyanate	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	0 % - 28 days	-	-
γ-butyrolactone	-	52 to 92 % - 14 days	-	-
2,2'-methylenediphenyl diisocyanate	OECD 302C Inherent Biodegradability: Modified MITI Test (II)	0 % - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
4,4'-methylenediphenyl diisocyanate	-	-	Not readily
Isocyanic acid, polymethylenepolyphenylene ester	-	-	Not readily
o-(p-isocyanatobenzyl)phenyl isocyanate	-	-	Not readily
γ-butyrolactone	-	-	Readily
2,2'-methylenediphenyl diisocyanate	-	-	Not readily

Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
4,4'-methylenediphenyl diisocyanate	4.51	200	low
Isocyanic acid, polymethylenepolyphenylene ester	-	<14	low
o-(p-isocyanatobenzyl)phenyl isocyanate	4.51	200	low
γ-butyrolactone	-0.566	-	low
2,2'-methylenediphenyl diisocyanate	5.22	200	low

Section 12. Ecological information

Mobility in soil

Soil/water partition coefficient (K_{OC}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-
Transport hazard class(es)	-	-	-
Packing group	-	-	-
Environmental hazards	No.	No.	No.

Additional information

DOT Classification : **Reportable quantity** 14548.4 lbs / 6605 kg [1530.6 gal / 5793.8 L]. Package sizes shipped in quantities less than the product reportable quantity are not subject to the RQ (reportable quantity) transportation requirements.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) PAIR**: 4,4'-methylenediphenyl diisocyanate; o-(p-isocyanatobenzyl)phenyl isocyanate; acetaldehyde

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

TSCA 8(c) calls for record of SAR: 4,4'-methylenediphenyl diisocyanate; Isocyanic acid, polymethylenepolyphenylene ester; o-(p-isocyanatobenzyl)phenyl isocyanate; 2,2'-methylenediphenyl diisocyanate

United States inventory (TSCA 8b): Not determined.

Clean Water Act (CWA) 307: 4,4'-methylenediphenyl diisocyanate

Clean Water Act (CWA) 311: propylene oxide; acetaldehyde; benzoyl chloride

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

Name	%	EHS	SARA 302 TPQ (lbs)	SARA 302 TPQ (gallons)	SARA 304 RQ (lbs)	SARA 304 RQ (gallons)
propylene oxide	<0.1	Yes.	10000	1444.3	100	14.4
furan	<0.1	Yes.	500	64.1	100	12.8

SARA 304 RQ : 595770 lbs / 270479.6 kg [62678.2 gal / 237262.8 L]

SARA 311/312

Classification : ACUTE TOXICITY (inhalation) - Category 4
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A
RESPIRATORY SENSITIZATION - Category 1
SKIN SENSITIZATION - Category 1
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

Composition/information on ingredients

Name	%	Classification
4,4'-methylenediphenyl diisocyanate	≥15 - ≤35	ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2B RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

Section 15. Regulatory information

Isocyanic acid, polymethylenepolyphenylene ester	≥15 - ≤35	ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2B RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
o-(p-isocyanatobenzyl)phenyl isocyanate	≥5 - ≤20	ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2B RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
γ-butyrolactone	<3	ACUTE TOXICITY (oral) - Category 4 SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
2,2'-methylenediphenyl diisocyanate	<1	ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2B RESPIRATORY SENSITIZATION - Category 1 SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	4,4'-methylenediphenyl diisocyanate Isocyanic acid, polymethylenepolyphenylene ester	101-68-8 9016-87-9	≥15 - ≤35 ≥15 - ≤35
Supplier notification	4,4'-methylenediphenyl diisocyanate Isocyanic acid, polymethylenepolyphenylene ester	101-68-8 9016-87-9	≥15 - ≤35 ≥15 - ≤35

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : The following components are listed: METHYLENE BISPHENYL ISOCYANATE; DIPHENYLMETHANE DIISOCYANATE; MDI

New York : The following components are listed: Methylene diphenyl diisocyanate

New Jersey : The following components are listed: METHYLENE BISPHENYL ISOCYANATE; BENZENE, 1,1'-METHYLENEBIS[4-ISOCYANATO-; METHYLENE DIPHENYL DIISOCYANATE (POLYMERIC); ISOCYANIC ACID, POLYMETHYLENEPOLYPHENYLENE ESTER; DIISOCYANATES; DIISOCYANATES

Pennsylvania : The following components are listed: BENZENE, 1,1'-METHYLENEBIS [4-ISOCYANATO-

California Prop. 65

United States

Section 15. Regulatory information

⚠ **WARNING**: This product can expose you to chemicals including Propylene oxide, Furan and acetaldehyde, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Propylene oxide	-	-
Furan	-	-
acetaldehyde	Yes.	-

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

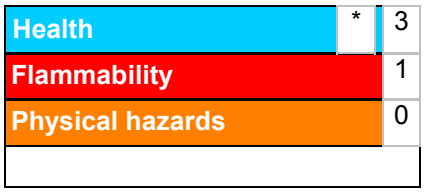
Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

Hazardous Material Information System (U.S.A.)



Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings and the associated label are not required on SDSs or products leaving a facility under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered trademark and service mark of the American Coatings Association, Inc.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

National Fire Protection Association (U.S.A.)

Procedure used to derive the classification

Section 16. Other information

Classification	Justification
ACUTE TOXICITY (inhalation) - Category 4	Calculation method
SKIN IRRITATION - Category 2	Calculation method
EYE IRRITATION - Category 2A	Calculation method
RESPIRATORY SENSITIZATION - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Calculation method

History

Date of issue/Date of revision : 08/27/2020

Date of previous issue : No previous validation

Version : 1

Key to abbreviations : ATE = Acute Toxicity Estimate
AMP = Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
UN = United Nations

References : HCS (U.S.A.)- Hazard Communication Standard
International transport regulations

Indicates information that has changed from previously issued version.

Notice to reader

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