Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 04.28.2014

Revision date: 02.13.2026

ISO PT. A

SECTION 1: Identification

Product Identifier

Product Name: ISO PT. A

Synonyms: Polymeric MDI

Product code: ISO A-D

Recommended Use of the Product and Restriction on Use

Relevant Identified Uses: SPRAY FOAM SYSTEM - ISO Component

Uses Advised Against: Not determined or not applicable.

Reasons Why Uses Advised Against: Not determined or not applicable.

Manufacturer or Supplier Details

Manufacturer:

United States

Rhino Linings Corporation
1001 Ed Rutherford Road
Greenville, TX 75402
858-450-0441
www.rhinolinings.com

Emergency Telephone Number:

North America

CHEMTREC
800-424-9300 (24/7)

SECTION 2: Hazard(s) Identification

GHS Classification:

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, category 3, respiratory tract irritation
Specific target organ toxicity - repeated exposure, category 2

Label elements

Hazard Pictograms:

Signal Word: Danger

Hazard statements:

H332 Harmful if inhaled

H315 Causes skin irritation
H320 Causes eye irritation
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317 May cause an allergic skin reaction
H335 May cause respiratory irritation
H373 May cause damage to organs (Olfactory organs) through prolonged or repeated exposure (inhalation).

Precautionary Statements:

P260 Do not breathe mist, vapors or spray.
P264 Wash contaminated body parts thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area
P272 Contaminated work clothing must not be allowed out of the workplace
P280 Wear protective gloves.
P284 In case of inadequate ventilation wear respiratory protection.
P312 Call a POISON CENTER or physician if you feel unwell
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P362 Take off contaminated clothing and wash it before reuse
P333+P313 If skin irritation or rash occurs: Get medical advice/attention
P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or physician.
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 attention.
P403+P233 Store in a well-ventilated place. Keep container tightly closed
P405 Store locked up
P501 Dispose of contents and container in accordance with local, regional, national, and international regulations.

Hazards Not Otherwise Classified:

CONTAINS ISOCYANATES. Inhalation of isocyanate mists or vapors may cause respiratory irritation, breathlessness, chest discomfort and reduced pulmonary function. Overexposure well above the PEL may result in bronchitis, bronchial spasms and pulmonary edema. Long-term exposure to isocyanates has been reported to cause lung damage, including reduced lung function which may be permanent. Acute or chronic overexposure to isocyanates may cause sensitization in some individuals, resulting in allergic respiratory reactions including wheezing, shortness of breath and difficulty breathing. Animal tests and other research indicate that skin contact with mdi may play a role in causing respiratory sensitization.

SECTION 3: Composition/Information on Ingredients

Identification	Name	Weight %
CAS Number: 9016-87-9	Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	50-75
CAS Number: 101-68-8	4,4'-methylenediphenyl diisocyanate	25-50
CAS Number: 26447-40-5	Diphenylmethane diisocyanate	3-7
CAS Number: 17589-24-1	2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	1-3

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CAS Number: 57636-09-6	Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	1-3

Additional Information:

Specific chemical identity and/or exact percentage (concentration) of each ingredient may be held as confidential business information (CBI). Any ingredient not disclosed in this section may have been determined not to be hazardous to health or the environment, or it may be present at a level below its disclosure threshold.

Note: CAS 101-68-8 is an MDI isomer that is part of CAS 9016-87-9.

SECTION 4: First Aid Measures

Description of First Aid Measures

General Notes:

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

After Inhalation:

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

After Skin Contact:

Wash affected areas thoroughly with soap and water. If irritation develops, seek medical attention.

After Eye Contact:

In case of contact with the eyes, rinse immediately for at least 15 minutes with plenty of water. Remove contact lenses, if present. Immediate medical attention required.

After Swallowing:

Rinse mouth and then drink 200-300 ml of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

Most Important Symptoms and Effects, Both Acute and Delayed

Acute Symptoms and Effects:

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11., Eye irritation, skin irritation, allergic symptoms.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI) Symptoms: Overexposure may cause:, Eye irritation, skin irritation, erythema, chest discomfort, dyspnea, asthma, nausea, headache, vomiting, dizziness, diarrhea, abdominal cramps, Inhalation may provoke the following symptoms:, irritation of respiratory tract, coughing, wheezing.

Information on: Methylenediphenyl diisocyanate Symptoms: Overexposure may cause:, Eye irritation, skin irritation, erythema, nausea, headache, vomiting, dizziness, diarrhea, abdominal cramps, Inhalation may provoke the following symptoms:, irritation of respiratory tract, coughing.

Information on: 1,3-Diazetidine-2,4-dione, 1,3-bis[4-[(4- isocyanatophenyl)methyl]phenyl]-Symptoms: Overexposure may cause:, Eye irritation, skin irritation, erythema, nausea, headache, vomiting, dizziness, diarrhea, abdominal cramps.

Delayed Symptoms and Effects:

Effects are dependent on exposure (dose, concentration, contact time).

Information on: Diphenylmethane-4,4'-diisocyanate (MDI) Hazards: Respiratory sensitization may result in allergic (asthma-like) signs in the lower respiratory tract including wheezing, shortness of breath and difficulty breathing, the onset of which may be delayed. Repeated inhalation of high concentrations may

cause lung damage, including reduced lung function, which may be permanent. Substances eliciting lower respiratory tract irritation may worsen the asthma-like reactions that may be produced by product exposures.

Immediate Medical Attention and Special Treatment

Specific Treatment:

If respiratory symptoms persist, seek medical attention.

Notes for the Doctor:

Antidote: Specific antidotes or neutralizers to isocyanates do not exist.

Treatment: Treatment should be supportive and based on the judgement of the physician in response to the reaction of the patient.

SECTION 5: Firefighting Measures

Extinguishing Media

Suitable Extinguishing Media:

Water mist/fog, carbon dioxide, dry chemical or alcohol resistant foam.

Unsuitable Extinguishing Media:

Do not use water jet.

Specific Hazards During Fire-Fighting:

Thermal decomposition may produce irritating/toxic fumes/gases.

Special Protective Equipment for Firefighters:

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

Special precautions:

Avoid contact with skin, eyes, hair and clothing. Do not breathe fumes/gas/mists/aerosols/vapors/dusts. Move containers from fire area if safe to do so. Use water spray/fog for cooling fire exposed containers. Avoid unnecessary run-off of extinguishing media which may cause pollution.

SECTION 6: Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures:

Evacuate unnecessary personnel. Ventilate area. Extinguish any sources of ignition. Wear recommended personal protective equipment (see Section 8). Avoid contact with skin, eyes and clothing. Avoid breathing mist, vapor, dust, fume and spray. Do not walk through spilled material. Wash thoroughly after handling.

Environmental Precautions:

Prevent further leakage or spillage if safe to do so. Prevent from reaching drains, sewers and waterways. Discharge into the environment must be avoided.

Methods and Material for Containment and Cleaning Up:

For small amounts: Absorb isocyanate with suitable absorbent material (see § 40 CFR, sections 260, 264 and 265 for further information). Shovel into open container. Spill area can be decontaminated with the following recommended decontamination solution: Mixture of 90 % water, 5-8 % household ammonia, 2-5 % detergent. Allow solution to stand for at least 10 minutes. Pick up with suitable absorbent material. Place into appropriately labeled waste containers. Do not make container pressure tight. Move container to a well-ventilated area (outside). Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide. Dispose of absorbed material in accordance with regulations.

For large amounts: For spills, stop leaks and provide diking to contain the material. Prevent entry into sewage systems, ground and surface waters. If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available from most fire departments) may be placed over the spill.

Transfer as much liquid as possible via pump or vacuum device into closed but not sealed containers for disposal.

For residues: The following measures should be taken for final cleanup: Spill area can be decontaminated with the following recommended decontamination solution: Mixture of 90 % water, 5-8 % household ammonia, 2-5 % detergent. Wash down spill area with decontamination solution. Allow solution to stand for at least 10 minutes. Pick up with suitable absorbent material. Place into appropriately labeled waste containers. Do not make container pressure tight. Move container to a well-ventilated area (outside). Allow to stand for at least 48 hours to allow escape of evolved carbon dioxide. Dispose of absorbed material in accordance with regulations.

Reference to Other Sections:

For personal protective equipment see Section 8. For disposal see Section 13.

SECTION 7: Handling and Storage

Precautions for Safe Handling:

Provide suitable exhaust ventilation at the processing machines. Ensure thorough ventilation of stores and work areas. Avoid aerosol formation. Avoid inhalation of dusts/mists/vapours. When handling heated product, vapours of the product should be ventilated, and respiratory protection used. Wear respiratory protection when spraying. Use suitable chemically resistant gloves. Danger of bursting when sealed gastight. Protect against moisture. If bulging of drum occurs, transfer to well ventilated area, puncture to relieve pressure, open vent and let stand for 48 hours before resealing. Protection against fire and explosion: No special precautions necessary.

Conditions for Safe Storage, Including Any Incompatibilities:

Keep away from water. Segregate from foods and animal feeds. Segregate from acids and bases.
Suitable materials for containers: Carbon steel (Iron), High density polyethylene (HDPE), Low density polyethylene (LDPE), Stainless steel 1.4301 (V2), Stove-lacquer KNS L-5X
Further information on storage conditions: Formation of CO2 and buildup of pressure possible. Keep container tightly closed and in a well-ventilated place. Outage of containers should be filled with dry inert gas at atmospheric pressure to avoid reaction with moisture.
Recommended storage temperature: 37 - 95°F (3 - 35°C). Storage temperature is noted for health and safety in the workplace. The storage temperature will affect the handling characteristics and quality of the product.

SECTION 8: Exposure Controls/Personal Protection

Only those substances with limit values have been included below.

Occupational Exposure Limit Values:

Country (Legal Basis)	Substance	Identifier	Permissible concentration
United States(California)	Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	9016-87-9	REL: 12 ug/m³ (Acute Inhalation)
	Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	9016-87-9	REL-TWA: 0.08 ug/m³ (Chronic Inhalation)
	Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	9016-87-9	8-Hour TWA: 0.16 ug/m³
	4,4'-methylenediphenyl diisocyanate	101-68-8	8-Hour TWA-PEL: 0.051 mg/m³ (0.005 ppm)

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Country (Legal Basis)	Substance	Identifier	Permissible concentration
	Diphenylmethane diisocyanate	26447-40-5	8-Hour TWA-PEL: 0.051 mg/m³ (0.005 ppm)
OSHA	4,4'-methylenediphenyl diisocyanate	101-68-8	PEL Ceiling: 0.2 mg/m³ (0.02 ppm)
	Diphenylmethane diisocyanate	26447-40-5	PEL Ceiling: 0.2 mg/m³ (0.02 ppm)
NIOSH	4,4'-methylenediphenyl diisocyanate	101-68-8	REL-TWA: 0.05 mg/m³ ([0.005 ppm] up to 10 hr)
	4,4'-methylenediphenyl diisocyanate	101-68-8	Ceiling Limit: 0.2 mg/m³ ([0.02 ppm] 10 min)
	4,4'-methylenediphenyl diisocyanate	101-68-8	IDLH: 75 mg/m³
	Diphenylmethane diisocyanate	26447-40-5	Ceiling Limit: 0.2 mg/m³ ([0.020 ppm] 10 min)
	Diphenylmethane diisocyanate	26447-40-5	IDLH: 75 mg/m³
	Diphenylmethane diisocyanate	26447-40-5	REL-TWA: 0.05 mg/m³ ([0.005 ppm] 10 hr)
ACGIH	4,4'-methylenediphenyl diisocyanate	101-68-8	8-Hour TWA: 0.005 ppm
	Diphenylmethane diisocyanate	26447-40-5	8-Hour TWA: 0.005 ppm

Biological Limit Values:

No biological exposure limits noted for the ingredient(s).

Information on Monitoring Procedures:

Not determined or not applicable.

Appropriate Engineering Controls:

Emergency eye wash stations and safety showers should be available in the immediate vicinity of use or handling. Provide adequate ventilation to maintain the airborne concentrations of vapor, mists, and/or dusts below the applicable workplace exposure limits, while observing recognized national standards (or equivalent).

Personal Protection Equipment

Eye and Face Protection:

Safety glasses or goggles. Use eye protection equipment that has been tested and approved by recognized national standards (or equivalent).

Skin and Body Protection:

Chemical resistant, impervious gloves approved by the appropriate standards. Gloves must be inspected prior to use. Avoid skin contact with used gloves. Appropriate techniques should be used to remove used gloves and contaminated clothing. 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. Ensure that all personal protective equipment is approved by recognized national standards (or equivalent).

Respiratory Protection:

If engineering controls do not maintain airborne concentrations below the applicable workplace exposure limits, or to an acceptable level (if exposure limits have not been established), a respirator approved by recognized national standards (or equivalent) must be worn.

General Hygienic Measures:

When handling chemical products, do not eat, drink or smoke. Wash hands after handling, before breaks, and at the end of the workday. Avoid contact with skin, eyes and clothing. Wash contaminated clothing before reuse. Perform routine housekeeping.

SECTION 9: Physical and Chemical Properties

Information on Basic Physical and Chemical Properties

Appearance	Liquid, Amber/Brown
Odor	Musty
Odor threshold	Not Applicable
pH	Not Applicable
Melting point/freezing point	Not determined or not available.
Initial boiling point/range	200°C (392°F)
Flash point (closed cup)	220°C (428°F)
Evaporation rate	Not determined or not available.
Flammability (solid, gas)	Not Flammable
Upper flammability/explosive limit	For liquids not relevant for classification and labelling.
Lower flammability/explosive limit	For liquids not relevant for classification and labelling. The lower explosion point may be 5 - 15 °C below the flash point.
Vapor pressure	0.00001 mmHg (20 °C)
Vapor density	Not Applicable
Density	1.220 - 1.25 g/cm3 (20 °C)
Relative density	1.22 @ 20°C
Solubilities	Reacts with water.
Partition coefficient (n-octanol/water)	Not Applicable
Auto/Self-ignition temperature	Auto: > 250 °C / Self: Based on its structural properties the product is not classified as selfigniting.
Decomposition temperature	No decomposition if stored and handled as prescribed/indicated.
Dynamic viscosity	200 mPa.s (20 °C)
Kinematic viscosity	Not determined or not available.
Explosive properties	Not determined or not available.
Oxidizing properties	Not determined or not available.

SECTION 10: Stability and Reactivity

Reactivity:

Corrosion to metals: No corrosive effect on metal. Oxidizing properties: Not an oxidizer.

Chemical Stability:

Stable under recommended handling and storage conditions.

Possibility of Hazardous Reactions:

Reacts with water, with formation of carbon dioxide. Risk of bursting. Reacts with alcohols. Reacts with acids. Reacts with alkalies. Reacts with amines. Risk of exothermic reaction. Risk of polymerization. Contact with certain rubbers and plastics can cause brittleness of the substance/product with subsequent loss in strength.

Conditions to Avoid:

Avoid moisture.

Incompatible Materials:

Acids, amines, alcohols, water, Alkalines, strong bases, Substances/products that react with isocyanates.

Hazardous Decomposition Products:

Decomposition products: Hazardous decomposition products: carbon monoxide, carbon dioxide, hydrogen cyanide, nitrogen oxides, aromatic isocyanates, gases/vapours Thermal decomposition: No decomposition if stored and handled as prescribed/indicated.

SECTION 11: Toxicological Information

Acute Toxicity

Assessment:

Harmful if inhaled.

Product Data: No data available.

Substance Data:

Name	Route	Result
4,4'-methylenediphenyl diisocyanate	oral	LD50 Rat: > 5000 mg/kg
	inhalation	LC50 Rat: 368 mg/m³ (4 hr [aerosol])
	dermal	LD50 Rabbit: >7940 mg/kg
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	oral	LD50 Rat: >2000 mg/kg ([Read-across substance data])
	dermal	LD50 Rabbit: >9400 mg/kg ([Read-across substance data])
	Inhalation ATE	LC50 Rat: 11 mg/L (4 hr [vapor])
Diphenylmethane diisocyanate	Inhalation ATE	LC50 Rat: 11 mg/L (4 hr [Vapor})
	oral	LD50 Rat: >2000 mg/kg
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Inhalation ATE	LC50 Rat: 11 mg/L (4 hr [Vapor])
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	Inhalation ATE	LC50 Rat: 11 mg/L (4h [Vapour])

Skin Corrosion/Irritation

Assessment:

Causes skin irritation.

Product Data:

No data available.

Substance Data:

Name	Result
4,4'-methylenediphenyl diisocyanate	Causes skin irritation.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Causes skin irritation.

Name	Result
Diphenylmethane diisocyanate	Causes skin irritation.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Causes skin irritation.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	Causes skin irritation.

Serious Eye Damage/Irritation

Assessment:

Causes eye irritation.

Product Data:

No data available.

Substance Data:

Name	Result
4,4'-methylenediphenyl diisocyanate	Causes serious eye irritation.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Causes serious eye irritation.
Diphenylmethane diisocyanate	Causes serious eye irritation.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Causes serious eye irritation.

Respiratory or Skin Sensitization

Assessment:

May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.

Product Data:

Assessment of sensitization: Sensitization after skin contact possible. The substance may cause sensitization of the respiratory tract. As a result of previous repeated overexposures or a single large dose, certain individuals will develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the PEL/TLV. These symptoms, which include chest tightness, wheezing, cough, shortness of breath, or asthmatic attack, could be immediate or delayed up to several hours after exposure. Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air, or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Chronic overexposure to isocyanates has also been reported to cause lung damage, including a decrease in lung function, which may be permanent. Prolonged contact can cause reddening, swelling, rash, scaling, or blistering. In those who have developed a skin sensitization, these symptoms can develop as a result of contact with very small amounts of liquid material, or even as a result of

vapour-only exposure. Animal tests indicate that skin contact may play a role in causing respiratory sensitization.

Substance Data:

Name	Result
4,4'-methylenediphenyl diisocyanate	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
	May cause an allergic skin reaction.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
	May cause an allergic skin reaction.
Diphenylmethane diisocyanate	May cause an allergic skin reaction.
	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	May cause an allergic skin reaction.
	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	May cause an allergic skin reaction.
	May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carcinogenicity

Assessment: Based on available data, the classification criteria are not met.

Product Data:

Species	Result
Assessment:	Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. IARC Group 3 (not classifiable as to human carcinogenicity).
Assessment:	A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. IARC Group 3 (not classifiable as to human carcinogenicity).
Information on: Diphenylmethane-4,4'-diisocyanate (MDI)	Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. IARC Group 3 (not classifiable as to human carcinogenicity).
Information on: P-MDI	Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. IARC Group 3 (not classifiable as to human carcinogenicity).

Species	Result
Information on: Methylenediphenyl diisocyanate	Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. IARC Group 3 (not classifiable as to human carcinogenicity).
Information on: 1,3-Diazetidine-2,4-dione, 1,3-bis[4-[(4- isocyanatophenyl)methyl]phenyl]-	Assessment of carcinogenicity: Indication of possible carcinogenic effect in animal tests. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.
Information on: Isocyanic acid, polymethylenepolyphenylene ester, polymer with.alpha.-hydro- .omega.-hydroxypoly(oxy-1,2-ethanediyl)	Assessment of carcinogenicity: A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure. IARC Group 3 (not classifiable as to human carcinogenicity).

Substance Data:

Name	Species	Result
4,4'-methylenediphenyl diisocyanate		Suspect of causing cancer.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate		Suspected of causing cancer by inhalation.
Diphenylmethane diisocyanate		Suspected of causing cancer.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate		Suspected of causing cancer.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)		Suspected of causing cancer.

International Agency for Research on Cancer (IARC):

Name	Classification
4,4'-methylenediphenyl diisocyanate	Group 3
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Group 3
Diphenylmethane diisocyanate	Group 3

Name	Classification
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Not Applicable
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	Not Applicable

National Toxicology Program (NTP):

Name	Classification
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Not Applicable
4,4'-methylenediphenyl diisocyanate	Not Applicable
Diphenylmethane diisocyanate	Not Applicable
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Not Applicable
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	Not Applicable

OSHA Carcinogens: Not applicable

Germ Cell Mutagenicity

Assessment: Based on available data, the classification criteria are not met.

Product Data:

No data available.

Substance Data: No data available.

Reproductive Toxicity

Assessment: Based on available data, the classification criteria are not met.

Product Data:

No data available.

Substance Data: No data available.

Specific Target Organ Toxicity (Single Exposure)

Assessment:

May cause respiratory irritation.

Product Data:

No data available.

Substance Data:

Name	Result
4,4'-methylenediphenyl diisocyanate	May cause respiratory irritation.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	May cause respiratory irritation.
Diphenylmethane diisocyanate	May cause respiratory irritation.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	May cause respiratory irritation.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	May cause respiratory irritation.

Specific Target Organ Toxicity (Repeated Exposure)

Assessment:

May cause damage to organs through prolonged or repeated exposure.

Product Data:

Assessment of repeated dose toxicity: The substance may cause damage to the olfactory epithelium after repeated inhalation. The substance may cause damage to the lung after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Substance Data:

Name	Result
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	May cause damage to respiratory system through prolonged or repeated inhalation.
4,4'-methylenediphenyl diisocyanate	May cause damage to the respiratory system and lungs through prolonged or repeated exposure.
Diphenylmethane diisocyanate	Chronic or repeated exposure may cause an asthma - like allergy. Repeated allergic lung attacks may lead to permanent scarring of the lungs (pulmonary fibrosis) with reduced lung function.
2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Causes damage to organs (nose/sinuses) through prolonged or repeated inhalation exposure.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly(oxy-1,2-ethanediyl)	May cause damage to organs through prolonged or repeated exposure.

Aspiration toxicity

Assessment: Based on available data, the classification criteria are not met.

Product Data:

No data available.

Substance Data: No data available.

Information on Likely Routes of Exposure:

No data available.

Symptoms Related to the Physical, Chemical, and Toxicological Characteristics:

No data available.

Other Information:

Medical conditions aggravated by overexposure: The isocyanate component is a respiratory sensitizer. It may cause allergic reaction leading to asthma-like spasms of the bronchial tubes and difficulty in breathing. Medical supervision of all employees who handle or come into contact with isocyanates is recommended. Contact may aggravate pulmonary disorders. Persons with history of respiratory disease or hypersensitivity should not be exposed to this product. Preemployment and periodic medical examinations with respiratory function tests (FEV, FVC as a minimum) are suggested. Persons with asthmatic conditions, chronic bronchitis, other chronic respiratory diseases, recurrent eczema or pulmonary sensitization should be excluded from working with isocyanates. Once a person is diagnosed as having pulmonary sensitization (allergic asthma) to isocyanates, further exposure is not recommended.

Assessment of acute toxicity: Of moderate toxicity after short-term inhalation. Inhalation of vapours may cause irritation of the mucous membranes of the nose, throat or trachea, breathlessness, chest discomfort, difficult breathing and reduced pulmonary function. Inhalation exposure well above the PEL may result additionally in eye irritation, headache, chemical bronchitis, asthma-like findings or pulmonary edema. Isocyanates have also been reported to cause hypersensitivity pneumonitis, which is characterized by flu-like symptoms, the onset of which may be delayed.

Assessment of repeated dose toxicity: The substance may cause damage to the olfactory epithelium after repeated inhalation. The substance may cause damage to the lung after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

SECTION 12: Ecological Information

Acute (Short-Term) Toxicity

Assessment: Based on available data, the classification criteria are not met.

Product Data: No data available.

Substance Data:

Name	Result
4,4'-methylenediphenyl diisocyanate	Fish LC50 Danio rerio: >100 mg/L (96 hr [mortality])
	Aquatic Invertebrates EC50 Daphnia magna: > 100 mg/L (48 hr [mobility])
	Aquatic Invertebrates EC50 Desmodesmus subspicatus: > 100 mg/L ([EL50] 72 hr [growth rate])
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Fish LC50 Freshwater Fish: >100 mg/L (96 hr [LL50-Read-across substance data])
	Aquatic Plants EC50 Algae species: >100 mg/L (72 hr [EL50-growth rate, Read-across substance data])
	Aquatic Invertebrates EC50 Aquatic invertebrates: >100 mg/L (48 hr [EL50-mobility, Read-across substance data])

Chronic (Long-Term) Toxicity

Assessment: Based on available data, the classification criteria are not met.

Product Data: No data available.

Substance Data:

Name	Result
4,4'-methylenediphenyl diisocyanate	Aquatic Invertebrates NOEC Daphnia magna: ≥10 mg/L (21 d [reproduction; read-across substance data])
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Aquatic Invertebrates NOEC Daphnia magna: >10 mg/L (21 d [reproduction, Read-across substance data])
Diphenylmethane diisocyanate	Aquatic Invertebrates NOEC Daphnia magna: >10 mg/L (21 d)

Persistence and Degradability

Product Data: No data available.

Substance Data:

Name	Result
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	The substance is not readily biodegradable. 1% degradation in water, measured by O2 consumption, after 28 days (Read-across substance data).
4,4'-methylenediphenyl diisocyanate	The substance is not readily biodegradable. 0% degradation in water, measured by O2 consumption, after 28 days.

Bioaccumulative Potential

Product Data: No data available.

Substance Data:

Name	Result
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Standard bioaccumulation studies are not applicable to UVCB substances.
4,4'-methylenediphenyl diisocyanate	The substance is not expected to bioaccumulate (BCF: 200).
Diphenylmethane diisocyanate	Exposure of carp to 0.00001% concentrations for an eight week period resulted in no bioaccumulations.

Mobility in Soil

Product Data: No data available.

Substance Data:

Name	Result
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	The substance is hardly mobile, therefore, there is a high potential for adsorption to soil and sediment (log Koc: 4.5, Read-across substance data).
4,4'-methylenediphenyl diisocyanate	The substance is hardly mobile, therefore, there is a high potential for adsorption to soil and sediment (Log Koc: 4.5; (Q)SAR substance data).
Diphenylmethane diisocyanate	Hydrolyzes rapidly in aqueous solution.

Results of PBT and vPvB assessment

Product Data:

PBT assessment: This product does not contain any substances that are assessed to be a PBT.

vPvB assessment: This product does not contain any substances that are assessed to be a vPvB.

Substance Data:

PBT assessment:

4,4'-methylenediphenyl diisocyanate	The substance is not PBT.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Standard PBT studies are not applicable to UVCB substances.

vPvB assessment:

4,4'-methylenediphenyl diisocyanate	The substance is not vPvB.
Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Standard vBvB studies are not applicable to UVCB substances.

Other Adverse Effects:

Assessment of aquatic toxicity: There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. Based on long-term (chronic) toxicity study data, the product is very likely not harmful to aquatic organisms. The product may hydrolyse. The test result maybe partially due to degradation products. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

SECTION 13: Disposal Considerations

Disposal Methods:

The generation of waste should be avoided or minimized wherever possible. If product becomes a waste, it does not meet criteria of hazardous waste as defined in 40 CFR 261, Subpart C and D. Do not discharge into sewer system. Spill cleanup residues may still be subject to RCRA storage and disposal requirements.

Dispose waste in compliance with local, state and federal regulations via licensed waste disposal contractor.

Contaminated packages:

Steel drums must be emptied and can be sent to a licensed drum reconditioner for reuse, a scrap metal dealer or an approved landfill. Do not attempt to refill or clean containers since residue is difficult to remove. Under no circumstances should empty drums be burned or cut open with gas or electric torch as toxic decomposition products may be liberated. Do not reuse empty containers.

SECTION 14: Transport Information

United States Transportation of Dangerous Goods (49 CFR DOT)

UN Number	Not regulated
UN Proper Shipping Name	Not regulated
UN Transport Hazard Class(es)	None
Packing Group	None
Environmental Hazards	None
Special Precautions for User	None
Additional Information	This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this SDS for the RQ for this product. NOTE: This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

International Maritime Dangerous Goods (IMDG)

UN Number	Not regulated
UN Proper Shipping Name	Not regulated
UN Transport Hazard Class(es)	None
Packing Group	None
Environmental Hazards	None
Special Precautions for User	None

International Air Transport Association Dangerous Goods Regulations (IATA-DGR)

UN Number	Not regulated
UN Proper Shipping Name	Not regulated
UN Transport Hazard Class(es)	None
Packing Group	None
Environmental Hazards	None
Special Precautions for User	None

SECTION 15: Regulatory Information

ISO PT. A

United States Regulations

Inventory Listing (TSCA): All ingredients are listed-active or exempt.

Significant New Use Rule (TSCA Section 5): None of the ingredients are listed.

Export Notification under TSCA Section 12(b): None of the ingredients are listed.

SARA Section 302 Extremely Hazardous Substances: None of the ingredients are listed.

SARA Section 313 Toxic Chemicals:

9016-87-9	Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Listed
101-68-8	4,4'-methylenediphenyl diisocyanate	Listed
17589-24-1	2,4-dioxo-1,3-diazetidine-1,3-diylbis[p-phenylenemethylene-p-phenylene] diisocyanate	Listed

CERCLA:

101-68-8	4,4'-methylenediphenyl diisocyanate	Listed	5000 lb

RCRA: None of the ingredients are listed.

Section 112(r) of the Clean Air Act (CAA): None of the ingredients are listed.

Massachusetts Right to Know:

101-68-8	4,4'-methylenediphenyl diisocyanate	Listed

New Jersey Right to Know:

9016-87-9	Reaction mass of 4,4'-methylenediphenyl diisocyanate and 2,2'-methylenediphenyl diisocyanate and o-(p-isocyanatobenzyl)phenyl isocyanate	Listed
101-68-8	4,4'-methylenediphenyl diisocyanate	Listed
26447-40-5	Diphenylmethane diisocyanate	Listed

New York Right to Know:

101-68-8	4,4'-methylenediphenyl diisocyanate	Listed
26447-40-5	Diphenylmethane diisocyanate	Listed

Pennsylvania Right to Know:

101-68-8	4,4'-methylenediphenyl diisocyanate	Listed

California Proposition 65: None of the ingredients are listed.

Additional information: Not determined.

SECTION 16: Other Information

Abbreviations and Acronyms: None

Disclaimer:

The data set forth in this sheet are based on information provided by the suppliers of the raw materials and chemicals used in the manufacture of the aforementioned product. Rhino Linings Corporation makes no warranty with respect to the accuracy of the information provided by their suppliers, and disclaims all liability of reliance thereof. Sections 11/12 Disclaimer (Toxicity/Ecotoxicity): This product itself has not been tested. Information given is based on data on the components and the toxicology of similar products. Section 14 (Transport Information): Information provided in Section 14 is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

NFPA: 2-1-1

ISO PT. A

HMIS: 2*-1-1
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Revision Notes:

Revision Date	Notes
2014-04-28	
2015-05-04	Internal Review
2016-05-13	Internal Review
2018-12-19	Internal Review
2021-09-24	Internal Review
2023-10-20	Internal Review / New SDS Software Program Implementation
2025-09-23	Internal Review / Canadian Jurisdiction Request
2026-02-13	Internal Review

End of Safety Data Sheet