Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Initial Preparation Date: 04.06.2020

Revision date: 11.21.2025

SolarMax 11-60 Isocyanate

SECTION 1: Identification

Product Identifier

Product Name: SolarMax 11-60 Isocyanate

Synonyms: Aliphatic Polyisocyanate

Product code: 60398

Recommended Use of the Product and Restriction on Use

Relevant Identified Uses: ALIPHATIC SPRAY ELASTOMER 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 (oral), category 4
Acute toxicity (inhalation), category 4
Respiratory sensitization, category 1
Skin sensitization, category 1
Specific target organ toxicity - single exposure, category 3, respiratory tract irritation

Label elements

Hazard Pictograms:

Signal Word: Danger

Hazard statements:

H302 Harmful if swallowed
H332 Harmful if inhaled

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317 May cause an allergic skin reaction
H335 May cause respiratory irritation

Precautionary Statements:

P261 Avoid breathing dust, fumes, gas, mist, vapors or spray.
P201 Obtain special instructions before use
P202 Do not handle until all safety precautions have been read and understood
P264 Wash any exposed skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product .
P271 Use only outdoors or in a well-ventilated area .
P272 Contaminated work clothing must not be allowed out of the workplace .
P280 Wear protective gloves, protective clothing, eye protection and face protection.
P284 In case of inadequate ventilation wear respiratory protection.
P301+P312 IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell.
P330 Rinse mouth
P302+P352 IF ON SKIN: Wash with plenty of water and soap.
P321 Specific treatment (see Sections 4-8 of this SDS and any supplemental information on the product label).
P363 Wash contaminated clothing before reuse .
P333+P313 If skin irritation or rash occurs: Get medical advice or 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.
P312 Call a POISON CENTER if you feel unwell.
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: 28182-81-2	Hexamethylene diisocyanate, oligomers	95-99
CAS Number: 822-06-0	Hexamethylene diisocyanate	0.1-2

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.

SECTION 4: First Aid Measures

Description of First Aid Measures

General Notes:

Show this Safety Data Sheet to the doctor in attendance.

After Inhalation:

If inhaled, remove person to fresh air and place in a position comfortable for breathing. Keep person at rest. If breathing is difficult, administer oxygen. If breathing has stopped, provide artificial respiration. If exposed, seek medical advice/attention.

After Skin Contact:

Remove contaminated clothing and shoes. Rinse skin with copious amounts of water [shower] for several minutes. Launder contaminated clothing before reuse. If symptoms develop or persist, seek medical advice/attention.

After Eye Contact:

Rinse eyes with plenty of water for several minutes. Remove contact lenses if present and easy to do so. Protect unexposed eye. If symptoms develop or persist, seek medical advice/attention.

After Swallowing:

If swallowed, DO NOT induce vomiting unless told to do so by a physician or poison control center. Rinse mouth with water. Never give anything by mouth to an unconscious person. If spontaneous vomiting occurs, place on the left side with head down to prevent aspiration of liquid into the lungs. If symptoms develop or persist, seek medical advice/attention.

Most Important Symptoms and Effects, Both Acute and Delayed

Acute Symptoms and Effects:

Inhalation exposure may cause allergy, asthma symptoms or breathing difficulties. Symptoms may include cough, chronic phlegm, shortness of breath, wheezing and chest tightness. Symptoms may be delayed.

Dermal exposure may cause an allergic skin reaction. Symptoms may include irritation, redness, pain, rash, inflammation, itching, burning and dermatitis.

Acute oral exposure may lead to dizziness, drowsiness, headache, breathing difficulties, nausea, vomiting, abdominal pain, and lowering of consciousness. Adverse effects are dependent on exposure (dose, concentration, contact time).

Delayed Symptoms and Effects:

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

Immediate Medical Attention and Special Treatment

Specific Treatment:

If respiratory symptoms persist, seek medical attention.

Notes for the Doctor:

Treat symptomatically.

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:

Do not touch damaged containers or spilled material unless wearing appropriate personal protective clothing. Stop leak if you can do it without risk. Contain and collect spillage and place in suitable container for future disposal. Dispose of in accordance with all applicable regulations (see Section 13).

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:

Use appropriate personal protective equipment (see Section 8). Use only with adequate ventilation. Avoid breathing mist/vapor/spray/dust. Do not eat, drink, smoke, or use personal products when handling chemical substances. Avoid contact with skin, eyes and clothing. Wash affected areas thoroughly after handling. Keep away from incompatible materials (See Section 10). Keep containers tightly closed when not in use.

Conditions for Safe Storage, Including Any Incompatibilities:

Store in cool, dry, well-ventilated location out of direct sunlight. Keep away from food and beverages. Protect from freezing and physical damage. Store away from heat, open flames and other sources of ignition. Keep container tightly sealed. Store away from incompatible materials (See Section 10). Recommended Storage Temperature: 16 - 50°C (60 - 120°F)

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
ACGIH	Hexamethylene diisocyanate	822-06-0	8-Hour TWA: 0.005 ppm
NIOSH	Hexamethylene diisocyanate	822-06-0	Ceiling Limit: 0.14 mg/m³ (0.02 ppm [10-min])
	Hexamethylene diisocyanate	822-06-0	REL-TWA: 0.035 mg/m³ (0.005 ppm [up to 10 hr])

Country (Legal Basis)	Substance	Identifier	Permissible concentration
United States(California)	Hexamethylene diisocyanate	822-06-0	8-Hour TWA-PEL: 0.034 mg/m³ (0.005 ppm)

Biological Limit Values:

Country (Legal Basis)	Substance	Identifier	Determinant	Specimen	Sampling time	Permissible limits
ACGIH	Hexamethylene diisocyanate	822-06-0	Hexamethylenediamine (with hydrolysis)	Creatinine in urine	End of shift	15 µg/g

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	Colorless to light yellow liquid
Odor	Almost odorless
Odor threshold	Not determined or not available.
pH	Not determined or not available.
Melting point/freezing point	Not determined or not available.
Initial boiling point/range	Not determined or not available.

Flash point (closed cup)	>150°C (316°F) (DIN 53213)
Evaporation rate	Not determined or not available.
Flammability (solid, gas)	Not determined or not available.
Upper flammability/explosive limit	Not determined or not available.
Lower flammability/explosive limit	Not determined or not available.
Vapor pressure	HDI Polyisocyanate: 5.2 X 10-9 @ 68°F (20°C) mmHg
Vapor density	Not determined or not available.
Density	Not determined or not available.
Relative density	1.11-1.16 @ 20°C (68°F) (DIN 53217)
Solubilities	Insoluble - Reacts slowly with water to liberate CO2 gas
Partition coefficient (n-octanol/water)	Not determined or not available.
Auto/Self-ignition temperature	›445°C (883°F) (DIN 51794)
Decomposition temperature	Not determined or not available.
Dynamic viscosity	Not determined or not available.
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:
Not reactive under recommended handling and storage conditions.

Chemical Stability:
Stable under recommended handling and storage conditions.

Possibility of Hazardous Reactions:
Contact with moisture, other materials that react with isocyanates, or temperatures above 177°C (350°F), may cause polymerization, Moisture (water and high humidity) or high heat (temperatures greater than 177°C (350°F)) can cause pressure build-up with possible explosive rupture.

Conditions to Avoid:
Extreme heat, open flames, hot surfaces, sparks, ignition sources and incompatible materials.
Protect from freezing.

Incompatible Materials:
Water, Amines, Strong bases, Alcohols, Copper alloys

Hazardous Decomposition Products:
By Fire and High Heat: Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke., Hydrogen cyanide, Isocyanate, Isocyanic Acid, Other undetermined compounds

SECTION 11: Toxicological Information

Acute Toxicity

Assessment:
Harmful if swallowed.
Harmful if inhaled.

Product Data: No data available.

Substance Data:

Name	Route	Result
Hexamethylene diisocyanate, oligomers	dermal	LD50 Rabbit: > 2000 mg/kg
	Inhalation ATE	LC50 Rat: 11 mg/L (4hr [vapour])
	oral	LD50 Rat: >2500 mg/kg
Hexamethylene diisocyanate	oral	LD50 Rat: 959 mg/kg
	inhalation	LC50 Rat: 0.124 mg/L (4 hr [Vapor])
	dermal	LD50 Rat: >7000 mg/kg

Skin Corrosion/Irritation

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

Product Data:
No data available.

Substance Data:

Name	Result
Hexamethylene diisocyanate	Causes skin irritation.

Serious Eye Damage/Irritation

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

Product Data:
No data available.

Substance Data:

Name	Result
Hexamethylene 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:
No data available.

Substance Data:

Name	Result
Hexamethylene diisocyanate, oligomers	May cause an allergic skin reaction.
	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Hexamethylene diisocyanate	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: No data available.

Substance Data: No data available.

International Agency for Research on Cancer (IARC):

Name	Classification
Hexamethylene diisocyanate	Not Applicable
Hexamethylene diisocyanate, oligomers	Not Applicable

National Toxicology Program (NTP):

Name	Classification
Hexamethylene diisocyanate	Not Applicable
Hexamethylene diisocyanate, oligomers	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
Hexamethylene diisocyanate, oligomers	May cause respiratory irritation.
Hexamethylene diisocyanate	May cause respiratory irritation.

Specific Target Organ Toxicity (Repeated Exposure)

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

Product Data:

No data available.

Substance Data: No data available.

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:

No data available.

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
Hexamethylene diisocyanate	Fish LC50 Danio rerio: >82.8 mg/L (96 hr)
	Aquatic Invertebrates EC50 Daphnia magna: >89.1 mg/L (48 hr [mobility])
	Aquatic Plants EC50 Desmodesmus subspicatus: >77.4 mg/L (72 hr [growth rate and biomass])
Hexamethylene diisocyanate, oligomers	Fish LC50 Danio rerio: 8.9 mg/L (96 hr)
	Aquatic Plants EC50 Desmodesmus subspicatus: >1000 mg/L (72 hr [growth rate])

Chronic (Long-Term) Toxicity
Assessment: Based on available data, the classification criteria are not met.
Product Data: No data available.
Substance Data: No data available.

Persistence and Degradability
Product Data: No data available.
Substance Data:

Name	Result
Hexamethylene diisocyanate, oligomers	The substance is not readily biodegradable.1% degradation in water, measured by O2 consumption, after 28 days.
Hexamethylene diisocyanate	The substance is not readily biodegradable. 42% degradation in water, measured by O2 consumption, after 28 days.

Bioaccumulative Potential
Product Data: No data available.
Substance Data:

Name	Result
Hexamethylene diisocyanate, oligomers	The substance has the potential to bioaccumulate (log Kow: 3.2, QSAR substance data).
Hexamethylene diisocyanate	The substance is not expected to bioaccumulate (BCF: 59.6, QSAR substance data).

Mobility in Soil
Product Data: No data available.
Substance Data:

Name	Result
Hexamethylene diisocyanate, oligomers	The substance is slightly mobile, therefore, adsorption to soil and sediment is expected (log Koc:3.682, QSAR substance data)..
Hexamethylene diisocyanate	The substance is slightly mobile, therefore, adsorption to soil and sediment is expected (log Koc: > 598 - < 4 818, QSAR substance data).

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:

Hexamethylene diisocyanate	The substance is not PBT.

Hexamethylene diisocyanate, oligomers	The substance is not PBT.

vPvB assessment:

Hexamethylene diisocyanate	The substance is not vPvB.
Hexamethylene diisocyanate, oligomers	The substance is not vPvB.

Other Adverse Effects: No data available.

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:

Even after emptying, container may retain residues. Containers should be completely emptied and safely stored until appropriately reconditioned or disposed through licensed contractor in accordance with government regulation. This material and its container must be disposed of in a safe way.

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	This product is regulated if the amount in an individual container exceeds the Product RQ of 39,998 lb: NA3082, Other regulated substances, liquid, n.o.s. (contains Hexamethylene-1,6-Diisocyanate), 9, III
Additional Information	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
Additional Information	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 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
Additional Information	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.

SECTION 15: Regulatory Information

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:

822-06-0	Hexamethylene diisocyanate	Listed

CERCLA:

822-06-0	Hexamethylene diisocyanate	Listed	100 lbs

RCRA: None of the ingredients are listed.

Section 112(r) of the Clean Air Act (CAA):

822-06-0	Hexamethylene diisocyanate	Listed

Massachusetts Right to Know:

822-06-0	Hexamethylene diisocyanate	Listed

New Jersey Right to Know:

822-06-0	Hexamethylene diisocyanate	Listed

New York Right to Know:

822-06-0	Hexamethylene diisocyanate	Listed

Pennsylvania Right to Know: None of the ingredients are 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-w

HMIS: 2-1-1-X

Initial Preparation Date: 04.06.2020

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Revision Notes:

Revision Date	Notes
2020-04-06	
2021-10-01	Internal Review
2023-03-14	Internal Review
2025-11-21	Internal Review

End of Safety Data Sheet