

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

### MATERIAL IDENTITY:

SeamTek 305 ISO

### INFORMATION TELEPHONE:

410-810-2100

### COMPANY:

Seamless Technologies, Inc.  
PO Box 428  
Chestertown, MD 21620

### EMERGENCY TELEPHONE:

CHEMTREC: 800-424-9300

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient(s)	CAS Number	% (by weight)
Homopolymer of HDI	28182-81-2	AP 90-100
Hexamethylene Diisocyanate (HDI)	822-06-0	AP 0-10

## 3. HAZARDS IDENTIFICATION

### HEALTH HAZARDS

**Acute Inhalation:** HDI vapors or mist at concentrations above the TLV or MGL can irritate the mucous membranes in the respiratory tract causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function, or as well as an asthma attack. Exposure well above the TLV or MGL may lead to bronchitis, bronchial spasm and pulmonary edema. These effects are usually reversible.

**Chronic Inhalation:** As a result of previous repeated overexposure or a single large dose, certain individuals will develop isocyanate sensitization, which will cause them to react to a later exposure to isocyanate at levels well below the TLV or MGL. 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 decrease in lung function, which may be permanent. Sensitization may be either temporary or permanent.

**Acute Skin Contact:** Isocyanates react with skin protein and moisture and can cause irritation. Symptoms of skin irritation may be reddening, swelling, rash, scaling or blistering. Some persons may develop skin sensitization from skin contact. Cured material is difficult to remove.

**Chronic Skin Contact:** Prolonged contact with the isocyanate 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 vapor-only exposure.

**Acute Eye Contact:** Liquid, aerosols and vapors of this product are irritants and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes.

**Chronic Eye Contact:** May result in corneal opacity (clouding of the eye surface).

**Acute Ingestion:** Can result in irritation and possible corrosive action in the mouth, stomach tissue and digestive tract.

**Chronic Ingestion:** None known.

### PHYSICAL HAZARDS

Closed container may explode under extreme heat or when contaminated with water; Toxic gases/ fumes are given off during burning or thermal decomposition.

### APPEARANCE

Clear/Pale Yellow; Liquid.

### ODOR

Negligible; may cause eye, skin, and respiratory tract irritation; May cause allergic respiratory reaction; Harmful if inhaled; May cause allergic skin reaction; May cause lung damage.

## 4. FIRST AID MEASURES

### EYES

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Flush with clean, lukewarm water (low pressure) for at least 15 minutes, while lifting eyelids. Refer individual to physician or ophthalmologist for immediate follow-up.

## SKIN

Remove contaminated clothing immediately. Wash affected areas thoroughly with soap and water. Wash contaminated clothing thoroughly before reuse. For severe exposures, get under safety shower after removing clothing, then get medical attention. For lesser exposures, seek medical attention if irritation develops or persists.

## INGESTION

DO NOT INDUCE VOMITING. Give 1 to 2 cups of milk or water to drink. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS OR CONVULSING PERSON. Consult physician.

## INHALATION

Move to an area free from risk of further exposure. Administer oxygen or artificial respiration as needed. Obtain medical attention. Asthmatic-type symptoms may develop and may be immediate or delayed up to several hours. Treatment is essentially symptomatic. Consult physician.

## ADVISE TO PHYSICIANS

Stain eyes for evidence of corneal injury. If cornea is burned, instill antibiotic / steroid preparation frequently. Workplace vapors could produce reversible corneal epithelial edema impairing vision. This product is a known skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn. For ingestion, treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritation nature of the product. For Inhalation, this product is known pulmonary sensitizer. Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material must be removed from any further exposure to any isocyanate.

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## 5. FIRE FIGHTING MEASURES

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FLASH POINT METHOD= >200°F (93°C)

### EXTINGUISHING MEDIA

Dry Chemical, Carbon Dioxide, Foam, Water. Spray for large fires.

### FIRE FIGHTING INSTRUCTIONS

Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, HDI vapors and other irritation, highly toxic gases may be generated by thermal decomposition or combustion (See Section 10). Closed container may explode when exposed to extreme heat or burst when contaminated with water (CO<sup>2</sup> evolved).

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## 6. ACCIDENTAL RELEASE MEASURES

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### MAJOR SPILLS, LEAKS OR RELEASES

Evacuate nonessential personnel. Remove all sources of ignition and ventilate the area. Notify appropriate authorities if necessary. Put on personal protective equipment (see section 8). Dike or impound spilled material and control further spillage if feasible. Cover spill with sawdust, vermiculite, fuller's earth or other absorbent material. Pour decontamination solution over spill area and allow to react for at least 10 minutes. Collect material in open containers and add further amounts of decontamination solution. Remove containers to a safe place, cover loosely, and allow to stand for 24 to 48 hours. Wash down spill area with decontamination solutions: nonionic surfactant Union Carbide's Tergitol TMN-10 (20%) and water (80%); concentrated ammonia (3-8%), detergent (2%) and water (90-95%).

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## 7. HANDLING AND STORAGE

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STORAGE TEMPERATURE (MIN/MAX): -30°F (-34°C) / 122°F (50°C)

SHELF LIFE: 6 months at 77°F (25°C) after receipt of material by customer.

SPECIAL SENSITIVITY: If container is exposed to high heat, it can be pressurized and possibly rupture explosively. HDI reacts slowly with water to form CO<sup>2</sup> gas. This gas can cause sealed containers to expand and possibly rupture explosively.

HANDLING: Store in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. At maximum storage temperatures noted, material may slowly polymerize without hazard. Ideal storage temperature range for ease of handling is 50-81°F (10-

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27°C). Avoid contact with skin and eyes. Employee education and training in the safe use and handling of this product are required under the OSHA Hazard Communication Standard.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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### GENERAL

Precautions must be taken so that persons handling this product do not allow contact with the eyes or skin. In spray operations, protection must be afforded against exposure to both vapor and spray mist.

### MEDICAL SURVEILLANCE

Medical supervision of all employees who handle or come in contact with this product is recommended. This should include pre-employment and periodic medical examinations with respiratory function tests (FEV<sub>1</sub>, FVC as a minimum). Persons with asthma-type conditions, chronic bronchitis, other chronic respiratory diseases or recurrent skin eczema or sensitization should be excluded from working with isocyanates. Once a person is diagnosed as sensitized to an isocyanate, no further exposure can be permitted.

### SKIN PROTECTION

Permeation resistant gloves. Cover as much of the exposed skin area as possible with appropriate clothing. If skin creams are used, keep the area protected only by the cream to a minimum.

### VENTILATION REQUIREMENTS

Good industrial hygiene practice dictates that worker protection should be achieved through engineering controls, such as ventilation, whenever feasible. When such controls are not feasible to achieve full protection, the use of respirators and other personal protective equipment is mandated (See respiratory requirements below). Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination. Curing ovens must be ventilated to prevent emissions onto the workplace. If oven off-gases are not vented properly (i.e. they are released into the work area), it is possible to be exposed to airborne monomeric HDI.

### RESPIRATORY PROTECTIONS

A respirator that is recommended or approved for use in isocyanate-containing environments (air-purifying or fresh-air supplied) may be necessary for spray applications or other situations such as high temperature use which may produce inhalation exposures. A supplied-air respirator (either positive pressure or continuous flow-type) is recommended. Before an air-purifying respirator can be used, air monitoring must be performed to measure airborne concentrations of HDI monomer and HDI polyisocyanate. Specific conditions under which air-purifying respirators can be used are outlined in the following sections. Observe OSHA regulations for respirator use (29 CFR 1910.134)

#### SPRAY APPLICATION:

A Good industrial hygiene practice dictates that when isocyanate-based coatings are spray applied, some form of respiratory protection should be worn. During the spray application of coatings containing this product, the use of a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists:

- The airborne isocyanate concentrations are not known; or
- The airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or
- The airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m<sup>3</sup> averaged over 8 hours or 10mg/m<sup>3</sup> averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits) or
- Operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146).

A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing spray paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met:

- The airborne isocyanate monomer concentrations are known to be below 0.05 ppm averaged over eight (8) hours (10 times 8 hour TWA exposure limit); and

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-The airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m<sup>3</sup> averaged over 8 hours or 10 mg/m<sup>3</sup> averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits) and

-A NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup.

## NON-SPRAY OPERATIONS:

During non-spray operations such as mixing, batch-making, brush or roller application, etc., at elevated temperatures (for example, heating of material or application to a hot substrate), it is possible to be exposed to airborne isocyanate vapors. Therefore, when the coatings system will be applied in a non-spray manner, a supplied-air (either positive pressure or continuous flow-type) respirator is mandatory when ONE OR MORE of the following conditions exists:

-The airborne isocyanate concentrations are not known; or

-The airborne isocyanate monomer concentrations exceed 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); or

-The airborne polyisocyanate (polymeric, oligomeric) concentrations exceed 5 mg/m<sup>3</sup> averaged over 8 hours or 10 mg/m<sup>3</sup> averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits); or

-Operations are performed in a confined space (See OSHA Confined Space Standard, 29 CFR 1910.146).

A properly fitted air-purifying (combination organic vapor and particulate) respirator, proven by test to be effective in isocyanate-containing paint environments, and used in accordance with all recommendations made by the manufacturer, can be used when ALL of the following conditions are met:

-The airborne concentrations of the isocyanate monomer are below 0.05 ppm averaged over eight (8) hours (10 times the 8 hour TWA exposure limit); and

-The airborne polyisocyanate (polymeric, oligomeric) concentrations are known to be below 5 mg/m<sup>3</sup> averaged over eight (8) hours or 10 mg/m<sup>3</sup> averaged over 15 minutes (10 times the 8 hour TWA or the 15 minute STEL exposure limits) and

-A NIOSH-certified End of Service Life Indicator or a change schedule based upon objective information or data is used to ensure that cartridges are replaced before the end of their service life. In addition, prefilters should be changed whenever breathing resistance increases due to particulate buildup.

## ADDITIONAL PROTECTIVE MEASURES

Safety showers and eyewash stations should be available. Educate and train employees in safe use of product. Follow all label instructions.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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Boiling Point	382°F
Vapor Pressure	Polyisocyanate: Approx. 7.5 x 10 <sup>-5</sup> mmHg @ 20°C
Bulk Density	9.5 lbs/gal
Specific Gravity	1.14 @ 68°F (20°C)
Odor	Negligible
Melting/Freezing Point	N/A
Color	Clear/ Pale Yellow
Physical Form	Liquid
Molecular Weight	Approx. 500 (polyisocyanate)

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## 10. STABILITY AND REACTIVITY

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### CONDITIONS TO AVOID

None known.

### HAZARDOUS DECOMPOSITION PRODUCTS

By high heat and fire: carbon dioxide, carbon monoxide, oxides of nitrogen, HCN, HDI.

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## HAZARDOUS POLYMERIZATION

May occur; Contact with moisture or other materials which react with isocyanates or temperatures above 400°F (200°C) may cause polymerization.

## CHEMICAL STABILITY

Stable under normal conditions.

## INCOMPATIBILITY WITH OTHER SUBSTANCES

Water, amines, strong bases, alcohols, metal compounds and surface active materials.

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## 11. TOXICOLOGICAL INFORMATION

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TOXICITY DATA FOR: A similar product

### ACCUTE TOXICITY

Oral LD50 (rat):	Estimated to be >10000 mg/kg
Dermal LD50 (rabbit):	Estimated to be >5000 mg/kg
Inhalation LC50(rat):	Lower respiratory irritant. Values range from 137-1150 mg/m3
Eye Effects (rabbit):	Severe irritant capable of inducing corneal injury
Skin Effects (rabbit):	Moderate irritation
Sensitization:	Pulmonary and dermal sensitizer in animals and humans.
Mutagenicity:	Ames test: No indication of mutagenic effects.

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## 12. ECOLOGICAL INFORMATION

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No Ecological Information Available.

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## 13. DISPOSAL CONSIDERATIONS

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Waste must be disposed of in accordance with federal, state, and local environmental control regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue. Decontaminate containers prior to disposal. DO NOT HEAT OR CUT EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH. (See Sections 5 and 10).

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## 14. TRANSPORTATION INFORMATION

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TRANSPORTATION EMERGENCY TELEPHONE NUMBER: 1-800-424-9300 (CHEMTREC)

Technical Shipping Name: Polyisocyanate

Freight Class Bulk: Isocyanate

Freight Class Package: Chemicals, NOI (Isocyanate), NMFC 60000

Product Label: Product label established

DOT (Domestic Surface): Not Regulated.

IMO/IMDG CODE (Ocean): Not Regulated.

ICAO/IATA (Air): Not Regulated.

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## 15. REGULATORY INFORMATION

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### USA CLASSIFICATION:

**OSHA CLASSIFICATION:** This product is classified as a hazardous material under the criteria outlined in the OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200)

**TSCA (TOXIC SUBSTANCES CONTROL ACT) REGULATIONS:** All ingredients are on the TSCA Chemical Substance Inventory.

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT):**

None reported.

### SARA TITLE III:

Section 302 Extremely Hazardous Substances:	None
Section 311/312 Hazard Categories:	Immediate Health Hazard; Delayed Health Hazard; Reactive Hazard
Section 313 Toxic Chemicals:	None

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**RCRA STATUS:** If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20.24)

**OTHER REGULATIONS/LEGISLATION WHICH APPLY TO THIS PRODUCT:** Massachusetts Right-to-Know(MSL), Pennsylvania Right-to-Know(PA3), New Jersey Right-to-Know(NJ4), CERCLA, California Right-to-Know(Proposition 65).

**CANADIAN CLASSIFICATION:**

This product has been classified in accordance with the hazard criteria of the CPR (Controlled Products Regulations) and this MSDS (Material Safety Data Sheet) contains all the information required by the CPR.

**CONTROLLED PRODUCTS REGULATIONS (WHMIS) CLASSIFICATION:** D-1A; D-2A and D-2B.

**CEPA / CANADIAN DOMESTIC SUBSTANCES LIST (DSL):** The substance(s) in this product is/are on the Canadian Domestic Substances List (CEEPA DSL).

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## 16. OTHER INFORMATION

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HMIS Ratings:	Health	2 (Chronic Health Hazard)
	Flammability	1
	Reactivity	1
	0=Minimal	1=Slight 2=Moderate 3=Serious 4=Severe

Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself. The information in this MSDS was obtained from sources, which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable. This MSDS has been prepared in accordance with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).