

Ureglaze NR Ceiling and Wall Coating System  
MSDS Listing  
and  
Explanation of Use

<b>PROPER NAME</b>	<b>Use within System</b>	<b>Name on general MSDS List</b>
SR101 and SH101	Epoxy Primer for the system	SR101 and SH101
Resin 231	Urethane resin for coating system	231
ISO 305	Urethane Hardener for resin 231	305

## MATERIAL SAFETY DATA SHEET

### SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME (ON LABEL) : SeamTek™ Standard Hardener, SH101  
 COMMON NAME: epoxy hardener DATE PRINTED: 7/2/02  
**DISTRIBUTOR:**  
**SEAMLESS TECHNOLOGIES, INC.** EMERGENCY TELEPHONE: CHEMTREC  
 PO Box 428 24 HOURS A DAY 1 (800) 424-9300  
 Chestertown, MD 21620 INFORMATION TELEPHONE: 1 (800) 666-6216  
 DATE PREPARED : 23-May-94 PREVIOUS MSDS REVISION DATE: FIRST  
 REV.

### SECTION 2 - COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Wt %	OSHA PEL	ACGIH TLV
polyoxalkyleneamine	9046100		N.E.	N.E.
triethylene glycol diamine	929599		N.E.	N.E.
epoxy curing agent	mixture		N.E.	N.E.
alkyl phenol	84852153		N.E.	N.E.
alpha hydroxy toluene	100-51-6		N.E.	N.E.

T.S.C.A. Status - OK on all above components.

### SECTION 3 - PHYSICAL & CHEMICAL PROPERTIES

<b>APPEARANCE</b>	: clear	<b>SPECIFIC GRAVITY (H2O=1.0)</b>	:>1.00
<b>PHYSICAL STATE</b>	: liquid	<b>DENSITY (LB/GAL)</b>	: N/A
<b>VAPOR PRESSURE</b>	: N/A mm Hg.	<b>MELTING POINT (°C)</b>	: N/A
<b>ODOR</b>	: amine odor	<b>EVAPORATION RATE</b>	: N/A
<b>VAPOR DENSITY</b>	: N/A	<b>(Butyl Acetate = 1)</b>	
<b>WATER SOLUBILITY</b>	: insoluble	<b>V.O.C</b>	: 3.14

lb/gal

### SECTION 4 - STABILITY & REACTIVITY

**STABILITY** : Stable.  
**CONDITIONS TO AVOID** : Keep container closed when not in use.  
**INCOMPATIBILITY** : Avoid contact with strong oxidizers or acids.  
**HAZARDOUS DECOMPOSITION BYPRODUCTS**: By fire: carbon dioxide, carbon monoxide, nitrogen oxide, aldehydes.  
**HAZARDOUS POLYMERIZATION** : Will not occur.  
**CONDITIONS TO AVOID** : Uncontrolled reaction with epoxy resins. Avoid breathing fumes generated by hardener and epoxy mixture when not used within established pot life.

*(Continued on page 2)*

**SECTION 5 - FIRE & EXPLOSION HAZARD DATA**

**FLASH POINT (CLOSED CUP METHOD)** :>200°F      **LOWER EXPLOSIVE LIMIT** :N/A  
**UPPER EXPLOSIVE LIMIT** :N/A

**EXTINGUISHING MEDIA** :Foam, CO<sub>2</sub>, dry chemical, water spray

**SPECIAL FIRE FIGHTING PROCEDURES** :Wear full protective equipment including self contained breathing apparatus. Irritating and/or toxic gases may be generated by fire.

**UNUSUAL FIRE AND EXPLOSION HAZARDS** :Combustion products may be toxic. Cool storage containers with water spray to prevent pressure buildup which could rupture containers.

**SECTION 6 - HEALTH HAZARD DATA**

**ROUTES OF ENTRY:**      **INHALATION?** yes      **SKIN?** yes      **INGESTION?** yes

**SIGNS AND SYMPTOMS OF OVEREXPOSURE:** Irritation of skin.

**HEALTH HAZARDS (ACUTE AND CHRONIC):**ACUTE:Irritation of skin and dermatitis.

CHRONIC:Repeated overexposure will cause severe skin irritation, dermatitis and sensitization. Sensitized persons may experience rapid irritation of skin upon exposure. **NOTE:Persons with lung disorders or who are sensitized should not use this product.**

**CARCINOGENICITY:**      **NTP?** No      **IARC MONOGRAPHS?** No      **OSHA REGULATED?** No

**MEDICAL CONDITIONS GENERALLY AGGRAVATED BY OVEREXPOSURE:**

Allergy, skin disorders.

**SECTION 7 - FIRST AID PROCEDURES**

**EYES:** Flush with water, holding lids open for 15 minutes or more. Call physician for advice if necessary.

**SKIN:** Promptly wash with soap and water. Do not wash with solvents. Seek medical advice if irritation develops or persists.

**INHALATION:** Move person to fresh air if effects occur. If needed, give oxygen or artificial respiration to improve breathing. Consult physician.

**INGESTION:** Get medical attention immediately. Never give liquids to an unconscious or convulsing person.

**SECTION 8 - PRECAUTIONS FOR SAFE HANDLING AND USE**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:** Wear protective clothing to prevent exposure. Stop spill and dike to prevent spreading. Cover spill with absorbent materials and collect into containers. Clean contaminated area with detergent and water or a steam cleaner for best results.

**WASTE DISPOSAL METHOD:** Dispose in accordance with all Federal, State and Local requirements.

**HANDLING AND STORAGE PRECAUTIONS:** Keep containers tightly closed when not in use.

**OTHER PRECAUTIONS:** None known.

(Continued on page 3)

**SECTION 9 - EXPOSURE CONTROL & PERSONAL PROTECTION**

**RESPIRATORY PROTECTION:** Provide adequate exhaust ventilation and/or NIOSH approved amine cartridge respirator.

**VENTILATION: LOCAL EXHAUST:**if needed **SPECIAL:** none known

**MECHANICAL (GENERAL):** Adequate exhaust ventilation must exhaust away from the applicator.

**PROTECTIVE GLOVES:** natural rubber or neoprene gloves

**EYE PROTECTION:** splash goggles or face shield

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, however, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at the work area.

**WORK/HYGIENIC PRACTICES:** Enforce careful handling to prevent splashing. Wash thoroughly after handling.

**SECTION 10 - OTHER INFORMATION**

**HMS RATINGS:** HEALTH :3  
FLAMMABILITY :1  
REACTIVITY :0  
PERSONAL PROTECTION :G

**KEY TO ABBREVIATIONS:**

N.E. = none established

**NOTICE**

“The information contained herein is, to the best of our knowledge and belief, accurate. However, since data, safety standards, and government regulations are subject to change; and the conditions of handling and use (or misuse) are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use or misuse of this material. It is the responsibility of the user to satisfy himself that he has all current data relevant to his particular application, and to comply with all applicable Federal, State and local laws and regulations.”

**END OF MSDS**

**MATERIAL SAFETY DATA SHEET****SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME (ON LABEL) : SeamTek® Standard Resin, **SR101**  
 COMMON NAME : epoxy resin DATE PRINTED: 7/2/02  
 DISTRIBUTOR:  
 SEAMLESS TECHNOLOGIES, INC. EMERGENCY TELEPHONE: CHEMTREC  
 PO Box 428 24 HOURS A DAY 1 (800) 424-9300  
 Chestertown, MD 21620 INFORMATION TELEPHONE: 1 (800) 666-6216  
 DATE PREPARED : 01-Aug-96 PREVIOUS MSDS REVISION DATE: 20-May-94

**SECTION 2 - COMPOSITION & INFORMATION ON INGREDIENTS**

Chemical Name	CAS No.	Wt %	OSHA PEL	ACGIH TLV
diglycidyl ether bisphenol A epoxy resin	25085-99-8		N.E.	N.E.
aliphatic epoxide	68609-97-2		N.E.	N.E.
alkylated phenol	AN123581		N.E.	N.E.
2-methyl-2,4-pentenediol	107-41-5		25 ppm	25 ppm
alkyl phenol	84852153		N.E.	N.E.

T.S.C.A. Status - OK on all above components.

**SECTION 3 - PHYSICAL & CHEMICAL PROPERTIES**

APPEARANCE : viscous liquid SPECIFIC GRAVITY (H<sub>2</sub>O=1.0) : 1.1  
 PHYSICAL STATE : liquid DENSITY (LB/GAL) : N/A  
 VAPOR PRESSURE : N/A mm Hg. MELTING POINT (°C) : N/A  
 ODOR : mild EVAPORATION RATE : N/A  
 VAPOR DENSITY : N/A (Butyl Acetate = 1)  
 WATER SOLUBILITY : none V.O.C. : 0.57  
 lb/gal

**SECTION 4 - STABILITY & REACTIVITY**

STABILITY : Stable.  
 CONDITIONS TO AVOID : Excessive heating over long periods of time degrades the resin.  
 INCOMPATIBILITY : Uncontrolled reaction with amines.  
 HAZARDOUS DECOMPOSITION BYPRODUCTS: By fire: carbon dioxide, carbon monoxide, nitrogen oxide, aldehydes.  
 HAZARDOUS POLYMERIZATION : Will not occur.  
 CONDITIONS TO AVOID : Uncontrolled reaction with amines.

(Continued on page 2)

**SECTION 5 - FIRE & EXPLOSION HAZARD DATA**



**RESPIRATORY PROTECTION:** Provide adequate exhaust ventilation and/or NIOSH approved amine cartridge respirator.

**VENTILATION:**    **LOCAL EXHAUST:**if needed    **SPECIAL:** none known

**MECHANICAL (GENERAL):** Adequate exhaust ventilation must exhaust away from the applicator.

**PROTECTIVE GLOVES:** natural rubber or neoprene gloves

**EYE PROTECTION:** splash goggles or face shield

**OTHER PROTECTIVE CLOTHING OR EQUIPMENT:** Use rubber apron, face shield and appropriate clothing to prevent contact with skin. Launder contaminated clothing before reuse. Discard contaminated leather shoes and canvas sneakers. Protective skin creams help cleaning with soap and water, however, gloves must still be worn. An eye wash station or an adequate supply of clean water must be available at the work area.

**WORK/HYGIENIC PRACTICES:** Enforce careful handling to prevent splashing. Wash thoroughly after handling.

**SECTION 10 - OTHER INFORMATION**

<b>HMIS RATINGS:</b>	HEALTH	:2
	FLAMMABILITY	:1
	REACTIVITY	:0
	PERSONAL PROTECTION	:F

**KEY TO ABBREVIATIONS:**

N.E. = none established

**NOTICE**

"The information contained herein is, to the best of our knowledge and belief, accurate. However, since data, safety standards, and government regulations are subject to change; and the conditions of handling and use (or misuse) are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use or misuse of this material. It is the responsibility of the user to satisfy himself that he has all current data relevant to his particular application, and to comply with all applicable Federal, State and local laws and regulations."

END OF MSDS

# MATERIAL SAFETY DATA SHEET

Date Prepared: 10/07/2005

Date Modified: 10/07/2005

Date Printed: 11/13/2009

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## 1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

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### MATERIAL IDENTITY:

SeamTek 231 Wall Coating

### INFORMATION TELEPHONE:

920-803-1700

### COMPANY:

NOVOC Performance Resins, LLC  
3687 Enterprise Drive  
Sheboygan, WI 53083

### EMERGENCY TELEPHONE:

CHEMTREC: 800-424-9300

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## 2. COMPOSITION/INFORMATION ON INGREDIENTS

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Ingredient(s)	CAS Number	% (by weight)
Aspartic Ester	Not Disclosed	AP 40-90

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## 3. HAZARDS IDENTIFICATION

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### HEALTH HAZARDS

Irritating to eyes, respiratory system and skin. Inhalation at levels above the occupational exposure limit could cause respiratory sensitization and risk of serious damage to respiratory system. The onset of the respiratory symptoms may be delayed for several hours after exposure. A hyper-reactive response to even minimal concentrations of MDI may develop in sensitized persons. Sensitized person should not be exposed to any mixture containing unreacted MDI.

### PHYSICAL HAZARDS

Reacts slowly with water to produce carbon dioxide, which may rupture, closed containers. This reaction accelerates at higher temperatures.

### APPEARANCE

Clear; Liquid.

### ODOR

Slight; May cause eye, skin, and respiratory tract irritation; May cause allergic skin reaction.

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## 4. FIRST AID MEASURES

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### EYES

Immediately flush eyes with running water for at least 15 minutes. Retract eyelids often. Get prompt medical attention. Hold eyelids open during flushing. Obtain medical attention immediately.

### SKIN

Remove contaminated clothing. Wash the exposed area with mild soap and water. Flush w/lukewarm water for 15 minutes. Some organic materials such as corn oil or propylene glycol are effective in decontaminating MDI from the skin when applied immediately. Seek medical attention if ill effect or irritation develops.

### INGESTION

Consult a physician immediately. Give large quantities of lukewarm water (1 -2 glasses) if victim is completely conscious/alert. Do not induce vomiting as risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

### INHALATION

If overcome by exposure, remove victim to fresh air immediately. If breathing is labored, oxygen should be administered by qualified personnel. Use artificial respiration if breathing stops. Obtain emergency medical attention.

### ADVISE TO PHYSICIANS

If exposed, treat skin and eye burns or irritation conventionally after decontamination. Symptomatic and supportive therapy as needed. Following severe exposure medical follow-up should be monitored for at least 48 hours.

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## 5. FIRE FIGHTING MEASURES

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### FLASH POINT METHOD= (Estimated)

>200°F (93°C)

# MATERIAL SAFETY DATA SHEET

Date Prepared: 10/07/2005

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## EXTINGUISHING MEDIA

Dry Chemical, CO<sub>2</sub>, Foam, Water.

## FIRE FIGHTING INSTRUCTIONS

Do not enter fire area without proper protection. Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH) approved or equivalent. Fight fire from safe distance/protected location. Heat/impurities may increase temperature/build pressure/rupture closed containers, spreading fire, increasing risk of burns/injuries. Water may be ineffective in firefighting due to low solubility. Use water spray/fog for cooling. Pressure relief system may plug with solids, increasing risk of overpressure. Notify authorities if liquid enters sewer/public waters.

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## 6. ACCIDENTAL RELEASE MEASURES

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### MAJOR SPILLS, LEAKS OR RELEASES

Evacuate the area and remove all sources of ignition. Ventilate the area. Equip clean-up crew with appropriate protective equipment. Dike or impound spilled material and control further spillage if feasible. Cover spill with sawdust, vermiculite, Fuller's earth or other absorbent material; collect material in open containers. Prevent further leakage or entry into drains.

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## 7. HANDLING AND STORAGE

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**STORAGE TEMPERATURE (MIN/MAX):** 32°F (0°C) / 122°F (50°C)

### SHELF LIFE:

6 months at ambient temperature.

### SPECIAL SENSITIVITY:

Material is hygroscopic and may absorb small amounts of atmospheric moisture.

### HANDLING:

Keep container dry and tightly closed in a cool and well ventilated area. Container should be tightly closed to prevent contamination with foreign materials and moisture. Take precautions against the buildup of electrostatic charges. Keep away from heat, sparks, and open flame. Avoid getting material on skin and cloths, or in the eyes. Do not breath vapors/mists if generated.

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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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### GENERAL

Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

### EYE PROTECTION

Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles or vapor. Contact lenses should not be worn.

### SKIN PROTECTION

When skin contact is possible, protective clothing including gloves, apron, sleeves, boots, head and face protection should be worn. This equipment must be cleaned thoroughly after each use.

### VENTILATION REQUIREMENTS

Ventilation as needed to control airborne concentrations below level of irritation to eyes, nose and throat.

### RESPIRATORY PROTECTIONS

When the product is sprayed or heated without adequate ventilation, an approved MSHA/NIOH positive-pressure, supplied-air respirator may be required. Air purifying respirators equipped with organic vapor cartridges and a HEPA (P100) particulate filter may be used under certain conditions when a cartridge change-out schedule has been developed in accordance with the OSHA respiratory protection standard (29CFR1910.134).

### ADDITIONAL PROTECTIVE MEASURES

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

# MATERIAL SAFETY DATA SHEET

Date Prepared: 10/07/2005

Date Modified: 10/07/2005

Date Printed: 11/13/2009

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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Boiling Point	NA
Vapor Pressure	1.4 x 10 <sup>-5</sup> mm Hg @ 68°F (20°C)
Vapor Density (air=1)	9lbs/gal
Specific Gravity (water=1 @39.2F)	1.13 g/cm <sup>3</sup>
Odor	Slight
Melting/Freezing Point	NA
Color	Amber
State	Liquid

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## 10. STABILITY AND REACTIVITY

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### CONDITIONS TO AVOID

High temperatures. Freezing temperatures.

### HAZARDOUS DECOMPOSITION PRODUCTS

By fire: CO, CO<sub>2</sub>, oxides of nitrogen, amines, and other aliphatic fragments which have not been determined.

### HAZARDOUS POLYMERIZATION

Will not occur.

### CHEMICAL STABILITY

This is a stable material.

### INCOMPATIBILITY WITH OTHER SUBSTANCES

Oxidizing materials.

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## 11. TOXICOLOGICAL INFORMATION

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TOXICITY DATA FOR : A similar product

### ACCUTE TOXICITY

Oral LD50 (rat):	>2000 mg/kg
Eye Effects (rabbit):	>5,000 mg/kg
Skin Effects (rabbit):	Slight to moderate irritation
Sensitization:	Sensitization test according to Magnusson/Kligmann (maximizing test): The results of test in guinea pigs showed a significant skin sensitizing potential.
Mutagenicity:	Ames test: No indication of mutagenic effects.

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## 12. ECOLOGICAL INFORMATION

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<b>Fish Toxicity:</b>	LC50 = 66 mg/l (Brachydanio rerio (Zebra Barbel). Duration of test 96 hours.
<b>Invertebrate Toxicity:</b>	EC50 = 88.60 mg/l (Daphnia magna). Duration of test 48 hours.
<b>Biological Elimination:</b>	Biodegradability: 13% - not readily degradable. Degradation rate is 28 days
<b>Inhibition Bacteria:</b>	EC50 = 3110 mg/l
<b>Plant Toxicity:</b>	EC50 = 113 mg/l (Green algae (Scenedesmus subspicatus)). Duration of test 72 hours.

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## 13. DISPOSAL CONSIDERATIONS

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The generation of waste should be avoided or minimized wherever possible.

Disposal should be in accordance with local, state, provincial or national regulations. This material is not a hazardous waste under RCRA 40 CFR 261. Small quantities should be treated with a decontamination solution (See Section 6). The treated waste is not a hazardous material under RCRA 40 CFR 261. Chemical waste, even small quantities should never be poured down drains, sewers or waterways.

Empty containers should be decontaminated and either passed to an approved drum recycler or destroyed.

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## 14. TRANSPORTATION INFORMATION

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Date Prepared: 10/07/2005

Date Modified: 10/07/2005

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**DOT:** Single containers less than 5,000 lbs. are not regulated. Single containers with 5,000 lbs or more of 4,4'-MDI are regulated as: Other Regulated Substances, Liquid, N.O.S. (Methylene Diphenyl Diisocyanate), 9, NA3082, PgIII, RQ.

**Transportation Emergency Telephone Number:** 1-800-424-9300 (CHEMTREC)

**DOT (Domestic Surface):** Not Regulated.

**IMO/IMDG code (Ocean):** Not Regulated.

**ICAO/IATA (Air):** Not Regulated.

## 15. REGULATORY INFORMATION

### 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.

This product does not contain nor is it manufactured with ozone depleting substances.

**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, Pennsylvania Right-to-Know, New Jersey Right-to-Know, CERCLA.

### 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).

## 16. OTHER INFORMATION

**GLOSSARY:** ACHIG- American Conference of Governmental Industrial Hygienists

IARC - International Agency for Research on Cancer

NTP - National Toxicology Program

OSHA - Occupational Safety and Health Administration

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).

# MATERIAL SAFETY DATA SHEET

Date Prepared: 10/07/2005

Date Revised: 10/07/2005

Date Printed: 11/13/2009

## 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

# MATERIAL SAFETY DATA SHEET

Date Prepared: 05/09/2002

Date Revised: //10/2005

Date Printed: 11/13/2009

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-

# MATERIAL SAFETY DATA SHEET

Date Prepared: 05/09/2002

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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

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

### 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).