



THE HANSON GROUP, LLC  
GOOD PEOPLE, GREAT SCIENCE

## SAFETY DATA SHEET

### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

**Product identifier:** TCS 357 M; Part A  
**Other means of identification:** Isocyanate Pre-Polymer  
**Chemical use and restrictions:** For use in formulating and coating  
For use only by a professional formulator or coater  
**Manufacturer:** Hanson Group LLC  
900 McFarland 400 Boulevard  
Alpharetta, GA 30004  
770-495-9554  
**24 Hour emergency response** CHEMTREC 800-424-9300

### SECTION 2. HAZARD(S) IDENTIFICATION

#### Emergency Overview

#### Classification of the substance or mixture

#### GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Acute toxicity, Inhalation (Category 4), H332

Skin irritation (Category 2), H315

Eye irritation (Category 2A), H319

Respiratory sensitization (Category 1), H334

Skin sensitization (Category 1), H317

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

Specific target organ toxicity - repeated exposure, Inhalation (Category 2), Respiratory system, H373

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### GHS Label elements, including precautionary statements

**Signal word**                      Danger

#### **Hazard statement(s)**

H315                      Causes skin irritation.  
H317                      May cause an allergic skin reaction.  
H319                      Causes serious eye irritation.  
H332                      Harmful if inhaled.  
H334                      May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H335                      May cause respiratory irritation.  
H373                      May cause damage to organs (Respiratory system) through prolonged or repeated exposure if inhaled.

#### **Precautionary statement(s)**

P201                      Obtain special instructions before use.  
P202                      Do not handle until all safety precautions have been read and understood.  
P260                      Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P264                      Wash skin thoroughly after handling.  
P271                      Use only outdoors or in a well-ventilated area.  
P272                      Contaminated work clothing should not be allowed out of the workplace.  
P280                      Wear protective gloves/ eye protection/ face protection.  
P302 + P352            IF ON SKIN: Wash with plenty of soap and water.  
P304 + P340            IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305 + P351 + P338    IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313            IF exposed or concerned: Get medical advice/ attention.  
P321                      Specific treatment (see supplemental first aid instructions on this label).  
P333 + P313            If skin irritation or rash occurs: Get medical advice/ attention.  
P337 + P313            If eye irritation persists: Get medical advice/ attention.  
P362                      Take off contaminated clothing and wash before reuse.  
P403 + P233            Store in a well-ventilated place. Keep container tightly closed.  
P405                      Store locked up.  
P501                      Dispose of contents/ container to an approved waste disposal plant.

#### **NFPA Rating**

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Flammability: 1  
Health: 2  
Reactivity: 1

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

**Hazards not otherwise classified (HNOC) or not covered by GHS - Lachrymator**

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name  | Wt. %          | CAS            |
|----------------|----------------|----------------|
| Trade Secret * | Trade Secret * | Trade Secret * |
| Trade Secret * | Trade Secret * | Trade Secret * |

\*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

### SECTION 4. FIRST-AID MEASURES

**Precautions:** First aid providers should avoid direct contact with this chemical. Wear protective equipment as necessary.

**Eye contact:** Flush immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult a physician.

**Skin contact: REMOVE FROM SKIN IMMEDIATELY.** Take off all contaminated clothing immediately. Remove adhering matter immediately. Use waterless hand cleaner. Then wash with lots of water and soap.

**After inhalation:** Remove the victim into fresh air. Symptoms include irritation of the respiratory tract or asthmatic reaction.

**After ingestion:** Do not induce vomiting without medical advice.

**Medical Attention:** Consult a physician if any of these events occur.

**General:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

### SECTION 5. FIRE FIGHTING MEASURES

**Flammable properties:** The material can burn if heated. Flashpoint is 204<sup>o</sup> C.

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**Suitable extinguishing media:** Water fog or fine spray. Foam. Dry chemical. Carbon dioxide (CO<sub>2</sub>). Alcohol resistant foams are preferred for large fires. Use water spray to cool fire-exposed containers.

**Unsuitable extinguishing media:** Do not use a solid water stream as it may scatter and spread fire. Use caution when using water, contamination of product will generate carbon dioxide gas.

**Fire and explosion hazards:** Cool containers / tanks with water spray. In the event of fire and/or explosion do not breathe fumes. Heating/burning can release hazardous gases: carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>). Polymeric MDI decomposes rapidly above 204<sup>o</sup> C.

**Special protective equipment:** Wear protective clothing. In case of respirable dust and/or fumes, use self-contained breathing apparatus.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

**SMALL SPILL:** Dike area to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover spilled material on absorbent, such as diatomaceous earth, sawdust, vermiculite, or any appropriate readily available material and sweep or shovel absorbed material into closed containers for disposal. After all visible traces, including ignitable vapors, have been removed thoroughly wash the contaminated area. Do not flush to sewer. If area of spill is porous, remove as much contaminated earth and gravel, etc. as necessary and place in closed containers for disposal.

Wear the appropriate personal protective equipment designated in Section 8, remove the leaking container to a containment area and place into an appropriate container to prevent any further spill.

**LARGE SPILL:** Construct temporary dikes of dirt or sand to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover spilled material on absorbent, such as diatomaceous earth, sawdust, vermiculite, or any appropriate readily available material and sweep or shovel adsorbed material into closed containers for disposal. If area of spill is porous, remove as much contaminated earth and gravel, etc. as necessary and place in closed containers for disposal.

Wear the appropriate personal protective equipment designated in Section 8, close or cap leaking valves and/or block or plug hole in leaking container. Remove the leaking containers to a containment area and place into an appropriate container to prevent any further spill.

Contain material as described above and call the local fire, police, or appropriate emergency response provider for immediate emergency assistance.

### ENVIRONMENTAL PRECAUTIONS

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**WATER SPILL:** Construct temporary dikes of dirt, sand, or any appropriate readily available material to prevent spreading of material into sources of water.

**GENERAL PROCEDURES:** Absorb spill with an emergency spill kit, diatomaceous earth, saw dust or equivalent inert material. Shovel up and dispose of at an appropriate waste disposal facility following applicable laws and regulations.

### SECTION 7. HANDLING AND STORAGE

**GENERAL PROCEDURES:** Store product in original containers. Store container in a secure cool, dry, well-ventilated area. Opened containers should be blanketed with nitrogen gas at atmospheric pressure to avoid reaction with moisture. Contamination with moisture or "basic" compounds can cause dangerous pressure buildup in closed containers.

#### **Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Further processing of solid materials may result in the formation of combustible dusts. The potential for combustible dust formation should be taken into consideration before additional processing occurs. Provide appropriate exhaust ventilation at places where dust is formed. Use with sufficient ventilation to keep employee exposure below recommended limits. Provide adequate ventilation for storage, handling and use, especially for enclosed or low spaces. Avoid contact of liquid with eyes and prolonged skin exposure. Avoid breathing in vapors, mists, and aerosols. Do not allow product to contact open flame or electrical heating elements because dangerous decomposition products may form.

#### **Conditions for safe storage, including any incompatibilities**

Keep container tightly closed in a dry and well-ventilated place.

Recommended storage temperature -20 °C

Handle and store under inert gas. Moisture sensitive.

**INCOMPATIBLE MATERIALS:** Will react with amines, water and acids.

**COMMENTS:** If bulging of containers occurs, transfer to a well-ventilated area and open carefully to relieve pressure then reseal.

### SECTION 8. EXPOSURE CONTROL/PERSONAL PROTECTION

**PEL:** Not determined.

**TLV:** Not determined.

**Engineering measures:** Ensure adequate ventilation, especially in confined areas.

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**Personal protection equipment:** Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice.

**Eye protection:** Tightly fitting safety goggles or face-shield as appropriate.

**Hand protection:** Solvent-resistant gloves.

**Skin and body protection:** Solvent-resistant apron and boots. Protective suit. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

**Respiratory protection:** In case of insufficient ventilation wear suitable respiratory equipment with filter classification: N-95 or if oil/liquid aerosols are present P-95 (42 CFR 84). In USA use a NIOSH/MSHA approved respirator.

**COMMENTS:** Always practice "good personal hygiene" during and after use of this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics. DO NOT eat, drink, or smoke in work areas that contain hazardous chemicals.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

These data do not represent technical or sales specifications.

#### APPEARANCE/PHYSICAL STATE

Amber liquid.

#### ODOR

sharp, pungent

#### VAPOR PRESSURE

$<1 \times 10^{-5}$  mm Hg @ 25C

#### SPECIFIC GRAVITY

N.D.

### SECTION 10. STABILITY AND REACTIVITY

#### CHEMICAL STABILITY

Stable under recommended storage conditions.

#### INCOMPATIBILITY WITH OTHER MATERIALS

Avoid contact with acids, water, alcohols, amines, ammonia, bases, moist air, and strong oxidizers. Avoid contact with metals such as aluminum, brass, copper, galvanized metals, tin, zinc. Avoid contact with moist organic absorbents. Reaction with water

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will generate carbon dioxide and heat. Generation of gas can cause pressure buildup in closed systems. Avoid unintended contact with polyols. The reaction of polyols and isocyanates generate heat. Diisocyanates react with many materials and the rate of reaction increases with temperature as well as increased contact; these reactions can become violent. Contact is increased by stirring or if the other material mixes with the diisocyanate. Diisocyanates are not soluble in water and are denser than water and sink to the bottom, but react slowly at the interface. The reaction forms carbon dioxide gas and a layer of solid polyurea.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Gases are released during decomposition.

### HAZARDOUS POLYMERIZATION

Can occur. Polymerization can be catalyzed by: strong bases and water. Can react with itself at temperatures above 320F (160C).

**Reactivity:** Will react rapidly with amines

## SECTION 11. TOXICOLOGICAL INFORMATION

### Toxicity note

Data for Pre-polymer of similar composition

### Acute oral toxicity

LD50: > 2,000 mg/kg (rat,  
Male/Female)

### Acute inhalation toxicity

LC50: 490 mg/m<sup>3</sup>,  
4 h (rat)

### Repeated dose toxicity

90 Days, inhalation: NOAEL: 1 mg/m<sup>3</sup>, (rat, Male/Female, 6  
hrs/day 5 days/week)  
Irritation to lungs and nasal cavity.  
2 years, inhalation: NOAEL: 0.2, (rat, Male/Female, 6 hrs/day 5  
days/week)  
Irritation to lungs and nasal cavity.

### Mutagenicity

Genetic Toxicity in Vitro:  
Bacterial - gene mutation assay: negative (Salmonella typhimurium, Metabolic  
Activation: with/without)

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### **Carcinogenicity**

rat, Male/Female, inhalation, 2 Years, 6 hrs/day 5 days/week,  
Exposure to a level of 6 mg/m<sup>3</sup> polymeric MDI was related to the occurrence of lung tumors. This level is significantly over the TLV for MDI.

### **Developmental Toxicity/Teratogenicity**

rat, female, inhalation, gestation days 6-15, 6 hrs/day, NOAEL (teratogenicity): 12 mg/m<sup>3</sup>, NOAEL (maternal): 4 mg/m<sup>3</sup>

No Teratogenic effects observed at doses tested., Fetotoxicity seen only with maternal toxicity.

### **Toxicity Data for**

#### **Polyurethane Prepolymer**

##### **Toxicity Note**

No data available for this component.

#### **Toxicity Data for 4,4'-Diphenylmethane**

##### **Diisocyanate (MDI) Acute inhalation toxicity**

LC50: 369 mg/m<sup>3</sup>, 4 h (rat, Male/Female)

LC50: > 2240 mg/m<sup>3</sup>, 1 h (rat) (OECD Test

Guideline 403)

##### **Acute dermal toxicity**

LD50: > 10,000 mg/kg

(rabbit)

##### **Skin irritation**

rabbit, Draize Test, Slightly

irritating

Human, irritating

##### **Eye irritation**

rabbit, Draize, Moderately

irritating

##### **Sensitisation**

dermal: sensitizer (guinea pig,

Maximization Test)

inhalation: sensitizer (Guinea pig)

##### **Repeated dose toxicity**

90 Days, inhalation: NOAEL: 0.3 mg/m<sup>3</sup>, (rat, Male/Female, 18 hrs/day, 5 days/week)

Irritation to lungs and nasal cavity.

(Human)

Irritation to lungs and nasal cavity.

##### **Mutagenicity**



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### Genetic Toxicity in Vitro:

Ames: (Salmonella typhimurium, Metabolic Activation: with/without)  
Positive and negative results were reported. The use of certain solvents which rapidly hydrolyze diisocyanates is suspected of producing the positive mutagenicity results.

### Genetic Toxicity in Vivo:

Micronucleus Assay: (mouse)

negative

Micronucleus test: negative (rat, male, Inhalative (exposure period: 3x1h/day over 3 weeks))

negative

### **Carcinogenicity**

rat, Female, inhalation, 2 Years, 17 hrs/day,

5 days/week,

negative

### **Other Relevant Toxicity**

#### **Information**

May cause irritation of  
respiratory tract.

## SECTION 12. ECOLOGICAL INFORMATION

### Biodegradation

0 %, Exposure time: 28 d, i.e. not degradable

### Bioaccumulation

Oncorhynchus mykiss (rainbow trout), Exposure time: 112 d, < 1 BCF

Does not bioaccumulate.

### Acute and Prolonged Toxicity to Fish

LC0: > 1,000 mg/l (Danio rerio (zebra fish), 96 h)

LC0: > 3,000 mg/l (Oryzias latipes (Orange-red killifish), 96 h)

### Acute Toxicity to Aquatic Invertebrates

EC50: > 1,000 mg/l (Water flea (Daphnia magna), 24 h)

### Toxicity to Aquatic Plants

NOEC: 1,640 mg/l, End Point: growth (Green algae (Scenedesmus subspicatus), 72 h)

### Toxicity to Microorganisms

EC50: > 100 mg/l, (activated sludge, 3 h)

### Additional Ecotoxicological Remarks

Ecotoxicity data based on polymeric MDI

Ecological Data for Polyurethane Prepolymer

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Additional Ecotoxicological Remarks

No data available for this component.

Ecological Data for Diphenylmethane Diisocyanate (MDI) Mixed Isomers

Additional Ecotoxicological Remarks

No data available for this component.

Ecological Data for 4,4'-Diphenylmethane Diisocyanate (MDI)

Acute and Prolonged Toxicity to Fish

LC50: > 500 mg/l (Zebra fish (*Brachydanio rerio*), 24 h)

Acute Toxicity to Aquatic Invertebrates

EC50: > 500 mg/l (Water flea (*Daphnia magna*), 24 h)

### SECTION 13. DISPOSAL CONSIDERATIONS

**Provisions relating to waste:** EPA - Resource Conservation and Recovery Act (RCRA)

Hazardous and Solid Waste Management Regulations must be followed.

**Disposal information:** Dispose of in compliance with all applicable regulations. Can be incinerated by an approved facility that is in compliance with the local regulations. Empty remaining contents. Do not reuse empty containers. This product (in its fresh unused state) is not listed by generic name or trademark name in the U.S. EPA's RCRA regulations and does not possess any of the four identifying characteristics of hazardous waste (ignitability, corrosivity, reactivity or toxicity).

### SECTION 14. TRANSPORTATION INFORMATION

Land transport (DOT)

Proper shipping name:

Other regulated substances, liquid, n.o.s. (contains 4,4'-Diphenylmethane Diisocyanate (MDI))

Hazard Class or Division: 9

UN/NA Number: NA3082

Packaging group: III

Hazard Label(s):

Class 9

RSPA/DOT Regulated Components:

4,4'-Diphenylmethane Diisocyanate (MDI)

Reportable Quantity:

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10549 kg (23257 lb)

Sea transport (IMDG)  
Non-Regulated

Air transport (ICAO/IATA)  
Non-Regulated

Additional Transportation Information

When in individual containers of less than the Product RQ, this material ships as non-regulated.

### SECTION 15. REGULATORY INFORMATION

#### United States Federal Regulations

OSHA Hazcom Standard Rating: Hazardous

US. Toxic Substances Control Act:  
All components are listed on the TSCA Inventory.

US. EPA CERCLA Hazardous Substances (40 CFR 302):  
Components  
4,4'-Diphenylmethane Diisocyanate (MDI)  
Reportable quantity: 5000 lbs

SARA Section 311/312 Hazard Categories:  
Acute Health Hazard, Chronic Health Hazard

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III  
Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A):  
Components  
None

US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III  
Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required:  
Components  
4,4'-Diphenylmethane Diisocyanate (MDI)

### SECTION 16. OTHER INFORMATION

Date written: July 31, 2015

Revision Information: No revisions

## TCS 357 M; Part A

**MANUFACTURER DISCLAIMER:** This SDS to the best of our knowledge conforms to the requirements of OSHA 29 CFR 1910.1200, 91/155/EEC and summarizes the health and safety hazard information and general guidance on how to safely handle the material at the date of issue. Each user must review the SDS in the context of how the product will be handled and used in the workplace. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company. Responsibility for the product sold is subject to our standard terms and conditions, a copy of which is available upon request. This company warrants only that its products meet the specifications stated in the sales contract. Typical properties, where stated, are to be considered as representative of current production and should not be treated as specifications. While all the information presented in this document is believed to be reliable and to represent the best available data on these products, **NO GUARANTEE, WARRANTY, OR REPRESENTATION IS MADE, INTENDED, OR IMPLIED AS TO THE CORRECTNESS, OR SUFFICIENCY OF ANY INFORMATION, OR AS TO THE MERCHANTABILITY OR SUITABILITY OR FITNESS OF ANY CHEMICAL COMPOUNDS OR OTHER PRODUCTS FOR ANY PARTICULAR USE OR PURPOSE, OR THAT ANY CHEMICAL COMPOUNDS OR OTHER PRODUCTS OR THE USE THEREOF ARE NOT SUBJECT TO A CLAIM BY A THIRD PARTY FOR INFRINGEMENT OF ANY PATENT OR OTHER INTELLECTUAL PROPERTY RIGHT.** Some of the information presented and conclusions drawn herein are from sources other than direct test data on the product itself. Liability by this company for all claims, whether arising out of breach of warranty, negligence, strict liability, or otherwise, is limited to the purchase price of the material. Products may be toxic and require special precautions in handling. For all products listed, the user should obtain detailed information on toxicity, together with the proper shipping, handling and storage procedures, and comply with all applicable safety and environmental standards. Toxicity and risk characteristics of chemical compounds and other products may differ when used with other materials or in a manufacturing or other process. Those risk characteristics should be determined by the user and made known to handlers, processors, and end users.