

# Material Safety Data Sheet

Material Name: TUFCEM® II SPRAY GRADE – PART B

ID:

## \*\*\* Section 1 - Chemical Product and Company Identification \*\*\*

Product Trade Name TUFCEM II SPRAY GRADE – PART B

### Manufacturer Information

Ergon Armor (601) 933-3540  
Corrosion Engineering  
P.O. Box 1639 (800) 424-9300  
Jackson, MS 39215-1639

## \*\*\* Section 2 - Composition / Information on Ingredients \*\*\*

| Component                                      | CAS #     | Typical Wt. % | OSHA |
|--|-----------|---------------|------|
| Benzene, 1,1'-methylenebis[4-isocyanato- (MDI) | 101-68-8  | 10-35         | Y    |
| Polymethylene polyphenylisocyanate             | 9016-87-9 | 65-90         | Y    |

The substance(s) marked with a "Y" in the OSHA column, are identified as hazardous chemicals according to the criteria of the OSHA Communication Standard (29 CFR 1910.1200)

This material is classified as hazardous under Federal OSHA regulation.

The components of this product are all on the TSCA inventory list.

## \*\*\* Section 3 - Hazards Identification \*\*\*

### Emergency Overview:

Clear, light yellow to dark amber liquid, mild odor

WARNING!

CAUSES EYE, SKIN AND RESPIRATORY TRACT IRRITATION.

MAY CAUSE SENSITIZATION BY INHALATION AND SKIN CONTACT.

### Potential Health Effects:

Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. Single inhalation exposure to high concentrations may be irritating to eyes and respiratory tract with symptoms such as a burning sensation in the nose and mouth, runny nose, sore throat, coughing and chest discomfort. Repeated exposure has resulted in an allergic respiratory reaction (respiratory sensitization) with asthmatic-or pneumonia-like symptoms. Individuals with respiratory sensitization may experience delayed symptoms of chest tightness, wheezing, cough, shortness of breath or fever. Long-term exposure in the workplace has been reported to cause decreased lung function and long-term inhalation studies in rats have resulted in increased lung tumors at levels that caused fibrotic changes. Limited human epidemiological studies have not shown any significant increase in cancer associated with exposure to isocyanates. Inhalation exposure to this material may aggravate pre-existing lung disorders.

Direct contact of liquid with eyes can be severely irritating with symptoms such as tearing, redness, swelling and eye damage. This material may be absorbed through the skin, resulting in an allergic skin reaction and contributing to respiratory sensitization. Contact of liquid with skin may be irritating with symptoms such as redness, swelling, rash, scaling or blistering. While swallowing of this material is unlikely in the industrial setting, if swallowed, this material may be irritating to the mouth, throat, stomach and digestive tract. Symptoms of injury may include sore throat, abdominal

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pain, nausea, vomiting and diarrhea. This material is considered, on the basis of single exposure (acute) animal tests, to be practically non-toxic after ingestion (swallowing) and skin contact, moderately toxic after inhalation, slightly to moderately irritating to skin and slightly irritating to eyes.

## \*\*\* Section 4 - First Aid Measures \*\*\*

**IF IN EYES**, immediately flush with plenty of water for at least 15 minutes. Get medical attention.

**IF ON SKIN**, immediately wash with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Destroy contaminated shoes.

**IF SWALLOWED**, do NOT induce vomiting. Give water to drink. Get medical attention. Call a Poison Control Center. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

**IF INHALED**, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

## \*\*\* Section 5 - Fire Fighting Measures \*\*\*

### Fire & Explosion Hazards:

|                           |            |                         |
|---------------------------|------------|-------------------------|
| Auto-Ignition Temperature | NE         |                         |
| Flash Point               | 250 deg F  | Flash Point Method PMCC |
| Flammable Limits-         | Upper - NE |                         |
|                           | Lower - NE |                         |

### Extinguishing Media

Use water spray, carbon dioxide, foam or dry chemical.

### Fire Fighting Instructions

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand NIOSH approved or equivalent). Fire fighting equipment should be thoroughly decontaminated after use.

### Fire and Explosion Hazards

Avoid breathing fumes from fire-exposed material.

## \*\*\* Section 6 - Accidental Release Measures \*\*\*

### Spill or Leak

Contain spill. Stop leak at source if this can be done safely. Ventilate area. Nonessential personnel should leave the area until cleanup is completed. Pump liquid into DOT-approved drums for disposal. Absorb remaining liquid onto inert absorbent and place in DOT approved drums for disposal. Wash area with water. Keep concentrate and wash water from entering sewers or waterways. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

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## \*\*\* Section 7 - Handling and Storage \*\*\*

### Handling Procedures:

Do not taste or swallow. Do not get in eyes, on skin or clothing. Avoid breathing vapor or mist. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Empty container may contain hazardous residues.

### Storage Procedures:

Store in a cool, dry place. Avoid excessive heat. Store out of direct sunlight in a cool, well-ventilated place.

## \*\*\* Section 8 - Exposure Controls / Personal Protection \*\*\*

### Component Exposure Limits

The established Airborne Exposure Guidelines are listed below (figures are listed for MDI. The polymeric forms of MDI have no established airborne exposure limits):

ACGIH: 0.005 ppm TWA; 0.2 mg/m<sup>3</sup> TWA  
OSHA: 0.02 ppm Ceiling; 0.2 mg/m<sup>3</sup> Ceiling  
NIOSH: 0.005 ppm TWA; 0.05 mg/m<sup>3</sup> TWA  
0.020 ppm Ceiling (10 minute); 0.2 mg/m<sup>3</sup> Ceiling (10 minute)

-Only those components with exposure limits are printed in this section.

-Skin contact limits designated with a "Y" above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required.

-ACGIH Sensitizer designator with a value of "Y" above means that exposure to this material may cause allergic reactions.

### Engineering Controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits. Provide ventilation if necessary to control exposure levels below airborne exposure limits (see below). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

### Personal Protective Equipment

As prescribed in the OSHA Standard for Personal Protective Equipment (29 CFR 1910.132), employers must perform a Hazard Assessment of all workplaces to determine the need for, and selection of, proper protective equipment for each task performed.

### Eyes/Face Protective Equipment:

Where there is potential for eye contact, wear chemical goggles and have eye-flushing equipment available.

### Skin Protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Rinse contaminated skin promptly. Wash contaminated clothing and clean protective equipment before reuse. Wash skin thoroughly after handling.

### Respiratory Protection:

Avoid breathing vapor or mist. When airborne exposure limits are exceeded (see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Consult respirator manufacturer to determine appropriate type equipment for given application. Observe respirator use limitations

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specified by NIOSH or the manufacturer. For emergency and other conditions where exposure limit may be significantly exceeded, use an approved full-face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

## \*\*\* Section 9 - Physical & Chemical Properties \*\*\*

|                     |   |
|---------------------|---|
| Appearance/Odor     | light yellow to dark amber, viscous liquid with mild odor |
| pH                  | NA  |
| Specific Gravity    | 1.11 @ 25/25 C  |
| Vapor Pressure      | <1 mm Hg @ 20 C   |
| Vapor Density       | 8.5 (Air = 1)   |
| Melting Point       | NA  |
| Freezing Point      | <0 deg C  |
| Boiling Point       | 406 F   |
| Solubility In Water | Negligible  |
| Percent Volatile    | 0%  |

## \*\*\* Section 10 - Chemical Stability & Reactivity Information \*\*\*

### Chemical Stability:

This material is chemically stable under normal and anticipated storage and handling conditions. However, this material can undergo hazardous polymerization. See Hazardous Polymerization below for conditions to avoid.

### Incompatibility:

Contact with strong acids, alkalis and oxidizers causes violent reaction and heat.

### Decomposition Products:

Oxides of carbon, nitrogen oxides, traces of MCN, MDI.

### Hazardous Polymerization:

None expected.

## \*\*\* Section 11 - Toxicological Information \*\*\*

Data on this material and/or its components are summarized below.

### A: General Product Information

Isocyanates, in general, are irritating to skin, eyes and respiratory tract, causing damage to mucous membranes and are common cause of allergic sensitization of respiratory tract

### B: Component Analysis - LD50/LC50

#### Polymethylene polyphenylisocyanate (9016-87-9)

Inhalation LC50 Rat: 490 mg/m<sup>3</sup>/4H

Oral LD50 Rat: 49 gm/kg

Dermal LD50 Rabbit: >9400 mg/kg

#### Benzene, 1,1'-methylenebis[4-isocyanato- (101-68-8)

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Inhalation LC50 Rat: 178 mg/m<sup>3</sup>

Oral LD50 Rat: 9200 mg/kg

Oral LD50 Mouse: 2200 mg/kg

## Component Carcinogenicity

**Polymethylene polyphenylisocyanate (9016-87-9)**

IARC: Supplement 7, 1987; Monograph 19, 1979 (Group 3 (not classifiable))

**Benzene, 1,1'-methylenebis[4-isocyanato- (101-68-8)**

IARC: Monograph 71, 1999; Supplement 7, 1987; Monograph 19, 1979 (Group 3 (not classifiable))

## Chronic Toxicity

No information available for the product.

## Epidemiology:

No information available for the product.

## Neurotoxicity:

No information available for the product.

## Mutagenicity:

No information available for the product.

## Teratogenicity:

No information available for the product.

## \*\*\* Section 12 - Ecological Information \*\*\*

## Ecotoxicity:

### A: General Product Information

No information available for the product.

### B: Component Analysis - Ecotoxicity - Aquatic Toxicity

No ecotoxicity data are available for this product's components.

## Environmental Fate:

No data is available concerning the environmental fate, biodegradation or bioconcentration for this product.

## \*\*\* Section 13 - Disposal Considerations \*\*\*

## US EPA Waste Numbers & Descriptions:

### A: General Product Information

Recover, reclaim or recycle when practical. Dispose of in an approved landfill if allowed locally. Comply with federal, state, and local regulations. Dispose of in a permitted waste management facility if landfill is not practical.

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Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

## B: Component Waste Numbers

No EPA Waste Numbers are applicable for this product's components.

### \*\*\* Section 14 - Transportation Information \*\*\*

#### US DOT Information

|                    |  |
|--------------------|--|
| DOT Name           | N/A – NOT REGULATED BY DOT, IATA OR IMDG |
| DOT Technical Name | N/A                                      |
| UN Number          | N/A                                      |
| DOT Packing Group  | N/A                                      |

### \*\*\* Section 15 - Regulatory Information \*\*\*

#### US Federal Regulations

##### Hazard Categories Under Criteria of SARA Title III Rules (40 CFR Part 370)

|                            |   |
|----------------------------|---|
| Immediate (Acute) Health   | Y |
| Delayed (Chronic) Health   | Y |
| Fire                       | N |
| Reactive                   | N |
| Sudden Release of Pressure | N |

The components of this product are all on the TSCA inventory list.

## B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

##### Polymethylene polyphenylisocyanate (9016-87-9)

SARA 313: 1.0 percent de minimis concentration (Listed under "Diisocyanates")

##### Benzene, 1,1'-methylenebis[4-isocyanato- (101-68-8)

SARA 313: 1.0 percent de minimis concentration (Listed under "Diisocyanates")  
CERCLA: 5000 lb final RQ; 2270 kg final RQ

#### SARA Reportable Quantities

#### CERCLA RQ

#### SARA TPQ

Benzene, 1,1'-methylenebis[4-isocyanato-

5000 LBS

#### State Regulations

##### A: General Product Information

No additional information available.

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## B: Component Analysis – State

### Massachusetts Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Massachusetts Right to Know Substance List. Polymethylene polyphenylisocyanate  
Benzene, 1,1'-methylenebis[4-isocyanato-

### New Jersey Right to Know

This product does contain the following chemical(s), as indicated below, currently on the New Jersey Right to Know Substance List. Polymethylene polyphenylisocyanate  
Benzene, 1,1'-methylenebis[4-isocyanato-

### Pennsylvania Right to Know

This product does contain the following chemical(s), as indicated below, currently on the Pennsylvania Right to Know Substance List. Polymethylene polyphenylisocyanate  
Benzene, 1,1'-methylenebis[4-isocyanato-

## Other Regulations

### A: General Product Information

The components of this product are all on the TSCA inventory list.

### B: Component Analysis – Inventory/Component Analysis - Inventory

| Component                                | CAS #     | TSCA | DSL | EINECS |
|--|-----------|------|-----|--------|
| Benzene, 1,1'-methylenebis[4-isocyanato- | 101-68-8  | Yes  | Yes | Yes    |
| Polymethylene polyphenylisocyanate       | 9016-87-9 | Yes  | Yes | Yes    |

### C: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

| Component                                | CAS #     | Minimum Concentration |
|--|-----------|-----------------------|
| Benzene, 1,1'-methylenebis[4-isocyanato- | 101-68-8  | 1%                    |
| Polymethylene polyphenylisocyanate       | 9016-87-9 | 1%                    |

## \*\*\* Section 16 - Other Information \*\*\*

### Key/Legend

EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; NFPA = National Fire Protection Association; HMIS = Hazardous Material Identification System; CERCLA = Comprehensive Environmental Response, Compensation and Liability Act; SARA = Superfund Amendments and Reauthorization Act

The information presented herein is believed to be factual as it has been derived from the works and opinions of persons believed to be qualified experts; however, nothing contained in this information is to be taken as a warranty or representation for which Ergon Armor bears legal responsibility. The user should review any recommendations in the specific context of the intended use to determine whether they are appropriate.

