



## Safety Data Sheet

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|------------------------|-----------|-------------------------|----------|
| <b>Document Group:</b> | 30-3666-2 | <b>Version Number:</b>  | 2.00     |
| <b>Issue Date:</b>     | 11/14/14  | <b>Supersedes Date:</b> | 12/12/12 |

### Product identifier

3M™ Aerospace Sealant AC-236 B-2

### ID Number(s):

70-0052-0097-0, 70-0052-0100-2, 70-0052-0101-0, 70-0052-0102-8, 70-0052-0103-6, 70-0052-0106-9, 70-0052-0107-7, 70-0052-0108-5, 70-0052-0569-8, 70-0052-2042-4, 70-0052-2043-2, 70-0052-2044-0, 70-0052-2045-7, 70-0052-2046-5, 70-0052-2047-3, 70-0052-2048-1, 70-0052-2049-9, 70-0052-2050-7, 70-0052-2051-5

### Recommended use

Sealant

### Supplier's details

**MANUFACTURER:** 3M  
**DIVISION:** Aerospace and Commercial Transportation Division

**ADDRESS:** 3M Center, St. Paul, MN 55144-1000, USA  
**Telephone:** 1-888-3M HELPS (1-888-364-3577)

### Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

**This product is a kit or a multipart product which consists of multiple, independently packaged components. A Safety Data Sheet (SDS), Article Information Sheet (AIS), or Article Information Letter (AIL) for each of these components is included. Please do not separate the component documents from this cover page. The document numbers for components of this product are:**

30-3230-7, 30-3124-2

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| <b>Document Group:</b> | 30-3124-2 | <b>Version Number:</b>  | 4.00     |
| <b>Issue Date:</b>     | 02/13/15  | <b>Supersedes Date:</b> | 11/14/14 |

### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Aerospace Sealant AC-236 B-2 Catalyst

#### Product Identification Numbers

LC-B100-1122-3, LC-B100-1122-4, LC-B100-1122-5, LC-B100-1122-6, LC-B100-1122-7, LC-B100-1122-8, LC-B100-1122-9, LC-B100-1123-0, LC-B100-1123-1, 42-0044-2011-5, 70-0052-1985-5

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Hardener, For industrial or professional use only.

#### 1.3. Supplier's details

|                      |  |
|----------------------|--|
| <b>MANUFACTURER:</b> | 3M   |
| <b>DIVISION:</b>     | Aerospace and Commercial Transportation Division |
| <b>ADDRESS:</b>      | 3M Center, St. Paul, MN 55144-1000, USA          |
| <b>Telephone:</b>    | 1-888-3M HELPS (1-888-364-3577)                  |

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Serious Eye Damage/Irritation: Category 1.

Skin Corrosion/Irritation: Category 2.

Reproductive Toxicity: Category 2.

Specific Target Organ Toxicity (repeated exposure): Category 1.

#### 2.2. Label elements

##### Signal word

Danger

##### Symbols

Corrosion | Health Hazard |

##### Pictograms



**Hazard Statements**

Causes serious eye damage.  
 Causes skin irritation.  
 Suspected of damaging fertility or the unborn child.

Causes damage to organs through prolonged or repeated exposure:  
 nervous system |  
 respiratory system |

**Precautionary Statements**

**Prevention:**

Obtain special instructions before use.  
 Do not handle until all safety precautions have been read and understood.  
 Do not breathe dust/fume/gas/mist/vapors/spray.  
 Wear protective gloves and eye/face protection.  
 Do not eat, drink or smoke when using this product.  
 Wash thoroughly after handling.

**Response:**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
 IF ON SKIN: Wash with plenty of soap and water.  
 If skin irritation occurs: Get medical advice/attention.  
 Take off contaminated clothing and wash it before reuse.  
 IF exposed or concerned: Get medical advice/attention.

**Storage:**

Store locked up.

**Disposal:**

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

**2.3. Hazards not otherwise classified**

None.

8% of the mixture consists of ingredients of unknown acute oral toxicity.  
 10% of the mixture consists of ingredients of unknown acute dermal toxicity.

**SECTION 3: Composition/information on ingredients**

| Ingredient                         | C.A.S. No. | % by Wt                |
|------------------------------------|------------|------------------------|
| MANGANESE DIOXIDE                  | 1313-13-9  | 55 - 70 Trade Secret * |
| HYDROGENATED TERPHENYL             | 61788-32-7 | 20 - 30                |
| PARTIALLY HYDROGENATED POLYPHENYLS | 68956-74-1 | 0 - 10                 |
| WATER                              | 7732-18-5  | 1 - 5                  |
| TERPHENYL                          | 26140-60-3 | 0.5 - 5                |
| SODIUM HYDROXIDE                   | 1310-73-2  | 0 - 2 Trade Secret *   |
| DISPERSING AGENT                   | 68412-53-3 | 1 - 2 Trade Secret *   |

|                   |           |                        |
|-------------------|-----------|------------------------|
| DIPHENYLGUANIDINE | 102-06-7  | 0.1 - 2 Trade Secret * |
| ZINC OXIDE        | 1314-13-2 | 0.1 - 0.5              |

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

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### Inhalation:

Remove person to fresh air. If you feel unwell, get medical attention.

#### Skin Contact:

Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

#### Eye Contact:

Immediately flush with large amounts of water for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Immediately get medical attention.

#### If Swallowed:

Rinse mouth. If you feel unwell, get medical attention.

### 4.2. Most important symptoms and effects, both acute and delayed

See Section 11.1. Information on toxicological effects.

### 4.3. Indication of any immediate medical attention and special treatment required

Not applicable

## SECTION 5: Fire-fighting measures

### 5.1. Suitable extinguishing media

In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

### 5.2. Special hazards arising from the substance or mixture

None inherent in this product.

### Hazardous Decomposition or By-Products

#### Substance

Carbon monoxide  
Carbon dioxide

#### Condition

During Combustion  
During Combustion

### 5.3. Special protective actions for fire-fighters

No special protective actions for fire-fighters are anticipated.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**6.2. Environmental precautions**

Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

**6.3. Methods and material for containment and cleaning up**

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible.

**SECTION 7: Handling and storage****7.1. Precautions for safe handling**

Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Avoid release to the environment. Use personal protective equipment (gloves, respirators, etc.) as required.

**7.2. Conditions for safe storage including any incompatibilities**

Store away from heat. Store away from acids.

**SECTION 8: Exposure controls/personal protection****8.1. Control parameters****Occupational exposure limits**

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

| Ingredient                     | C.A.S. No. | Agency | Limit type  | Additional Comments            |
|--------------------------------|------------|--------|---|--------------------------------|
| SODIUM HYDROXIDE               | 1310-73-2  | ACGIH  | CEIL:2 mg/m3  |                                |
| SODIUM HYDROXIDE               | 1310-73-2  | CMRG   | TWA:2 mg/m3   |                                |
| SODIUM HYDROXIDE               | 1310-73-2  | OSHA   | TWA:2 mg/m3   |                                |
| MANGANESE COMPOUNDS            | 1313-13-9  | OSHA   | CEIL(as Mn):5 mg/m3   |                                |
| MANGANESE, INORGANIC COMPOUNDS | 1313-13-9  | ACGIH  | TWA(as Mn, inhalable fraction):0.1 mg/m3;TWA(as Mn, respirable fraction):0.02 mg/m3 | A4: Not class. as human carcin |
| ZINC OXIDE                     | 1314-13-2  | ACGIH  | TWA(respirable fraction):2 mg/m3;STEL(respirable fraction):10 mg/m3                 |                                |
| ZINC OXIDE                     | 1314-13-2  | OSHA   | TWA(as fume):5 mg/m3;TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3   |                                |
| TERPHENYL                      | 26140-60-3 | ACGIH  | CEIL:5 mg/m3  |                                |
| TERPHENYL                      | 26140-60-3 | OSHA   | CEIL:9 mg/m3(1 ppm)   |                                |
| HYDROGENATED TERPHENYL         | 61788-32-7 | ACGIH  | TWA:0.5 ppm   |                                |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit  
CEIL: Ceiling

## 8.2. Exposure controls

### 8.2.1. Engineering controls

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

### 8.2.2. Personal protective equipment (PPE)

#### Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Full Face Shield  
Indirect Vented Goggles

#### Skin/hand protection

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity. Gloves made from the following material(s) are recommended: Polymer laminate

#### Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|  |  |
|--|--|
| <b>General Physical Form:</b>                  | Liquid                                     |
| <b>Odor, Color, Grade:</b>                     | Slight odor; black, viscous Liquid         |
| <b>Odor threshold</b>                          | <i>No Data Available</i>                   |
| <b>pH</b>                                      | <i>Not Applicable</i>                      |
| <b>Melting point</b>                           | <i>Not Applicable</i>                      |
| <b>Boiling Point</b>                           | <i>No Data Available</i>                   |
| <b>Flash Point</b>                             | >=200 °F [ <i>Test Method:</i> Closed Cup] |
| <b>Evaporation rate</b>                        | <i>No Data Available</i>                   |
| <b>Flammability (solid, gas)</b>               | Not Applicable                             |
| <b>Flammable Limits(LEL)</b>                   | <i>No Data Available</i>                   |
| <b>Flammable Limits(UEL)</b>                   | <i>No Data Available</i>                   |
| <b>Vapor Pressure</b>                          | <i>No Data Available</i>                   |
| <b>Vapor Density</b>                           | >=1 [ <i>Ref Std:</i> AIR=1]               |
| <b>Specific Gravity</b>                        | 1.97 [ <i>Ref Std:</i> WATER=1]            |
| <b>Solubility in Water</b>                     | Nil  |
| <b>Solubility- non-water</b>                   | <i>No Data Available</i>                   |
| <b>Partition coefficient: n-octanol/ water</b> | <i>Not Applicable</i>                      |
| <b>Autoignition temperature</b>                | <i>No Data Available</i>                   |

|                                |   |
|--------------------------------|---|
| Decomposition temperature      | No Data Available                                 |
| Viscosity                      | No Data Available                                 |
| Volatile Organic Compounds     | 0 g/l [Test Method: calculated SCAQMD rule 443.1] |
| VOC Less H2O & Exempt Solvents | 0 g/l [Test Method: calculated SCAQMD rule 443.1] |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This material is considered to be non reactive under normal use conditions.

### 10.2. Chemical stability

Stable.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

Heat

### 10.5. Incompatible materials

Reducing agents

Strong acids

### 10.6. Hazardous decomposition products

| <u>Substance</u> | <u>Condition</u> |
|------------------|------------------|
|------------------|------------------|

None known.

Refer to section 5.2 for hazardous decomposition products during combustion.

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

### 11.1. Information on Toxicological effects

#### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

#### Inhalation:

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May cause additional health effects (see below).

#### Skin Contact:

May be harmful in contact with skin.

Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain.



**Eye Contact:**

Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

**Ingestion:**

May be harmful if swallowed.

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

**Additional Health Effects:****Prolonged or repeated exposure may cause target organ effects:**

Neurological Effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and/or changes in blood pressure and heart rate.

Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

**Reproductive/Developmental Toxicity:**

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

**Toxicological Data**

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

**Acute Toxicity**

| Name                   | Route                          | Species | Value   |
|------------------------|--------------------------------|---------|---|
| Overall product        | Dermal                         |         | No data available; calculated ATE 2,000 - 5,000 mg/kg |
| Overall product        | Ingestion                      |         | No data available; calculated ATE 2,000 - 5,000 mg/kg |
| MANGANESE DIOXIDE      | Dermal                         | Rat     | LD50 2,000 mg/kg                                      |
| MANGANESE DIOXIDE      | Inhalation-Dust/Mist (4 hours) | Rat     | LC50 > 1.5 mg/l                                       |
| MANGANESE DIOXIDE      | Ingestion                      | Rat     | LD50 > 2,197 mg/kg                                    |
| HYDROGENATED TERPHENYL | Dermal                         | Rabbit  | LD50 6,800 mg/kg                                      |
| HYDROGENATED TERPHENYL | Inhalation-Dust/Mist (4 hours) | Rat     | LC50 > 11.1 mg/l                                      |
| HYDROGENATED TERPHENYL | Ingestion                      | Rat     | LD50 > 10,000 mg/kg                                   |
| TERPHENYL              | Dermal                         | Rabbit  | LD50 > 5,000 mg/kg                                    |
| TERPHENYL              | Inhalation-Dust/Mist (4 hours) | Rat     | LD50 > 3.8 mg/l                                       |
| TERPHENYL              | Ingestion                      | Rat     | LD50 2,304 mg/kg                                      |
| DISPERSING AGENT       | Ingestion                      | Rat     | LD50 4,450  |
| DIPHENYLGUANIDINE      | Dermal                         |         | estimated to be > 5,000 mg/kg                         |
| DIPHENYLGUANIDINE      | Inhalation-Dust/Mist           |         | estimated to be > 12.5 mg/l                           |
| DIPHENYLGUANIDINE      | Inhalation-Vapor               |         | estimated to be > 50 mg/l                             |
| DIPHENYLGUANIDINE      | Ingestion                      |         | estimated to be 300 - 2,000 mg/kg                     |
| ZINC OXIDE             | Dermal                         |         | LD50 estimated to be > 5,000 mg/kg                    |
| ZINC OXIDE             | Inhalation-Dust/Mist (4 hours) | Rat     | LC50 > 5.7 mg/l                                       |
| ZINC OXIDE             | Ingestion                      | Rat     | LD50 > 5,000 mg/kg                                    |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name                   | Species          | Value                     |
|------------------------|------------------|---------------------------|
| HYDROGENATED TERPHENYL | Rabbit           | No significant irritation |
| TERPHENYL              | Rabbit           | No significant irritation |
| SODIUM HYDROXIDE       | Rabbit           | Corrosive                 |
| DISPERSING AGENT       | Rabbit           | Irritant                  |
| ZINC OXIDE             | Human and animal | No significant irritation |

### Serious Eye Damage/Irritation

| Name                   | Species | Value                     |
|------------------------|---------|---------------------------|
| HYDROGENATED TERPHENYL | Rabbit  | No significant irritation |
| TERPHENYL              | Rabbit  | No significant irritation |
| SODIUM HYDROXIDE       | Rabbit  | Corrosive                 |
| DISPERSING AGENT       | Rabbit  | Corrosive                 |
| ZINC OXIDE             | Rabbit  | Mild irritant             |

### Skin Sensitization

| Name                   | Species    | Value  |
|------------------------|------------|--|
| HYDROGENATED TERPHENYL | Human      | Not sensitizing  |
| SODIUM HYDROXIDE       | Human      | Not sensitizing  |
| DISPERSING AGENT       | Human      | Not sensitizing  |
| ZINC OXIDE             | Guinea pig | Some positive data exist, but the data are not sufficient for classification |

### Respiratory Sensitization

For the component/components, either no data are currently available or the data are not sufficient for classification.

### Germ Cell Mutagenicity

| Name                   | Route    | Value  |
|------------------------|----------|--|
| HYDROGENATED TERPHENYL | In vivo  | Not mutagenic  |
| TERPHENYL              | In Vitro | Not mutagenic  |
| TERPHENYL              | In vivo  | Not mutagenic  |
| SODIUM HYDROXIDE       | In Vitro | Not mutagenic  |
| DISPERSING AGENT       | In Vitro | Not mutagenic  |
| ZINC OXIDE             | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| ZINC OXIDE             | In vivo  | Some positive data exist, but the data are not sufficient for classification |

### Carcinogenicity

For the component/components, either no data are currently available or the data are not sufficient for classification.

### Reproductive Toxicity

#### Reproductive and/or Developmental Effects

| Name                   | Route     | Value   | Species                 | Test Result         | Exposure Duration             |
|------------------------|-----------|---|-------------------------|---------------------|-------------------------------|
| HYDROGENATED TERPHENYL | Ingestion | Not toxic to female reproduction  | Rat                     | NOAEL 81 mg/kg/day  | 2 generation                  |
| HYDROGENATED TERPHENYL | Ingestion | Not toxic to male reproduction  | Rat                     | NOAEL 62 mg/kg/day  | 2 generation                  |
| HYDROGENATED TERPHENYL | Ingestion | Some positive developmental data exist, but the data are not sufficient for classification              | Rat                     | NOAEL 500 mg/kg/day | 2 generation                  |
| ZINC OXIDE             | Ingestion | Some positive reproductive/developmental data exist, but the data are not sufficient for classification | Multiple animal species | NOAEL 125 mg/kg/day | pre mating & during gestation |

**Target Organ(s)****Specific Target Organ Toxicity - single exposure**

| Name             | Route      | Target Organ(s)        | Value                            | Species | Test Result         | Exposure Duration |
|------------------|------------|------------------------|----------------------------------|---------|---------------------|-------------------|
| SODIUM HYDROXIDE | Inhalation | respiratory irritation | May cause respiratory irritation | Human   | NOAEL Not available |                   |

**Specific Target Organ Toxicity - repeated exposure**

| Name                   | Route      | Target Organ(s)   | Value  | Species | Test Result         | Exposure Duration |
|------------------------|------------|---|--|---------|---------------------|-------------------|
| HYDROGENATED TERPHENYL | Inhalation | liver   | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 0.5 mg/l      | 90 days           |
| HYDROGENATED TERPHENYL | Ingestion  | endocrine system   blood   liver   kidney and/or bladder        | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 144 mg/kg/day | 14 weeks          |
| ZINC OXIDE             | Ingestion  | nervous system  | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 600 mg/kg/day | 10 days           |
| ZINC OXIDE             | Ingestion  | endocrine system   hematopoietic system   kidney and/or bladder | Some positive data exist, but the data are not sufficient for classification | Other   | NOAEL 500 mg/kg/day | 6 months          |

**Aspiration Hazard**

For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

**SECTION 12: Ecological information****Ecotoxicological information**

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

**Chemical fate information**

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

**SECTION 13: Disposal considerations****13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of completely cured (or polymerized) material in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

**SECTION 14: Transport Information**

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

## SECTION 15: Regulatory information

### 15.1. US Federal Regulations

Contact 3M for more information.

#### 311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - Yes

#### Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

| <u>Ingredient</u>                       | <u>C.A.S. No</u> | <u>% by Wt</u> |
|---|------------------|----------------|
| MANGANESE DIOXIDE (MANGANESE COMPOUNDS) | 1313-13-9        | 55 - 70        |

### 15.2. State Regulations

Contact 3M for more information.

### 15.3. Chemical Inventories

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

### 15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## SECTION 16: Other information

### NFPA Hazard Classification

Health: 2 Flammability: 1 Instability: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

|                        |           |                         |          |
|------------------------|-----------|-------------------------|----------|
| <b>Document Group:</b> | 30-3124-2 | <b>Version Number:</b>  | 4.00     |
| <b>Issue Date:</b>     | 02/13/15  | <b>Supersedes Date:</b> | 11/14/14 |

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## Safety Data Sheet

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|------------------------|-----------|-------------------------|----------|
| <b>Document Group:</b> | 30-3230-7 | <b>Version Number:</b>  | 2.01     |
| <b>Issue Date:</b>     | 02/13/15  | <b>Supersedes Date:</b> | 11/14/14 |

### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Aerospace Sealant AC-236 B-1/2, B-2, and B-4 Base

#### Product Identification Numbers

LC-B100-1088-4, LC-B100-1088-5, LC-B100-1088-6, LC-B100-1088-7, LC-B100-1088-8, LC-B100-1088-9, LC-B100-1091-5, LC-B100-1091-6, LC-B100-1132-9, 42-0044-2092-5, 42-0044-2093-3, 42-0044-2094-1, 70-0052-1968-1, 70-0052-1969-9

#### 1.2. Recommended use and restrictions on use

##### Recommended use

For industrial or professional use only., Sealant

#### 1.3. Supplier's details

|                      |  |
|----------------------|--|
| <b>MANUFACTURER:</b> | 3M   |
| <b>DIVISION:</b>     | Aerospace and Commercial Transportation Division |
| <b>ADDRESS:</b>      | 3M Center, St. Paul, MN 55144-1000, USA          |
| <b>Telephone:</b>    | 1-888-3M HELPS (1-888-364-3577)                  |

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Skin Sensitizer: Category 1.

#### 2.2. Label elements

##### Signal word

Warning

##### Symbols

Exclamation mark |

##### Pictograms

**Hazard Statements**

May cause an allergic skin reaction.

**Precautionary Statements****Prevention:**

Avoid breathing dust/fume/gas/mist/vapors/spray.

Wear protective gloves.

Contaminated work clothing must not be allowed out of the workplace.

**Response:**

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

Wash contaminated clothing before reuse.

**Disposal:**

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

**2.3. Hazards not otherwise classified**

None.

## SECTION 3: Composition/information on ingredients

| Ingredient                  | C.A.S. No. | % by Wt                   |
|-----------------------------|------------|---------------------------|
| POLYSULFIDE RUBBER          | 68611-50-7 | 55 - 65                   |
| CALCIUM CARBONATE           | 471-34-1   | 35 - 45                   |
| TITANIUM DIOXIDE            | 13463-67-7 | 1 - 5 Trade Secret *      |
| PHENOL-FORMALDEHYDE POLYMER | 9003-35-4  | 0.1 - 0.5 Trade Secret *  |
| EPOXY RESIN                 | 25085-99-8 | 0.01 - 0.2 Trade Secret * |
| QUARTZ SILICA               | 14808-60-7 | 0 - 0.15 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

**4.1. Description of first aid measures****Inhalation:**

Remove person to fresh air. If you feel unwell, get medical attention.

**Skin Contact:**

Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

**Eye Contact:**

No need for first aid is anticipated.

**If Swallowed:**

Rinse mouth. If you feel unwell, get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed**

See Section 11.1. Information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

**SECTION 5: Fire-fighting measures**

**5.1. Suitable extinguishing media**

In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

**5.2. Special hazards arising from the substance or mixture**

None inherent in this product.

**Hazardous Decomposition or By-Products**

| <u>Substance</u> | <u>Condition</u>  |
|------------------|-------------------|
| Formaldehyde     | During Combustion |
| Carbon monoxide  | During Combustion |
| Carbon dioxide   | During Combustion |

**5.3. Special protective actions for fire-fighters**

No special protective actions for fire-fighters are anticipated.

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**6.2. Environmental precautions**

Avoid release to the environment.

**6.3. Methods and material for containment and cleaning up**

Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible.

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

**7.2. Conditions for safe storage including any incompatibilities**



Store away from acids. Store away from strong bases.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

| Ingredient        | C.A.S. No. | Agency | Limit type  | Additional Comments            |
|-------------------|------------|--------|---|--------------------------------|
| TITANIUM DIOXIDE  | 13463-67-7 | ACGIH  | TWA:10 mg/m <sup>3</sup>  | A4: Not class. as human carcin |
| TITANIUM DIOXIDE  | 13463-67-7 | CMRG   | TWA(as respirable dust):5 mg/m <sup>3</sup>   |                                |
| TITANIUM DIOXIDE  | 13463-67-7 | OSHA   | TWA(as total dust):15 mg/m <sup>3</sup>   |                                |
| QUARTZ SILICA     | 14808-60-7 | ACGIH  | TWA(respirable fraction):0.025 mg/m <sup>3</sup>  | A2: Suspected human carcin.    |
| QUARTZ SILICA     | 14808-60-7 | OSHA   | TWA concentration(as total dust):0.3 mg/m <sup>3</sup> ;TWA concentration(respirable):0.1 mg/m <sup>3</sup> (2.4 millions of particles/cu. ft.) |                                |
| CALCIUM CARBONATE | 471-34-1   | CMRG   | TWA:10 mg/m <sup>3</sup> ;STEL:20 mg/m <sup>3</sup>   |                                |
| Limestone         | 471-34-1   | OSHA   | TWA(as total dust):15 mg/m <sup>3</sup> ;TWA(respirable fraction):5 mg/m <sup>3</sup>   |                                |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

### 8.2. Exposure controls

#### 8.2.1. Engineering controls

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

#### 8.2.2. Personal protective equipment (PPE)

##### Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Safety Glasses with side shields

##### Skin/hand protection

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - polymer laminate

#### Respiratory protection

None required.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

|   |  |
|---|--|
| General Physical Form:                  | Liquid   |
| Specific Physical Form:                 | Paste  |
| Odor, Color, Grade:                     | Sulphurous odor; white paste                                 |
| Odor threshold                          | <i>No Data Available</i>                                     |
| pH                                      | <i>No Data Available</i>                                     |
| Melting point                           | <i>Not Applicable</i>  |
| Boiling Point                           | <i>Not Applicable</i>  |
| Flash Point                             | >=200 °F [ <i>Test Method: Closed Cup</i> ]                  |
| Evaporation rate                        | <i>Not Applicable</i>  |
| Flammability (solid, gas)               | Not Applicable   |
| Flammable Limits(LEL)                   | <i>No Data Available</i>                                     |
| Flammable Limits(UEL)                   | <i>No Data Available</i>                                     |
| Vapor Pressure                          | <i>No Data Available</i>                                     |
| Vapor Density                           | <i>No Data Available</i>                                     |
| Specific Gravity                        | 1.63 [ <i>Ref Std: WATER=1</i> ]                             |
| Solubility in Water                     | Nil  |
| Solubility- non-water                   | <i>No Data Available</i>                                     |
| Partition coefficient: n-octanol/ water | <i>No Data Available</i>                                     |
| Autoignition temperature                | <i>No Data Available</i>                                     |
| Decomposition temperature               | <i>No Data Available</i>                                     |
| Viscosity                               | <i>No Data Available</i>                                     |
| Hazardous Air Pollutants                | 0 % weight   |
| Volatile Organic Compounds              | 4.1 g/l [ <i>Test Method: calculated SCAQMD rule 443.1</i> ] |
| VOC Less H2O & Exempt Solvents          | 4.2 g/l [ <i>Test Method: calculated SCAQMD rule 443.1</i> ] |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This material is considered to be non reactive under normal use conditions.

### 10.2. Chemical stability

Stable.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials

Strong bases

Reducing agents

Strong acids

#### 10.6. Hazardous decomposition products

**Substance**

**Condition**

None known.

Refer to section 5.2 for hazardous decomposition products during combustion.

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

### 11.1. Information on Toxicological effects

#### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

**Inhalation:**

No health effects are expected.

**Skin Contact:**

Contact with the skin during product use is not expected to result in significant irritation. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

**Eye Contact:**

Contact with the eyes during product use is not expected to result in significant irritation.

**Ingestion:**

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

**Carcinogenicity:**

| <u>Ingredient</u>       | <u>CAS No.</u> | <u>Class Description</u>       | <u>Regulation</u>                           |
|-------------------------|----------------|--------------------------------|---|
| SILICA, CRYSTAL AIRRESP | 14808-60-7     | Known human carcinogen         | National Toxicology Program Carcinogens     |
| QUARTZ SILICA           | 14808-60-7     | Grp. 1: Carcinogenic to humans | International Agency for Research on Cancer |
| TITANIUM DIOXIDE        | 13463-67-7     | Grp. 2B: Possible human carc.  | International Agency for Research on Cancer |

**Toxicological Data**

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

**Acute Toxicity**

| <u>Name</u>        | <u>Route</u>                   | <u>Species</u> | <u>Value</u>                                    |
|--------------------|--------------------------------|----------------|---|
| Overall product    | Ingestion                      |                | No data available; calculated ATE > 5,000 mg/kg |
| POLYSULFIDE RUBBER | Dermal                         | Rat            | LD50 > 7,800 mg/kg                              |
| POLYSULFIDE RUBBER | Ingestion                      | Rat            | LD50 > 5,000 mg/kg                              |
| CALCIUM CARBONATE  | Dermal                         | Rat            | LD50 > 2,000 mg/kg                              |
| CALCIUM CARBONATE  | Inhalation-Dust/Mist (4 hours) | Rat            | LC50 3.0 mg/l                                   |
| CALCIUM CARBONATE  | Ingestion                      | Rat            | LD50 6,450 mg/kg                                |
| TITANIUM DIOXIDE   | Dermal                         | Rabbit         | LD50 > 10,000 mg/kg                             |

|                             |                                |     |                                    |
|-----------------------------|--------------------------------|-----|------------------------------------|
| TITANIUM DIOXIDE            | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 6.82 mg/l                   |
| TITANIUM DIOXIDE            | Ingestion                      | Rat | LD50 > 10,000 mg/kg                |
| PHENOL-FORMALDEHYDE POLYMER | Dermal                         | Rat | LD50 > 2,000 mg/kg                 |
| PHENOL-FORMALDEHYDE POLYMER | Ingestion                      | Rat | LD50 > 2,900 mg/kg                 |
| QUARTZ SILICA               | Dermal                         |     | LD50 estimated to be > 5,000 mg/kg |
| QUARTZ SILICA               | Ingestion                      |     | LD50 estimated to be > 5,000 mg/kg |
| EPOXY RESIN                 | Dermal                         | Rat | LD50 > 1,600 mg/kg                 |
| EPOXY RESIN                 | Ingestion                      | Rat | LD50 > 1,000 mg/kg                 |

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

| Name                        | Species                | Value                     |
|-----------------------------|------------------------|---------------------------|
| POLYSULFIDE RUBBER          | Rabbit                 | No significant irritation |
| CALCIUM CARBONATE           | Rabbit                 | No significant irritation |
| TITANIUM DIOXIDE            | Rabbit                 | No significant irritation |
| PHENOL-FORMALDEHYDE POLYMER | Human and animal       | Mild irritant             |
| QUARTZ SILICA               | Professional judgement | No significant irritation |
| EPOXY RESIN                 | Rabbit                 | Mild irritant             |

**Serious Eye Damage/Irritation**

| Name                        | Species          | Value                     |
|-----------------------------|------------------|---------------------------|
| POLYSULFIDE RUBBER          | Rabbit           | No significant irritation |
| CALCIUM CARBONATE           | Rabbit           | No significant irritation |
| TITANIUM DIOXIDE            | Rabbit           | No significant irritation |
| PHENOL-FORMALDEHYDE POLYMER | Human and animal | Moderate irritant         |
| EPOXY RESIN                 | Rabbit           | Moderate irritant         |

**Skin Sensitization**

| Name                        | Species          | Value           |
|-----------------------------|------------------|-----------------|
| POLYSULFIDE RUBBER          |                  | Not sensitizing |
| TITANIUM DIOXIDE            | Human and animal | Not sensitizing |
| PHENOL-FORMALDEHYDE POLYMER | Human and animal | Sensitizing     |
| EPOXY RESIN                 | Human and animal | Sensitizing     |

**Respiratory Sensitization**

| Name                        | Species | Value  |
|-----------------------------|---------|--|
| PHENOL-FORMALDEHYDE POLYMER | Human   | Some positive data exist, but the data are not sufficient for classification |
| EPOXY RESIN                 | Human   | Some positive data exist, but the data are not sufficient for classification |

**Germ Cell Mutagenicity**

| Name             | Route    | Value  |
|------------------|----------|--|
| TITANIUM DIOXIDE | In Vitro | Not mutagenic                                  |
| TITANIUM DIOXIDE | In vivo  | Not mutagenic                                  |
| QUARTZ SILICA    | In Vitro | Some positive data exist, but the data are not |

|               |          |  |
|---------------|----------|--|
|               |          | sufficient for classification  |
| QUARTZ SILICA | In vivo  | Some positive data exist, but the data are not sufficient for classification |
| EPOXY RESIN   | In vivo  | Not mutagenic  |
| EPOXY RESIN   | In Vitro | Some positive data exist, but the data are not sufficient for classification |

**Carcinogenicity**

| Name             | Route      | Species                 | Value  |
|------------------|------------|-------------------------|--|
| TITANIUM DIOXIDE | Ingestion  | Multiple animal species | Not carcinogenic   |
| TITANIUM DIOXIDE | Inhalation | Rat                     | Carcinogenic   |
| QUARTZ SILICA    | Inhalation | Human and animal        | Carcinogenic   |
| EPOXY RESIN      | Dermal     | Mouse                   | Some positive data exist, but the data are not sufficient for classification |

**Reproductive Toxicity**

**Reproductive and/or Developmental Effects**

| Name              | Route     | Value                            | Species | Test Result         | Exposure Duration              |
|-------------------|-----------|----------------------------------|---------|---------------------|--------------------------------|
| CALCIUM CARBONATE | Ingestion | Not toxic to development         | Rat     | NOAEL 625 mg/kg/day | prematuring & during gestation |
| EPOXY RESIN       | Ingestion | Not toxic to female reproduction | Rat     | NOAEL 750 mg/kg/day | 2 generation                   |
| EPOXY RESIN       | Ingestion | Not toxic to male reproduction   | Rat     | NOAEL 750 mg/kg/day | 2 generation                   |
| EPOXY RESIN       | Dermal    | Not toxic to development         | Rabbit  | NOAEL 300 mg/kg/day | during organogenesis           |
| EPOXY RESIN       | Ingestion | Not toxic to development         | Rat     | NOAEL 750 mg/kg/day | 2 generation                   |

**Target Organ(s)**

**Specific Target Organ Toxicity - single exposure**

| Name                        | Route      | Target Organ(s)        | Value  | Species          | Test Result         | Exposure Duration |
|-----------------------------|------------|------------------------|--|------------------|---------------------|-------------------|
| CALCIUM CARBONATE           | Inhalation | respiratory system     | All data are negative  | Rat              | NOAEL 0.812 mg/l    | 90 minutes        |
| PHENOL-FORMALDEHYDE POLYMER | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | Human and animal | NOAEL Not available |                   |

**Specific Target Organ Toxicity - repeated exposure**

| Name                        | Route      | Target Organ(s)    | Value  | Species | Test Result         | Exposure Duration     |
|-----------------------------|------------|--------------------|--|---------|---------------------|-----------------------|
| CALCIUM CARBONATE           | Inhalation | respiratory system | Some positive data exist, but the data are not sufficient for classification | Human   | NOAEL Not available | occupational exposure |
| TITANIUM DIOXIDE            | Inhalation | respiratory system | Some positive data exist, but the data are not sufficient for classification | Rat     | LOAEL 0.010 mg/l    | 2 years               |
| TITANIUM DIOXIDE            | Inhalation | pulmonary fibrosis | All data are negative  | Human   | NOAEL Not available | occupational exposure |
| PHENOL-FORMALDEHYDE POLYMER | Inhalation | respiratory system | Some positive data exist, but the data are not sufficient for classification | Human   | NOAEL Not available | occupational exposure |
| QUARTZ SILICA               | Inhalation | silicosis          | Causes damage to organs through prolonged or repeated exposure               | Human   | NOAEL Not available | occupational exposure |

|             |           |  |  |     |                             |          |
|-------------|-----------|--|--|-----|-----------------------------|----------|
| EPOXY RESIN | Dermal    | liver  | Some positive data exist, but the data are not sufficient for classification | Rat | NOAEL<br>1,000<br>mg/kg/day | 2 years  |
| EPOXY RESIN | Dermal    | nervous system   | All data are negative  | Rat | NOAEL<br>1,000<br>mg/kg/day | 13 weeks |
| EPOXY RESIN | Ingestion | auditory system   heart   endocrine system   hematopoietic system   liver   eyes   kidney and/or bladder | All data are negative  | Rat | NOAEL<br>1,000<br>mg/kg/day | 28 days  |

#### Aspiration Hazard

For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

## SECTION 12: Ecological information

#### Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

#### Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

## SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of completely cured (or polymerized) material in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

## SECTION 14: Transport Information

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

## SECTION 15: Regulatory information

#### 15.1. US Federal Regulations

Contact 3M for more information.

### 311/312 Hazard Categories:

Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No Immediate Hazard - Yes Delayed Hazard - No

### 15.2. State Regulations

Contact 3M for more information.

### 15.3. Chemical Inventories

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

### 15.4. International Regulations

Contact 3M for more information.

**This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.**

## SECTION 16: Other information

### NFPA Hazard Classification

**Health: 2 Flammability: 1 Instability: 0 Special Hazards: None**

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

|                        |           |                         |          |
|------------------------|-----------|-------------------------|----------|
| <b>Document Group:</b> | 30-3230-7 | <b>Version Number:</b>  | 2.01     |
| <b>Issue Date:</b>     | 02/13/15  | <b>Supersedes Date:</b> | 11/14/14 |

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