



## Safety Data Sheet

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### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Scotch-Weld™ Structural Adhesive Film AF 46

#### Product Identification Numbers

62-0046-5835-7, 62-0046-5915-7

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

##### Recommended use

Structural adhesive

#### 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.

63% of the mixture consists of ingredients of unknown acute oral toxicity.

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

| <b>Ingredient</b> | <b>C.A.S. No.</b> | <b>% by Wt</b>         |
|-------------------|-------------------|------------------------|
| Polyamide Polymer | 25191-90-6        | 40 - 70                |
| Epoxy Resin       | 25068-38-6        | 15 - 40 Trade Secret * |
| Dicyandiamide     | 461-58-5          | 1 - 5                  |
| Caprolactam       | 105-60-2          | 1 - 5 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:**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, 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 carbon dioxide or dry chemical extinguisher 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>  |
|--------------------|-------------------|
| Aldehydes          | During Combustion |
| Carbon monoxide    | During Combustion |
| Carbon dioxide     | During Combustion |
| Hydrogen Cyanide   | During Combustion |
| Ammonia            | During Combustion |
| Oxides of Nitrogen | 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. 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

Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. 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. Avoid release to the environment. Wash contaminated clothing before reuse.

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

Store away from heat.

## 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            |
|-------------|------------|--------|-------------------------------------------|--------------------------------|
| Caprolactam | 105-60-2   | ACGIH  | TWA(inhalable fraction and vapor):5 mg/m3 | A5: Not suspected human carcin |

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

Provide ventilated enclosure for heat curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. 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: Butyl Rubber  
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 – Butyl rubber

Apron - 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

General Physical Form: Solid  
Specific Physical Form: Film

|                                                |                          |
|------------------------------------------------|--------------------------|
| <b>Odor, Color, Grade:</b>                     | Clear, no odor.          |
| <b>Odor threshold</b>                          | <i>No Data Available</i> |
| <b>pH</b>                                      | <i>Not Applicable</i>    |
| <b>Melting point</b>                           | <i>No Data Available</i> |
| <b>Boiling Point</b>                           | <i>Not Applicable</i>    |
| <b>Flash Point</b>                             | No flash point           |
| <b>Evaporation rate</b>                        | <i>Not Applicable</i>    |
| <b>Flammability (solid, gas)</b>               | Not Classified           |
| <b>Flammable Limits(LEL)</b>                   | <i>Not Applicable</i>    |
| <b>Flammable Limits(UEL)</b>                   | <i>Not Applicable</i>    |
| <b>Vapor Pressure</b>                          | <i>Not Applicable</i>    |
| <b>Vapor Density</b>                           | <i>Not Applicable</i>    |
| <b>Density</b>                                 | <i>No Data Available</i> |
| <b>Specific Gravity</b>                        | <i>No Data Available</i> |
| <b>Solubility in Water</b>                     | Nil                      |
| <b>Solubility- non-water</b>                   | <i>No Data Available</i> |
| <b>Partition coefficient: n-octanol/ water</b> | <i>No Data Available</i> |
| <b>Autoignition temperature</b>                | <i>Not Applicable</i>    |
| <b>Decomposition temperature</b>               | <i>No Data Available</i> |
| <b>Viscosity</b>                               | <i>Not Applicable</i>    |
| <b>Volatile Organic Compounds</b>              | <i>Not Applicable</i>    |
| <b>Percent volatile</b>                        | Nil                      |
| <b>VOC Less H2O &amp; Exempt Solvents</b>      | <i>Not Applicable</i>    |

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

### 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

Amines

### 10.6. Hazardous decomposition products

#### Substance

None known.

#### Condition

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.

##### Skin Contact:

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

Physical Blockage: Signs/symptoms may include cramping, abdominal pain, and constipation.

#### 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 | Ingestion                      |         | No data available; calculated ATE > 5,000 mg/kg |
| Epoxy Resin     | Dermal                         | Rat     | LD50 > 1,600 mg/kg                              |
| Epoxy Resin     | Ingestion                      | Rat     | LD50 > 1,000 mg/kg                              |
| Dicyandiamide   | Dermal                         | Rabbit  | LD50 > 10,000 mg/kg                             |
| Dicyandiamide   | Ingestion                      | Rat     | LD50 > 30,000 mg/kg                             |
| Caprolactam     | Dermal                         | Rat     | LD50 > 2,000 mg/kg                              |
| Caprolactam     | Inhalation-Dust/Mist (4 hours) | Rat     | LC50 8.2 mg/l                                   |
| Caprolactam     | Ingestion                      | Rat     | LD50 1,475 mg/kg                                |

ATE = acute toxicity estimate

#### Skin Corrosion/Irritation

| Name          | Species                 | Value              |
|---------------|-------------------------|--------------------|
| Epoxy Resin   | Rabbit                  | Mild irritant      |
| Dicyandiamide | Human and animal        | Minimal irritation |
| Caprolactam   | official classification | Irritant           |

#### Serious Eye Damage/Irritation

| Name          | Species                | Value             |
|---------------|------------------------|-------------------|
| Epoxy Resin   | Rabbit                 | Moderate irritant |
| Dicyandiamide | Professional judgement | Mild irritant     |
| Caprolactam   | official               | Severe irritant   |

|  |                |  |
|--|----------------|--|
|  | classification |  |
|--|----------------|--|

**Skin Sensitization**

| Name          | Species          | Value                                                                        |
|---------------|------------------|------------------------------------------------------------------------------|
| Epoxy Resin   | Human and animal | Sensitizing                                                                  |
| Dicyandiamide | Guinea pig       | Some positive data exist, but the data are not sufficient for classification |
| Caprolactam   | Guinea pig       | Not sensitizing                                                              |

**Respiratory Sensitization**

| Name        | Species | Value                                                                        |
|-------------|---------|------------------------------------------------------------------------------|
| Epoxy Resin | Human   | Some positive data exist, but the data are not sufficient for classification |

**Germ Cell Mutagenicity**

| Name          | Route    | Value                                                                        |
|---------------|----------|------------------------------------------------------------------------------|
| Epoxy Resin   | In vivo  | Not mutagenic                                                                |
| Epoxy Resin   | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Dicyandiamide | In Vitro | Not mutagenic                                                                |
| Caprolactam   | In Vitro | Not mutagenic                                                                |
| Caprolactam   | In vivo  | Not mutagenic                                                                |

**Carcinogenicity**

| Name          | Route     | Species                 | Value                                                                        |
|---------------|-----------|-------------------------|------------------------------------------------------------------------------|
| Epoxy Resin   | Dermal    | Mouse                   | Some positive data exist, but the data are not sufficient for classification |
| Dicyandiamide | Ingestion | Rat                     | Not carcinogenic                                                             |
| Caprolactam   | Ingestion | Multiple animal species | Not carcinogenic                                                             |

**Reproductive Toxicity****Reproductive and/or Developmental Effects**

| Name          | Route     | Value                            | Species | Test Result           | Exposure Duration             |
|---------------|-----------|----------------------------------|---------|-----------------------|-------------------------------|
| 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                  |
| Dicyandiamide | Ingestion | Not toxic to female reproduction | Rat     | NOAEL 1,000 mg/kg/day | prematings & during gestation |
| Dicyandiamide | Ingestion | Not toxic to male reproduction   | Rat     | NOAEL 1,000 mg/kg/day | 44 days                       |
| Dicyandiamide | Ingestion | Not toxic to development         | Rat     | NOAEL 1,000 mg/kg/day | prematings & during gestation |
| Caprolactam   | Ingestion | Not toxic to female reproduction | Rat     | NOAEL 833 mg/kg/day   | 3 generation                  |
| Caprolactam   | Ingestion | Not toxic to male reproduction   | Rat     | NOAEL 833 mg/kg/day   | 3 generation                  |

|             |           |                                                                                            |        |                    |                      |
|-------------|-----------|--------------------------------------------------------------------------------------------|--------|--------------------|----------------------|
| Caprolactam | Ingestion | Some positive developmental data exist, but the data are not sufficient for classification | Rabbit | NOAEL 50 mg/kg/day | during organogenesis |
|-------------|-----------|--------------------------------------------------------------------------------------------|--------|--------------------|----------------------|

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

| Name        | Route      | Target Organ(s)        | Value                            | Species | Test Result      | Exposure Duration |
|-------------|------------|------------------------|----------------------------------|---------|------------------|-------------------|
| Caprolactam | Inhalation | respiratory irritation | May cause respiratory irritation | Human   | LOAEL 0.056 mg/l | not available     |

**Specific Target Organ Toxicity - repeated exposure**

| Name          | Route      | Target Organ(s)                                                                                          | Value                                                                        | Species | Test Result           | Exposure Duration |
|---------------|------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|---------|-----------------------|-------------------|
| Epoxy Resin   | Dermal     | liver                                                                                                    | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 1,000 mg/kg/day | 2 years           |
| Epoxy Resin   | Dermal     | nervous system                                                                                           | All data are negative                                                        | Rat     | NOAEL 1,000 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 1,000 mg/kg/day | 28 days           |
| Dicyandiamide | Ingestion  | kidney and/or bladder                                                                                    | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 6,822 mg/kg/day | 13 weeks          |
| Caprolactam   | Inhalation | respiratory system                                                                                       | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 0.070 mg/l      | 13 weeks          |
| Caprolactam   | Inhalation | nervous system   eyes                                                                                    | All data are negative                                                        | Rat     | NOAEL 0.243 mg/l      | 13 weeks          |
| Caprolactam   | Ingestion  | kidney and/or bladder                                                                                    | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 33 mg/kg/day    | 90 days           |
| Caprolactam   | Ingestion  | endocrine system   liver   nervous system                                                                | Some positive data exist, but the data are not sufficient for classification | Rat     | NOAEL 1,333 mg/kg/day | 90 days           |
| Caprolactam   | Ingestion  | hematopoietic system                                                                                     | All data are negative                                                        | Rat     | NOAEL 667 mg/kg/day   | 90 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. If no other disposal options are available, waste product that has been completely cured or polymerized may be placed in a landfill properly designed for industrial waste. 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:** 1 **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.

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