



Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier

3M™ Scotch-Weld™ Structural Adhesive Film AF 3109-2K

Product Identification Numbers

62-2625-6009-7, 62-3158-0355-1, 62-3158-0455-9, 62-3158-5305-1, 62-3158-6003-1, 62-3158-6005-6, 62-3158-6009-8, 62-3370-6003-2, 62-3370-6009-9, 87-2500-0344-6, 87-3300-0006-5, 87-3300-0120-4, 87-3300-0568-4, 87-3300-0569-2, 87-3300-0570-0, 87-3300-0571-8, 87-3300-0588-2, 87-3300-0589-0, 87-3300-0612-0, 87-3300-0613-8, FS-9100-3916-3, FS-9100-3918-9, FS-9100-3933-8
7000121225, 7010309775, 7000000842, 7010329691, 7000046428, 7000046464, 7000046465, 7000080055, 7000058938, 7100067917, 7100067424, 7100067425, 7100067426, 7100067822, 7100067823, 7100067430, 7100067503, 7010321185

1.2. Recommended use and restrictions on use

Recommended use

Structural Adhesive Film

1.3. Supplier's details

MANUFACTURER: 3M
DIVISION: Automotive and Aerospace Solutions Division
ADDRESS: 3M Center, St. Paul, MN 55144-1000, USA
Telephone: 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

Germ Cell Mutagenicity: Category 2.

2.2. Label elements

Signal word

Warning

Symbols

Health Hazard |

Pictograms

**Hazard Statements**

Suspected of causing genetic defects.

Precautionary Statements**Prevention:**

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Wear protective gloves.

Response:

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.

SECTION 3: Composition/information on ingredients

| Ingredient | C.A.S. No. | % by Wt |
|--|-------------------|------------------------|
| Polymeric Epoxy Reaction Product (M.W. >1200) | Trade Secret* | 30 - 60 |
| Epoxy Resin 1 | 28768-32-3 | 15 - 40 Trade Secret * |
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE | 14228-73-0 | 5 - 10 Trade Secret * |
| Epoxy Resin 2 | 25068-38-6 | 5 - 10 Trade Secret * |
| Dicyandiamide | 461-58-5 | 3 - 7 |
| N,N'-(Methyl-1,3-Phenylene)bis(N',N'-Dimethylurea) | 17526-94-2 | 1 - 5 |
| Non-Volatile Amide | 1071-93-8 | 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:

Wash with soap and water. If you are concerned, get medical advice.

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

No critical symptoms or effects. 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

Exposure to extreme heat can give rise to thermal decomposition.

Hazardous Decomposition or By-Products**Substance**

Aldehydes
Carbon monoxide
Carbon dioxide
Hydrogen Chloride
Hydrogen Cyanide
Hydrogen Fluoride
Ammonia
Oxides of Nitrogen

Condition

During Combustion
During Combustion
During Combustion
During Combustion
During Combustion
During Combustion
During Combustion
During Combustion

5.3. Special protective actions for fire-fighters

Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Evacuate area. 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 in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

For industrial/occupational use only. Not for consumer sale or use. Do not handle until all safety precautions have been read and understood. Avoid breathing dust/fume/gas/mist/vapors/spray. 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 amines.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

No occupational exposure limit values exist for any of the components listed in Section 3 of this SDS.

8.2. Exposure controls

8.2.1. Engineering controls

Provide ventilated enclosure for curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. 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

None required.

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: Chemical Protective glove of any material type

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:

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use a positive pressure supplied-air respirator.

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

Appearance

Physical state

Solid

Color

Blue

Specific Physical Form:

Film

Odor

Odorless

Odor threshold

No Data Available

pH

Not Applicable

Melting point

No Data Available

Boiling Point

Not Applicable

| | |
|---|--------------------------|
| Flash Point | No flash point |
| Evaporation rate | <i>Not Applicable</i> |
| Flammability (solid, gas) | Not Classified |
| Flammable Limits(LEL) | <i>Not Applicable</i> |
| Flammable Limits(UEL) | <i>Not Applicable</i> |
| Vapor Pressure | <i>Not Applicable</i> |
| Vapor Density | <i>Not Applicable</i> |
| Density | <i>No Data Available</i> |
| Specific Gravity | <i>No Data Available</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>Not Applicable</i> |
| Decomposition temperature | <i>No Data Available</i> |
| Viscosity | <i>Not Applicable</i> |
| Molecular weight | <i>No Data Available</i> |
| Volatile Organic Compounds | <i>Not Applicable</i> |
| Percent volatile | <i>No Data Available</i> |
| Percent volatile | Negligible |
| VOC Less H2O & Exempt Solvents | <i>Not Applicable</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

Heat

10.5. Incompatible materials

Amines

10.6. Hazardous decomposition products

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

| | |
|-------------|--|
| None known. | |
|-------------|--|

Refer to section 5.2 for hazardous decomposition products during combustion.

Extreme heat arising from situations such as misuse or equipment failure can generate hydrogen fluoride as a decomposition product.

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:

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

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.

Additional Health Effects:

Genotoxicity:

Genotoxicity and Mutagenicity: May interact with genetic material and possibly alter gene expression.

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 1 | Dermal | Rabbit | LD50 > 3,000 mg/kg |
| Epoxy Resin 1 | Ingestion | Rat | LD50 > 5,000 mg/kg |
| Epoxy Resin 2 | Dermal | Rat | LD50 > 1,600 mg/kg |
| Epoxy Resin 2 | Ingestion | Rat | LD50 > 1,000 mg/kg |
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE | Ingestion | Rat | LD50 1,000 mg/kg |
| Dicyandiamide | Dermal | Rabbit | LD50 > 10,000 mg/kg |
| Dicyandiamide | Ingestion | Rat | LD50 > 30,000 mg/kg |
| N,N'-(Methyl-1,3-Phenylene)bis(N,N'-Dimethylurea) | Dermal | Rat | LD50 > 2,000 mg/kg |
| N,N'-(Methyl-1,3-Phenylene)bis(N,N'-Dimethylurea) | Ingestion | Rat | LD50 > 2,000 mg/kg |
| Non-Volatile Amide | Ingestion | Mouse | LD50 > 5,000 mg/kg |

ATE = acute toxicity estimate

Skin Corrosion/Irritation

| Name | Species | Value |
|---|-------------------------|---------------------------|
| Overall product | Multiple animal species | No significant irritation |
| Epoxy Resin 1 | Rabbit | No significant irritation |
| Epoxy Resin 2 | Rabbit | Mild irritant |
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE | In vitro data | Irritant |
| Dicyandiamide | Human and animal | Minimal irritation |
| N,N'-(Methyl-1,3-Phenylene)bis(N,N'-Dimethylurea) | Rabbit | No significant irritation |
| Non-Volatile Amide | Rabbit | No significant irritation |

Serious Eye Damage/Irritation

| Name | Species | Value |
|---|------------------------|---------------------------|
| Epoxy Resin 1 | Rabbit | Mild irritant |
| Epoxy Resin 2 | Rabbit | Moderate irritant |
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE | In vitro data | No significant irritation |
| Dicyandiamide | Professional judgement | Mild irritant |
| N,N'-(Methyl-1,3-Phenylene)bis(N,N'-Dimethylurea) | Rabbit | No significant irritation |

Skin Sensitization

| Name | Species | Value |
|--|-------------------|----------------|
| Overall product | Guinea pig | Not classified |
| Epoxy Resin 1 | Human and animal | Sensitizing |
| Epoxy Resin 2 | Human and animal | Sensitizing |
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE | similar compounds | Sensitizing |
| Dicyandiamide | Guinea pig | Not classified |
| Non-Volatile Amide | Guinea pig | Sensitizing |

Respiratory Sensitization

| Name | Species | Value |
|---------------|---------|----------------|
| Epoxy Resin 2 | Human | Not classified |

Germ Cell Mutagenicity

| Name | Route | Value |
|--|----------|--|
| Epoxy Resin 1 | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Epoxy Resin 1 | In vivo | Mutagenic |
| Epoxy Resin 2 | In vivo | Not mutagenic |
| Epoxy Resin 2 | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE | In Vitro | Mutagenic; structurally related to germ cell mutagens |
| Dicyandiamide | In Vitro | Not mutagenic |
| Non-Volatile Amide | In vivo | Not mutagenic |

Carcinogenicity

| Name | Route | Species | Value |
|---------------|-----------|---------|--|
| Epoxy Resin 2 | Dermal | Mouse | Some positive data exist, but the data are not sufficient for classification |
| Dicyandiamide | Ingestion | Rat | Not carcinogenic |

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

| Name | Route | Value | Species | Test Result | Exposure Duration |
|---------------|-----------|--------------------------------|---------|-------------|-------------------|
| Epoxy Resin 1 | Ingestion | Not classified for development | Rat | NOAEL 90 | during |

| | | | | mg/kg/day | gestation |
|---------------|-----------|--|--------|-----------------------|-------------------------------|
| Epoxy Resin 2 | Ingestion | Not classified for female reproduction | Rat | NOAEL 750 mg/kg/day | 2 generation |
| Epoxy Resin 2 | Ingestion | Not classified for male reproduction | Rat | NOAEL 750 mg/kg/day | 2 generation |
| Epoxy Resin 2 | Dermal | Not classified for development | Rabbit | NOAEL 300 mg/kg/day | during organogenesis |
| Epoxy Resin 2 | Ingestion | Not classified for development | Rat | NOAEL 750 mg/kg/day | 2 generation |
| Dicyandiamide | Ingestion | Not classified for female reproduction | Rat | NOAEL 1,000 mg/kg/day | prematings & during gestation |
| Dicyandiamide | Ingestion | Not classified for male reproduction | Rat | NOAEL 1,000 mg/kg/day | 44 days |
| Dicyandiamide | Ingestion | Not classified for development | Rat | NOAEL 1,000 mg/kg/day | prematings & during gestation |

Target Organ(s)

Specific Target Organ Toxicity - single exposure

| Name | Route | Target Organ(s) | Value | Species | Test Result | Exposure Duration |
|--|------------|------------------------|--|------------------------|---------------------|-------------------|
| 1,4-BIS[(2,3-EPOXYPROPOXY)METHYLCYCLOHEXANE] | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | similar health hazards | NOAEL Not available | |

Specific Target Organ Toxicity - repeated exposure

| Name | Route | Target Organ(s) | Value | Species | Test Result | Exposure Duration |
|---------------|-----------|--|--|---------|-----------------------|-------------------|
| Epoxy Resin 1 | Ingestion | hematopoietic system | Some positive data exist, but the data are not sufficient for classification | Rat | NOAEL 50 mg/kg/day | 13 weeks |
| Epoxy Resin 1 | Ingestion | gastrointestinal tract liver immune system nervous system eyes kidney and/or bladder | Not classified | Rat | NOAEL 200 mg/kg/day | 13 weeks |
| Epoxy Resin 2 | Dermal | liver | Not classified | Rat | NOAEL 1,000 mg/kg/day | 2 years |
| Epoxy Resin 2 | Dermal | nervous system | Not classified | Rat | NOAEL 1,000 mg/kg/day | 13 weeks |
| Epoxy Resin 2 | Ingestion | auditory system heart endocrine system hematopoietic system liver eyes kidney and/or bladder | Not classified | Rat | NOAEL 1,000 mg/kg/day | 28 days |
| Dicyandiamide | Ingestion | kidney and/or bladder | Not classified | Rat | NOAEL 6,822 mg/kg/day | 13 weeks |

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.

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.

EPCRA 311/312 Hazard Classifications:

Physical Hazards

Not applicable

Health Hazards

Germ cell mutagenicity

15.2. State Regulations

Contact 3M for more information.

15.3. Chemical Inventories

This product is an article as defined by TSCA regulations, and is exempt from TSCA Inventory listing requirements.

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:** 3 **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.

The NFPA Health code of 3 is due to emergency situations where the material may thermally decompose and release Hydrogen Fluoride. During normal use conditions, please reference Section 2 and Section 11 of the SDS for additional health hazard information.

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