



Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier

3M™ Scotch-Weld™ Structural Adhesive Film AF 503

Product Identification Numbers

87-3300-0197-2, 87-3300-0198-0, 87-3300-0199-8, 87-3300-0200-4, 87-3300-0201-2, 87-3300-0252-5
7100228591, 7100228592, 7100229667, 7100228597, 7100228596, 7100279395

1.2. Recommended use and restrictions on use

Recommended use

Aircraft parts bonding, Industrial use

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

Skin Sensitizer: Category 1.

Germ Cell Mutagenicity: Category 2.

2.2. Label elements

Signal word

Warning

Symbols

Exclamation mark |Health Hazard|

Pictograms



Hazard Statements

May cause an allergic skin reaction.
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.
Avoid breathing vapors.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves.

Response:

IF ON SKIN: Wash with plenty of soap and water.
IF exposed or concerned: Get medical attention.
If skin irritation or rash occurs: Get medical attention.
Take off contaminated clothing and wash it before reuse.

Storage:

Store locked up.

Disposal:

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

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Epoxy Resin	Trade Secret*	30 - 40
4,4'-isopropylidenediphenol-epichlorohydrin polymer	25068-38-6	10 - 30 Trade Secret *
VINYL-ACRYLIC COPOLYMER	Trade Secret*	10 - 15
NON-WOVEN POLYESTER CLOTH	None	< 12
DICYANDIAMIDE	461-58-5	2 - 10
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	28768-32-3	3 - 10 Trade Secret *
NON-VOLATILE AMIDE	Trade Secret*	2 - 10
1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE	14228-73-0	1 - 5 Trade Secret *
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	28064-14-4	1 - 5 Trade Secret *
POLYETHER SULFONE	Trade Secret*	1 - 5
MODIFIED SILICA	Trade Secret*	< 3

*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:

If exposed, flush eyes with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms develop, 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

Allergic skin reaction (redness, swelling, blistering, and itching).

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**

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

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. Use personal protective equipment based on the results of an exposure assessment. Refer to Section 8 for PPE recommendations. If anticipated exposure resulting from an accidental release exceeds the protective capabilities of the PPE listed in Section 8, or are unknown, select PPE that offers an appropriate level of protection. Consider the physical and chemical hazards of the material when doing so. Examples of PPE ensembles for emergency response could include wearing bunker gear for a release of flammable material; wearing chemical protective clothing if the spilled material is a corrosive, a sensitizer, a significant dermal irritant, or can be absorbed through the skin; or donning a positive pressure supplied-air respirator for chemicals with inhalation hazards. For information regarding physical

and health hazards, refer to sections 2 and 11 of the SDS.

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. 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

Do not handle until all safety precautions have been read and understood. 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. Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities

Store away from acids. Store away from strong bases. 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

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. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.

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 (e.g., spraying, high splash potential, etc.), then use of a protective apron may be necessary. See recommended glove material(s) for determining appropriate apron material(s). If a glove material is not available as an apron, polymer laminate is a suitable option.

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

Physical state	Solid
Specific Physical Form:	Film
Color	Off-White
Odor	Mild Epoxy
Odor threshold	<i>No Data Available</i>
pH	<i>Not Applicable</i>
Melting point/Freezing point	<i>No Data Available</i>
Boiling point/Initial boiling point/Boiling range	<i>Not Applicable</i>
Flash Point	No flash point
Evaporation rate	<i>No Data Available</i>
Flammability	Not Applicable
Flammable Limits(LEL)	<i>Not Applicable</i>
Flammable Limits(UEL)	<i>Not Applicable</i>
Vapor Pressure	<i>Not Applicable</i>
Relative Vapor Density	<i>Not Applicable</i>
Density	<i>No Data Available</i>
Relative Density	<i>No Data Available</i>
Water solubility	Nil
Solubility- non-water	Nil
Partition coefficient: n-octanol/ water	<i>No Data Available</i>
Autoignition temperature	<i>Not Applicable</i>
Decomposition temperature	<i>No Data Available</i>
Kinematic Viscosity	<i>No Data Available</i>
Volatile Organic Compounds	<i>No Data Available</i>
Percent volatile	<i>Not Applicable</i>
VOC Less H ₂ O & Exempt Solvents	<i>No Data Available</i>
Molecular weight	<i>No Data Available</i>

Particle Characteristics	<i>Not Applicable</i>
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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

Not determined

10.5. Incompatible materials

Amines
Strong acids
Strong bases

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.

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.

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

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
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Dermal	Rat	LD50 > 1,600 mg/kg
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Ingestion	Rat	LD50 > 1,000 mg/kg
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Dermal	Rabbit	LD50 > 3,000 mg/kg
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Ingestion	Rat	LD50 > 5,000 mg/kg
NON-VOLATILE AMIDE	Dermal		LD50 estimated to be > 5,000 mg/kg
NON-VOLATILE AMIDE	Ingestion	Rat	LD50 > 5,000 mg/kg
DICYANDIAMIDE	Dermal	Rabbit	LD50 > 10,000 mg/kg
DICYANDIAMIDE	Ingestion	Rat	LD50 > 30,000 mg/kg
1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE	Ingestion	Rat	LD50 1,000 mg/kg
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	Dermal	Rabbit	LD50 > 6,000 mg/kg
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 1.7 mg/l
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	Ingestion	Rat	LD50 > 4,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Rabbit	Mild irritant
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Rabbit	No significant irritation
NON-VOLATILE AMIDE	Rabbit	No significant irritation
DICYANDIAMIDE	Human and animal	Minimal irritation
1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE	In vitro data	Irritant
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	Rabbit	Minimal irritation

Serious Eye Damage/Irritation

Name	Species	Value
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Rabbit	Moderate irritant
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Rabbit	Mild irritant
NON-VOLATILE AMIDE	Rabbit	Mild irritant
DICYANDIAMIDE	Professional judgement	Mild irritant
1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE	In vitro data	No significant irritation
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	Rabbit	Mild irritant

Skin Sensitization

Name	Species	Value
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Human and animal	Sensitizing
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Human and animal	Sensitizing
NON-VOLATILE AMIDE	Mouse	Not classified
DICYANDIAMIDE	Guinea pig	Not classified
1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE	similar compounds	Sensitizing
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	Human	Sensitizing

	and animal	
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Respiratory Sensitization

Name	Species	Value
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
4,4'-isopropylidenediphenol-epichlorohydrin polymer	In vivo	Not mutagenic
4,4'-isopropylidenediphenol-epichlorohydrin polymer	In Vitro	Some positive data exist, but the data are not sufficient for classification
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	In Vitro	Some positive data exist, but the data are not sufficient for classification
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	In vivo	Mutagenic
NON-VOLATILE AMIDE	In Vitro	Some positive data exist, but the data are not sufficient for classification
DICYANDIAMIDE	In Vitro	Not mutagenic
1,4-BIS[(2,3-EPOXYPROPOXY)METHYL]CYCLOHEXANE	In Vitro	Mutagenic; structurally related to germ cell mutagens
PHENOL-FORMALDEHYDE POLYMER GLYCIDYL ETHER	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
4,4'-isopropylidenediphenol-epichlorohydrin polymer	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
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Ingestion	Not classified for development	Rat	NOAEL 90 mg/kg/day	during gestation
DICYANDIAMIDE	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	prematuring & 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	prematuring & 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)MET	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for	similar health	NOAEL Not available	

HYL CYCLOHEXANE			classification	hazards		
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Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
4,4'-isopropylidenediphenol-epichlorohydrin polymer	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
4,4'-isopropylidenediphenol-epichlorohydrin polymer	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
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Ingestion	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 50 mg/kg/day	13 weeks
N,N,N',N'-TETRAGLYCIDYLBIS(P-AMINOPHENYL)METHANE	Ingestion	gastrointestinal tract liver immune system nervous system eyes kidney and/or bladder	Not classified	Rat	NOAEL 200 mg/kg/day	13 weeks
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 waste product 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

Respiratory or Skin Sensitization

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. All required components of this product are listed on the active portion of the TSCA Inventory.

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: 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.

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