



## Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the REACH Regulation (EC) 1907/2006 and its modifications.

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

3M™ Composite Surfacing and Lightning Strike Protection Film AF 536

##### Product Identification Numbers

UU-0110-1508-6	UU-0110-1813-0	UU-0110-1814-8	UU-0110-1815-5	UU-0110-1816-3
UU-0110-1817-1	UU-0111-1151-3	UU-0112-0928-3	UU-0112-0929-1	UU-0112-0930-9
UU-0112-0941-6	UU-0121-1885-5			
7100231631	7100230081	7100230123	7100230192	7100230191
7100230122	7100238767	7100244135	7100244136	7100244137
7100244138	7100292252			

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

##### Identified uses

Industrial use.

#### 1.3. Details of the supplier of the safety data sheet

**Address:** 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.  
**Telephone:** +44 (0)1344 858 000  
**E Mail:** tox.uk@mmm.com  
**Website:** www.3M.com/uk

#### 1.4. Emergency telephone number

+44 (0)1344 858 000

### SECTION 2: Hazard identification

#### 2.1. Classification of the substance or mixture

CLP REGULATION (EC) No 1272/2008

The health and environmental classifications of this material have been derived using the calculation method, except in cases where test data are available or the physical form impacts classification. Classification(s) based on test data or physical form are noted below, if applicable.

The eye damage/irritation classification is not applied due to the nature of this product (adhesive film).

#### CLASSIFICATION:

Skin Corrosion/Irritation, Category 2 - Skin Irrit. 2; H315

Skin Sensitization, Category 1 - Skin Sens. 1; H317

Hazardous to the Aquatic Environment (Chronic), Category 3 - Aquatic Chronic 3; H412

For full text of H phrases, see Section 16.

#### 2.2. Label elements

##### CLP REGULATION (EC) No 1272/2008

#### SIGNAL WORD

WARNING.

#### Symbols

GHS07 (Exclamation mark) |

#### Pictograms



#### Ingredients:

Ingredient	CAS Nbr	EC No.	% by Wt
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	60684-77-7		5 - 20
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	216-823-5	1 - 15
Bisphenol A - epichlorhydrin - formaldehyde copolymer	28906-96-9		1 - 10
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8		1 - 6
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	500-062-3	0.1 - 5

#### HAZARD STATEMENTS:

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H412	Harmful to aquatic life with long lasting effects.

#### PRECAUTIONARY STATEMENTS

##### Prevention:

P280E Wear protective gloves.

##### Response:

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

Contains 27% of components with unknown hazards to the aquatic environment.

### 2.3. Other hazards

None known.

This material does not contain any substances that are assessed to be a PBT or vPvB

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Ingredient	Identifier(s)	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Copper screen	None	30 - 55	Substance not classified as hazardous
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	(CAS-No.) 60684-77-7	5 - 20	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317
bis-[4-(2,3-epoxipropoxy)phenyl]propane	(CAS-No.) 1675-54-3 (EC-No.) 216-823-5	1 - 15	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	(CAS-No.) 25068-38-6	5 - 15	Substance not classified as hazardous
Bisphenol A - epichlorhydrin - formaldehyde copolymer	(CAS-No.) 28906-96-9	1 - 10	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317
Oxide glass chemicals	(CAS-No.) 65997-17-3 (EC-No.) 266-046-0	1 - 10	Substance with a national occupational exposure limit
FIBERGLASS	None	1 - 6	Substance not classified as hazardous
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	(CAS-No.) 25085-99-8	1 - 6	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Skin Sens. 1, H317 Aquatic Chronic 2, H411
Flexiblizer	Trade Secret	0.1 - 6	Substance not classified as hazardous
Dicyandiamide	(CAS-No.) 461-58-5 (EC-No.) 207-312-8	0.1 - 5	Substance not classified as hazardous
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	(CAS-No.) 28390-91-2 (EC-No.) 500-062-3	0.1 - 5	Aquatic Chronic 2, H411 Skin Sens. 1, H317
Filler	Trade Secret	0.1 - 5	Substance with a national occupational exposure limit
Adipohydrazide	(CAS-No.) 1071-93-8 (EC-No.) 213-999-5	< 1	Aquatic Chronic 2, H411 Skin Sens. 1B, H317

Please see section 16 for the full text of any H statements referred to in this section

**Specific Concentration Limits**

<b>Ingredient</b>	<b>Identifier(s)</b>	<b>Specific Concentration Limits</b>
bis-[4-(2,3-epoxipropoxy)phenyl]propane	(CAS-No.) 1675-54-3 (EC-No.) 216-823-5	(C ≥ 5%) Skin Irrit. 2, H315 (C ≥ 5%) Eye Irrit. 2, H319

For information on ingredient occupational exposure limits or PBT or vPvB status, see sections 8 and 12 of this SDS

**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**

The most important symptoms and effects based on the CLP classification include:

Irritation to the skin (localized redness, swelling, itching, and dryness). 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. 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 gas.  
Hydrogen Chloride  
Hydrogen cyanide.  
Ammonia

**Condition**

During combustion.  
During combustion.  
During combustion.  
During combustion.  
During combustion.  
During combustion.  
During combustion.

Oxides of nitrogen.  
Phosgene

During combustion.  
During combustion.

### 5.3. Advice 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.

### 6.4. Reference to other sections

Refer to Section 8 and Section 13 for more information

## 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/vapours/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 (eg. gloves, respirators...) as required.

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

Store away from heat. Store away from amines.

### 7.3. Specific end use(s)

See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

## 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	CAS Nbr	Agency	Limit type	Additional comments
Glass, oxide, chemicals	65997-17-3	UK HSC	TWA(as fiber):5 mg/m3(1 fibers/ml)	
Oxide glass chemicals	65997-17-3	Manufacturer determined	TWA(as non-fibrous, respirable)(8 hours):3 mg/m3;TWA(as non-fibrous, inhalable fraction)(8 hours):10 mg/m3	

Filler	Trade Secret UK HSC	TWA(as respirable dust):2.4 mg/m <sup>3</sup> ;TWA(as inhalable dust):6 mg/m <sup>3</sup>
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UK HSC : UK Health and Safety Commission

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

**Biological limit values**

No biological limit values exist for any of the components listed in Section 3 of this safety data sheet.

**Recommended monitoring procedures:**Information on recommended monitoring procedures can be obtained from UK HSC

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

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

<b>Material</b>	<b>Thickness (mm)</b>	<b>Breakthrough Time</b>
Polymer laminate	No data available	No data available

**Applicable Norms/Standards**

Use gloves tested to EN 374

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**

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 vapours and particulates

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

**Applicable Norms/Standards**

Use a respirator conforming to EN 140 or EN 136: filter types A & P

## SECTION 9: Physical and chemical properties

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

Physical state	Solid.
Specific Physical Form:	Film
Colour	Beige
Odor	Low Epoxy
Odour threshold	<i>No data available.</i>
Melting point/freezing point	<i>No data available.</i>
Boiling point/boiling range	<i>Not applicable.</i>
Flammability (solid, gas)	Not classified
Flammable Limits(LEL)	<i>Not applicable.</i>
Flammable Limits(UEL)	<i>Not applicable.</i>
Flash point	No flash point
Autoignition temperature	<i>Not applicable.</i>
Decomposition temperature	<i>No data available.</i>
pH	<i>substance/mixture is non-soluble (in water)</i>
Kinematic Viscosity	<i>Not applicable.</i>
Water solubility	Nil
Solubility- non-water	<i>No data available.</i>
Partition coefficient: n-octanol/water	<i>No data available.</i>
Density	<i>Not applicable.</i>
Relative density	<i>No data available.</i>
Relative Vapor Density	Nil

### 9.2. Other information

#### 9.2.2 Other safety characteristics

EU Volatile Organic Compounds	<i>No data available.</i>
Evaporation rate	<i>Not applicable.</i>
Molecular weight	<i>Not applicable.</i>
Percent volatile	0 - 2 % weight [ <i>Details:Max 2% in the AF 536 film, % reduced due to copper content</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 polymerisation 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>
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None known.

Refer to section 5.2 for hazardous decomposition products during combustion.

## SECTION 11: Toxicological information

The information below may not agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 11 are based on UN GHS calculation rules and classifications derived from internal hazard assessments.

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

#### Signs and Symptoms of Exposure

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

##### Inhalation

May be harmful if inhaled. 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

Skin Irritation: Signs/symptoms may include localised redness, swelling, itching, dryness, cracking, blistering, and pain. 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 diarrhoea. May cause additional health effects (see below).

#### Additional Health Effects:

##### Carcinogenicity:

Contains a chemical or chemicals which can cause 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

Name	Route	Species	Value
Overall product	Inhalation-Dust/Mist(4 hr)		No data available; calculated ATE >5 - =12.5 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	Inhalation-Dust/Mist	Professional judgement	LC50 estimated to be > 12.5 mg/l
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-	Ingestion	Professional	LD50 estimated to be > 5,000 mg/kg

phenyleneoxymethylene]]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]		nal judgeme nt	
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Dermal	Rat	LD50 > 1,600 mg/kg
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Ingestion	Rat	LD50 > 1,000 mg/kg
bis-[4-(2,3-epoxipropoxi)phenyl]propane	Dermal	Rat	LD50 > 1,600 mg/kg
bis-[4-(2,3-epoxipropoxi)phenyl]propane	Ingestion	Rat	LD50 > 1,000 mg/kg
Oxide glass chemicals	Dermal		LD50 estimated to be > 5,000 mg/kg
Oxide glass chemicals	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Bisphenol A - epichlorhydrin - formaldehyde copolymer	Dermal	Rat	LD50 > 2,000 mg/kg
Bisphenol A - epichlorhydrin - formaldehyde copolymer	Ingestion	Rat	LD50 > 2,000 mg/kg
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	Rat	LD50 > 1,600 mg/kg
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Rat	LD50 > 1,000 mg/kg
Flexiblizer	Dermal	Rabbit	LD50 > 5,000 mg/kg
Flexiblizer	Ingestion	Rat	LD50 > 5,000 mg/kg
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Ingestion	Mouse	LD50 > 5,000 mg/kg
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Dermal	Rabbit	LD50 > 3,000 mg/kg
Dicyandiamide	Dermal	Rabbit	LD50 > 10,000 mg/kg
Dicyandiamide	Ingestion	Rat	LD50 > 30,000 mg/kg
Filler	Dermal	Rabbit	LD50 > 5,000 mg/kg
Filler	Inhalation- Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Filler	Ingestion	Rat	LD50 > 5,110 mg/kg
Adipohydrazide	Ingestion	Mouse	LD50 > 5,000 mg/kg

ATE = acute toxicity estimate

### Skin Corrosion/Irritation

Name	Species	Value
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	Professio nal judgemen t	Irritant
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Rabbit	No significant irritation
bis-[4-(2,3-epoxipropoxi)phenyl]propane	Rabbit	Mild irritant
Oxide glass chemicals	Professio nal judgemen t	No significant irritation
Bisphenol A - epichlorhydrin - formaldehyde copolymer	Professio nal judgemen t	Irritant
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Rabbit	Mild irritant
Flexiblizer	Professio nal judgemen t	Minimal irritation
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Rabbit	No significant irritation
Dicyandiamide	Human and animal	Minimal irritation
Filler	Rabbit	No significant irritation
Adipohydrazide	Rabbit	No significant irritation

### Serious Eye Damage/Irritation

Name	Species	Value
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	Professio nal judgemen	Severe irritant

	t	
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Rabbit	Mild irritant
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Rabbit	Moderate irritant
Oxide glass chemicals	Professional judgement	No significant irritation
Bisphenol A - epichlorhydrin - formaldehyde copolymer	Professional judgement	Severe irritant
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Rabbit	Moderate irritant
Flexiblizer	Professional judgement	Mild irritant
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Rabbit	Mild irritant
Dicyandiamide	Professional judgement	Mild irritant
Filler	Rabbit	No significant irritation

### Skin Sensitisation

Name	Species	Value
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	Professional judgement	Sensitising
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Guinea pig	Not classified
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Human and animal	Sensitising
Bisphenol A - epichlorhydrin - formaldehyde copolymer	Professional judgement	Sensitising
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Human and animal	Sensitising
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Human and animal	Sensitising
Dicyandiamide	Guinea pig	Not classified
Filler	Human and animal	Not classified
Adipohydrazide	Guinea pig	Sensitising

### Respiratory Sensitisation

Name	Species	Value
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Human	Not classified
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Human	Not classified
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Human	Not classified

### Germ Cell Mutagenicity

Name	Route	Value
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	In vivo	Not mutagenic

reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	In Vitro	Some positive data exist, but the data are not sufficient for classification
bis-[4-(2,3-epoxipropoxy)phenyl]propane	In vivo	Not mutagenic
bis-[4-(2,3-epoxipropoxy)phenyl]propane	In Vitro	Some positive data exist, but the data are not sufficient for classification
Oxide glass chemicals	In Vitro	Some positive data exist, but the data are not sufficient for classification
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	In vivo	Not mutagenic
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	In Vitro	Some positive data exist, but the data are not sufficient for classification
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	In Vitro	Some positive data exist, but the data are not sufficient for classification
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	In vivo	Some positive data exist, but the data are not sufficient for classification
Dicyandiamide	In Vitro	Not mutagenic
Filler	In Vitro	Not mutagenic
Adipohydrazide	In vivo	Not mutagenic

### Carcinogenicity

Name	Route	Species	Value
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Oxide glass chemicals	Inhalation	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Dicyandiamide	Ingestion	Rat	Not carcinogenic
Filler	Not specified.	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
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Ingestion	Not classified for development	Rat	NOAEL 90 mg/kg/day	during gestation
Dicyandiamide	Ingestion	Not classified for female reproduction	Rat	NOAEL	premating &

				1,000 mg/kg/day	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	premating & during gestation
Filler	Ingestion	Not classified for female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Filler	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Filler	Ingestion	Not classified for development	Rat	NOAEL 1,350 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
Bisphenol A - epichlorhydrin - formaldehyde copolymer	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Professional judgement	NOAEL not available	

#### Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	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
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
bis-[4-(2,3-epoxipropoxy)phenyl]propane	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
bis-[4-(2,3-epoxipropoxy)phenyl]propane	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
Oxide glass chemicals	Inhalation	respiratory system	Not classified	Human	NOAEL not available	occupational exposure
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
2,2-Bis(p-hydroxyphenyl)propane	Ingestion	auditory system   heart   endocrine	Not classified	Rat	NOAEL 1,000	28 days

diglycidyl ether polymer		system   hematopoietic system   liver   eyes   kidney and/or bladder			mg/kg/day	
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	Ingestion	hematopoietic system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 50 mg/kg/day	13 weeks
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	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
Filler	Inhalation	respiratory system   silicosis	Not classified	Human	NOAEL Not available	occupational exposure

### Aspiration Hazard

For the component/components, either no data is currently available or the data is 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.**

### 11.2. Information on other hazards

This material does not contain any substances that are assessed to be an endocrine disruptor for human health.

## SECTION 12: Ecological information

The information below may not agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 12 are based on UN GHS calculation rules and classifications derived from 3M assessments.

### 12.1. Toxicity

No product test data available.

Material	CAS #	Organism	Type	Exposure	Test endpoint	Test result
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	60684-77-7	N/A	Data not available or insufficient for classification	N/A	N/A	n/a
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	25068-38-6	Water flea	Estimated	21 days	NOEC	>1.48 mg/l
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Activated sludge	Estimated	3 hours	IC50	>100 mg/l
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Rainbow trout	Estimated	96 hours	LC50	2 mg/l
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Water flea	Estimated	48 hours	EC50	1.8 mg/l

opane						
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Green algae	Experimental	72 hours	EC50	>11 mg/l
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Green algae	Experimental	72 hours	NOEC	4.2 mg/l
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Water flea	Experimental	21 days	NOEC	0.3 mg/l
Bisphenol A - epichlorhydrin - formaldehyde copolymer	28906-96-9	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
Oxide glass chemicals	65997-17-3	Green algae	Experimental	72 hours	EC50	>1,000 mg/l
Oxide glass chemicals	65997-17-3	Water flea	Experimental	72 hours	EC50	>1,000 mg/l
Oxide glass chemicals	65997-17-3	Zebra Fish	Experimental	96 hours	LC50	>1,000 mg/l
Oxide glass chemicals	65997-17-3	Green algae	Experimental	72 hours	NOEC	>=1,000 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Green algae	Estimated	72 hours	EC50	>11 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Rainbow trout	Estimated	96 hours	LC50	2 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Water flea	Estimated	48 hours	EC50	1.8 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Green algae	Estimated	72 hours	NOEC	4.2 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Water flea	Estimated	21 days	NOEC	0.3 mg/l
Flexiblizer	Trade Secret	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Bacteria	Experimental	24 hours	IC50	>10,000 mg/l
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Common Carp	Experimental	96 hours	LC50	7 mg/l
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Green algae	Experimental	72 hours	EC50	>11 mg/l
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Water flea	Experimental	48 hours	EC50	4.7 mg/l
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Green algae	Experimental	72 hours	EC10	2.4 mg/l
Dicyandiamide	461-58-5	Bluegill	Experimental	96 hours	LC50	>1,000 mg/l

Dicyandiamide	461-58-5	Green algae	Experimental	72 hours	EC50	>1,000 mg/l
Dicyandiamide	461-58-5	Water flea	Experimental	48 hours	EC50	3,177 mg/l
Dicyandiamide	461-58-5	Green algae	Experimental	72 hours	NOEC	310 mg/l
Dicyandiamide	461-58-5	Water flea	Experimental	21 days	NOEC	25 mg/l
Dicyandiamide	461-58-5	Redworm	Experimental	14 days	LC50	>3,200 mg/kg (Dry Weight)
Filler	Trade Secret	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
Adipohydrazide	1071-93-8	Activated sludge	Experimental	3 hours	EC50	>1,000 mg/l
Adipohydrazide	1071-93-8	Common Carp	Experimental	96 hours	LC50	>100 mg/l
Adipohydrazide	1071-93-8	Green algae	Experimental	72 hours	ErC50	8.7 mg/l
Adipohydrazide	1071-93-8	Water flea	Experimental	48 hours	EC50	>=106 mg/l
Adipohydrazide	1071-93-8	Green algae	Experimental	72 hours	NOEC	0.22 mg/l

## 12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	60684-77-7	Estimated Biodegradation	28 days	BOD	0 %BOD/ThOD	OECD 301C - MITI test (I)
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	25068-38-6	Estimated Biodegradation	28 days	BOD	7 %BOD/ThOD	OECD 301C - MITI test (I)
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Experimental Biodegradation	28 days	BOD	5 %BOD/COD	OECD 301F - Manometric respirometry
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Experimental Hydrolysis		Hydrolytic half-life	117 hours (t 1/2)	
Bisphenol A - epichlorhydrin - formaldehyde copolymer	28906-96-9	Data not available - insufficient	N/A	N/A	N/A	N/A
Oxide glass chemicals	65997-17-3	Data not available - insufficient	N/A	N/A	N/A	N/A
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Estimated Biodegradation	28 days	BOD	5 %BOD/COD	OECD 301F - Manometric respirometry
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Estimated Hydrolysis		Hydrolytic half-life	4.9 days (t 1/2)	
Flexiblizer	Trade Secret	Data not available - insufficient	N/A	N/A	N/A	N/A
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Experimental Biodegradation	28 days	CO2 evolution	10 %CO2 evolution/THC O2 evolution	OECD 301B - Modified sturm or CO2
Dicyandiamide	461-58-5	Experimental Biodegradation	28 days	Dissolv. Organic Carbon Deplet	0 %removal of DOC	OECD 301E - Modif. OECD Screen
Dicyandiamide	461-58-5	Experimental Aquatic Inherent Biodegrad.	14 days	Dissolv. Organic Carbon Deplet	0 %removal of DOC	OECD 302B Zahn-Wellens/EVPA
Dicyandiamide	461-58-5	Experimental Biodegradation	61 days	CO2 evolution	1.1 %CO2 evolution/THC O2 evolution	OECD 309 Aero Sim Biod Water
Filler	Trade Secret	Data not available - insufficient	N/A	N/A	N/A	N/A

		insufficient				
Adipohydrazide	1071-93-8	Experimental Biodegradation	28 days	Dissolv. Organic Carbon Deplet	62.1 %removal of DOC	OECD 301E - Modif. OECD Screen

### 12.3 : Bioaccumulative potential

Material	Cas No.	Test type	Duration	Study Type	Test result	Protocol
Oxirane, 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bis-, polymer with 1,1'-methylenebis[isocyanatobenzene]	60684-77-7	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	25068-38-6	Estimated Bioconcentration		Bioaccumulation factor	7.4	
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Experimental Bioconcentration		Log Kow	3.242	
Bisphenol A - epichlorhydrin - formaldehyde copolymer	28906-96-9	Modeled Bioconcentration		Bioaccumulation factor	5.7	Catalogic™
Bisphenol A - epichlorhydrin - formaldehyde copolymer	28906-96-9	Modeled Bioconcentration		Log Kow	≥5.7	Episuite™
Oxide glass chemicals	65997-17-3	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Estimated Bioconcentration		Log Kow	3.242	
Flexibilizer	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Benzenamine, 4,4'-methylenebis-, polymer with (chloromethyl)oxirane	28390-91-2	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Dicyandiamide	461-58-5	Experimental BCF - Fish	42 days	Bioaccumulation factor	≤3.1	OECD305-Bioconcentration
Dicyandiamide	461-58-5	Experimental Bioconcentration		Log Kow	-0.52	OECD 107 log Kow shke flsk mtd
Filler	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Adipohydrazide	1071-93-8	Experimental Bioconcentration		Log Kow	-2.7	OECD 107 log Kow shke flsk mtd

### 12.4. Mobility in soil

Material	Cas No.	Test type	Study Type	Test result	Protocol
Bisphenol A - epichlorhydrin - formaldehyde copolymer	28906-96-9	Modeled Mobility in Soil	Koc	≥3.5E+07 l/kg	Episuite™
Dicyandiamide	461-58-5	Modeled Mobility in Soil	Koc	9 l/kg	Episuite™
Adipohydrazide	1071-93-8	Modeled Mobility in Soil	Koc	10 l/kg	Episuite™

### 12.5. Results of the PBT and vPvB assessment

This material does not contain any substances that are assessed to be a PBT or vPvB

### 12.6. Endocrine disrupting properties

This material does not contain any substances that are assessed to be an endocrine disruptor for environmental effects

#### 12.7. Other adverse effects

No information available.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment 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.

The coding of a waste stream is based on the application of the product by the consumer. Since this is out of the control of 3M, no waste code(s) for products after use will be provided. Please refer to the European Waste Code (EWC - 2000/532/EC and amendments) to assign the correct waste code to your waste stream. Ensure national and/or regional regulations are complied with and always use a licensed waste contractor.

#### EU waste code (product as sold)

08 04 09\* Waste adhesives and sealants containing organic solvents or other dangerous substances

## SECTION 14: Transportation information

	Ground Transport (ADR)	Air Transport (IATA)	Marine Transport (IMDG)
<b>14.1 UN number or ID number</b>	UN1845	UN1845	UN1845
<b>14.2 UN proper shipping name</b>	CARBON DIOXIDE, SOLID, AS COOLANT	CARBON DIOXIDE, SOLID	CARBON DIOXIDE, SOLID, AS COOLANT
<b>14.3 Transport hazard class(es)</b>	Not applicable.	Not applicable.	Not applicable.
<b>14.4 Packing group</b>	Not applicable.	Not applicable.	Not applicable.
<b>14.5 Environmental hazards</b>	Not applicable.	Not applicable	Not applicable.
<b>14.6 Special precautions for user</b>	Please refer to the other sections of the SDS for further information.	Please refer to the other sections of the SDS for further information.	Please refer to the other sections of the SDS for further information.
<b>14.7 Marine Transport in bulk according to IMO instruments</b>	No data available.	No data available.	No data available.

<b>Control Temperature</b>	Not applicable.	Not applicable.	Not applicable.
<b>Emergency Temperature</b>	Not applicable.	Not applicable.	Not applicable.
<b>ADR Classification Code</b>	Not applicable.	Not applicable.	Not applicable.
<b>IMDG Segregation Code</b>	Not applicable.	Not applicable.	Not applicable.

Please contact the address or phone number listed on the first page of the SDS for additional information on the transport/shipment of the material by rail (RID) or inland waterways (ADN).

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### Carcinogenicity

<u>Ingredient</u>	<u>CAS Nbr</u>	<u>Classification</u>	<u>Regulation</u>
bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3	Gr. 3: Not classifiable	International Agency for Research on Cancer

#### Restrictions on the manufacture, placing on the market and use:

The following substance(s) contained in this product is/are subject through Annex XVII of REACH regulation to restrictions on the manufacture, placing on the market and use when present in certain dangerous substances, mixtures and articles. Users of this product are required to comply with the restrictions placed upon it by the aforementioned provision.

bis-[4-(2,3-epoxipropoxy)phenyl]propane	1675-54-3
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#### Global inventory status

Contact 3M for more information.

#### DIRECTIVE 2012/18/EU

Seveso hazard categories, Annex 1, Part 1

None

Seveso named dangerous substances, Annex 1, Part 2

Dangerous Substances	Identifier(s)	Qualifying quantity (tonnes) for the application of	
		Lower-tier requirements	Upper-tier requirements
reaction product: bisphenol-A-(epichlorhydrin) (MW>1200)	25068-38-6	200	500

#### Regulation (EU) No 649/2012

No chemicals listed

### 15.2. Chemical Safety Assessment

A chemical safety assessment has not been carried out for this substance/mixture in accordance with Regulation (EC) No 1907/2006, as amended.

## SECTION 16: Other information

### List of relevant H statements

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

### Revision information:

Section 1: Product identification numbers information was modified.  
 Section 01: SAP Material Numbers information was modified.  
 Section 9: Property description for optional properties information was modified.  
 Section 11: Acute Toxicity table information was modified.  
 Section 11: Reproductive Toxicity Table information was modified.  
 Section 11: Target Organs - Repeated Table information was added.  
 Section 11: Target Organs - Repeated Table information was deleted.  
 Section 12: Component ecotoxicity information information was modified.  
 Section 12: Mobility in soil information information was modified.  
 Section 12: Persistence and Degradability information information was modified.  
 Section 12: Bioaccumulative potential information information was modified.  
 Section 14 Multiplier – Main Heading information was deleted.  
 Section 14 Multiplier – Regulation Data information was deleted.  
 Section 14 Transport Category – Main Heading information was deleted.  
 Section 14 Transport Category – Regulation Data information was deleted.  
 Section 14 Marine transport in bulk according to IMO instruments – Main Heading information was modified.  
 Section 14 Tunnel Code – Main Heading information was deleted.  
 Section 14 Tunnel Code – Regulation Data information was deleted.  
 Section 14 UN Number information was modified.  
 Section 15: Restrictions on manufacture ingredients information information was added.  
 Section 2: No PBT/vPvB information available warning information was added.

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications. In addition, this SDS is being provided to convey health and safety information. If you are the importer of record of this product into the European Union, you are responsible for all regulatory requirements, including, but not limited to, product registrations/notifications, substance volume tracking, and potential substance registration.

3M United Kingdom MSDSs are available at [www.3M.com/uk](http://www.3M.com/uk)