Safety Data Sheet

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Document Group:	11-1378-6	**Version Number:**	24.00
Issue Date:	06/23/26	**Supersedes Date:**	02/05/25

SECTION 1: Identification

1.1. Product identifier
3M™ Scotch-Weld™ Structural Adhesive Film AF-10 20-mil (XA)

Product Identification Numbers
62-3040-0455-9, 62-3040-1205-7, 62-3040-1705-6, 62-3040-2405-2, 62-3040-2805-3, 62-3040-4704-6, 62-3040-4705-3, 87-2500-0251-3, 87-2500-0252-1, 87-2500-0253-9, 87-2500-0254-7, 87-2500-0255-4
7010329571, 7100129576, 7010366080, 7010329572, 7000046405, 7010309766, 7010351953, 7010293977, 7010399407, 7010351954, 7010399408

1.2. Recommended use and restrictions on use

Recommended use
Structural Adhesive Film, Structural adhesive

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 Corrosion/Irritation: Category 2.
Skin Sensitizer: Category 1.
Germ Cell Mutagenicity: Category 2.
Carcinogenicity: Category 1A.
Specific Target Organ Toxicity (single exposure): Category 1.
Specific Target Organ Toxicity (repeated exposure): Category 1.

2.2. Label elements
Signal word
Danger

Symbols

Exclamation mark |Health Hazard |

Pictograms



Hazard Statements

Causes skin irritation.
May cause an allergic skin reaction.
Suspected of causing genetic defects.
May cause cancer.
Causes damage to organs: blood or blood-forming organs | cardiovascular system | kidney/urinary tract | nervous system | respiratory system.

Causes damage to organs through prolonged or repeated exposure: blood or blood-forming organs | cardiovascular system | kidney/urinary tract | liver | respiratory system.
May cause damage to organs through prolonged or repeated exposure: nervous system.

Precautionary statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe vapors.
Wash exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves and if needed, respiratory protection (see SDS Section 8).

Response:
IF ON SKIN: Wash with plenty of soap and water.
IF exposed or concerned: Call a POISON CENTER or doctor.
Get medical attention if you feel unwell.
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.

2.3. Hazards not otherwise classified
May cause an allergic respiratory reaction in sensitive people.

1% of the mixture consists of ingredients of unknown acute inhalation toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
ACRYLONITRILE-BUTADIENE POLYMER	9003-18-3	30 - 60

Phenol-Formaldehyde Polymer	9003-35-4	30 - 60 Trade Secret *
Zinc Oxide	1314-13-2	< 2.5
Amorphous Silice	7631-86-9	0.5 - 2
Antioxidant	26780-96-1	< 1.5
Formaldehyde	50-00-0	0.5 - 1.5 Trade Secret *
Phenol	108-95-2	0.5 - 1.5 Trade Secret *
2-Mercaptobenzthiazole	149-30-4	0.1 - 1 Trade Secret *
2,5-DI-TERT-AMYLHYDROQUINONE	79-74-3	< 0.3
Acrylonitrile	107-13-1	< 0.03

*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). Target organ effects. See Section 11 for additional details. Target organ effects following prolonged or repeated exposure. See Section 11 for additional details.

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	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Sulfur	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. 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. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. 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 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
Acrylonitrile	107-13-1	ACGIH	TWA:2 ppm	A3: Confirmed animal carcin., Danger of cutaneous absorption
Acrylonitrile	107-13-1	OSHA	TWA:2 ppm;STEL:10 ppm	29 CFR 1910.1045, SKIN
Phenol	108-95-2	ACGIH	TWA:5 ppm	A4: Not class. as human carcin, Danger of cutaneous absorption
Phenol	108-95-2	OSHA	TWA:19 mg/m3(5 ppm)	SKIN
Zinc Oxide	1314-13-2	ACGIH	TWA(respirable fraction):2 mg/m3;STEL(respirable fraction):10 mg/m3	

Zinc Oxide	1314-13-2	OSHA	TWA(as total dust):15 mg/m3;TWA(respirable fraction):5 mg/m3;TWA(as fume):5 mg/m3	
2-Mercaptobenzthiazole	149-30-4	AIHA	TWA:5 mg/m3	SKIN; Dermal sensitizer
Formaldehyde	50-00-0	ACGIH	TWA:0.1 ppm;STEL:0.3 ppm	A1: Confirmed human carcin., Dermal/Respiratory Sensitizer
Formaldehyde	50-00-0	OSHA	TWA:0.75 ppm;STEL:2 ppm	29 CFR 1910.1048
Inert or Nuisance Dust, Respirable fraction	7631-86-9	OSHA	TWA(as total dust):50 millions of particles/cu. ft.(15 mg/m3);TWA(respirable fraction):15 millions of particles/cu. ft.(5 mg/m3)	
Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles	7631-86-9	ACGIH	TWA(inhalable particulates):10 mg/m3	
Particles (insoluble or poorly soluble) not otherwise specified, respirable particles	7631-86-9	ACGIH	TWA(respirable particles):3 mg/m3	

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 curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. Provide appropriate local exhaust ventilation for cutting, grinding, sanding or machining. 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: Chemical Protective glove of any material type

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 formaldehyde
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	Yellow
Odor	Slight Sulfuric
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point	*No Data Available*
Boiling Point	*Not Applicable*
Flash Point	214 ºF
Evaporation rate	*Not Applicable*
Flammability	Not Applicable
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	*Not Applicable*
Relative Vapor Density	*Not Applicable*
Density	*Not Applicable*
Relative Density	*Not Applicable*
Solubility in Water	Nil
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*Not Applicable*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*No Data Available*
Kinematic Viscosity	*Not Applicable*
Molecular weight	*No Data Available*
Volatile Organic Compounds	*Not Applicable*
Percent volatile	0.0 % weight
VOC Less H2O & Exempt Solvents	*Not Applicable*
Particle Characteristics	*Not Applicable*

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
None known.

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

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

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

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

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Allergic Respiratory Reaction in sensitive people: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest. May cause additional health effects (see below).

Skin Contact:
Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching. May cause additional health effects (see below).

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. May cause additional health effects (see below).

Additional Health Effects:

Single exposure may cause target organ effects:
Cardiac Effects: Signs/symptoms may include irregular heartbeat (arrhythmia), changes in heart rate, damage to heart muscle, heart attack, and may be fatal. Hematopoietic Effects: Signs/symptoms may include generalized weakness, fatigue and alterations in numbers of circulating blood cells. Neurological Effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and/or changes in blood pressure and heart rate. Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure. Kidney/Bladder Effects: Signs/symptoms may include changes in urine production, abdominal or lower

back pain, increased protein in urine, increased blood urea nitrogen (BUN), blood in urine, and painful urination.

Prolonged or repeated exposure may cause target organ effects:
Cardiac Effects: Signs/symptoms may include irregular heartbeat (arrhythmia), changes in heart rate, damage to heart muscle, heart attack, and may be fatal. Hematopoietic Effects: Signs/symptoms may include generalized weakness, fatigue and alterations in numbers of circulating blood cells. Liver Effects: Signs/symptoms may include loss of appetite, weight loss, fatigue, weakness, abdominal tenderness and jaundice. Neurological Effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and/or changes in blood pressure and heart rate. Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure. Kidney/Bladder Effects: Signs/symptoms may include changes in urine production, abdominal or lower back pain, increased protein in urine, increased blood urea nitrogen (BUN), blood in urine, and painful urination.

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

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

Ingredient	CAS No.	Class Description	Regulation
2-Mercaptobenzothiazole	149-30-4	Grp. 2A: Probable human carc.	International Agency for Research on Cancer
Acrylonitrile	107-13-1	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
Acrylonitrile	107-13-1	Anticipated human carcinogen	National Toxicology Program Carcinogens
ACRYLONITRILE	107-13-1	Cancer hazard	OSHA Carcinogens
Formaldehyde	50-00-0	Known To Be Human Carcinogen.	National Toxicology Program Carcinogens
Formaldehyde	50-00-0	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
FORMALDEHYDE	50-00-0	Cancer hazard	OSHA Carcinogens

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

Acute Toxicity

Name	Route	Species	Value
Overall product	Dermal		No data available; calculated ATE >5,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE >50 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Phenol-Formaldehyde Polymer	Dermal	Rat	LD50 > 2,000 mg/kg
Phenol-Formaldehyde Polymer	Ingestion	Rat	LD50 > 2,900 mg/kg
ACRYLONITRILE-BUTADIENE POLYMER	Dermal	Rabbit	LD50 > 15,000 mg/kg
ACRYLONITRILE-BUTADIENE POLYMER	Ingestion	Rat	LD50 > 30,000 mg/kg
Zinc Oxide	Dermal		LD50 estimated to be > 5,000 mg/kg
Zinc Oxide	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.7 mg/l
Zinc Oxide	Ingestion	Rat	LD50 > 5,000 mg/kg
Amorphous Silice	Dermal	Rabbit	LD50 > 5,000 mg/kg
Amorphous Silice	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Amorphous Silice	Ingestion	Rat	LD50 > 5,110 mg/kg
Formaldehyde	Dermal	Rabbit	LD50 270 mg/kg
Formaldehyde	Inhalation-Gas (4 hours)	Rat	LC50 479 ppm
Formaldehyde	Ingestion	Rat	LD50 640 mg/kg
Antioxidant	Dermal	Rabbit	LD50 > 5,010 mg/kg
Antioxidant	Ingestion	Rat	LD50 3,190 mg/kg
Phenol	Inhalation-		LC50 estimated to be 2 - 10 mg/l

	Vapor		
Phenol	Ingestion	Human	LD50 > 140 mg/kg
Phenol	Dermal	Rat	LD50 670 mg/kg
2-Mercaptobenzthiazole	Dermal	Rabbit	LD50 > 7,940 mg/kg
2-Mercaptobenzthiazole	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 1.27 mg/l
2-Mercaptobenzthiazole	Ingestion	Rat	LD50 2,830 mg/kg
2,5-DI-TERT-AMYLHYDROQUINONE	Dermal	Rabbit	LD50 > 3,160 mg/kg
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	Rat	LD50 1,900 mg/kg
Acrylonitrile	Dermal	Rabbit	LD50 226 mg/kg
Acrylonitrile	Inhalation-Vapor (4 hours)	Rat	LC50 2 mg/l
Acrylonitrile	Ingestion	Rat	LD50 93 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Phenol-Formaldehyde Polymer	Human and animal	Mild irritant
ACRYLONITRILE-BUTADIENE POLYMER	Professional judgement	No significant irritation
Zinc Oxide	Human and animal	No significant irritation
Amorphous Silice	Rabbit	No significant irritation
Formaldehyde	official classification	Corrosive
Antioxidant	Rabbit	No significant irritation
Phenol	Rat	Corrosive
2-Mercaptobenzthiazole	Rabbit	No significant irritation
2,5-DI-TERT-AMYLHYDROQUINONE	Rabbit	No significant irritation
Acrylonitrile	Rabbit	Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Phenol-Formaldehyde Polymer	Human and animal	Moderate irritant
ACRYLONITRILE-BUTADIENE POLYMER	Professional judgement	No significant irritation
Zinc Oxide	Rabbit	Mild irritant
Amorphous Silice	Rabbit	No significant irritation
Formaldehyde	official classification	Corrosive
Antioxidant	Rabbit	No significant irritation
Phenol	Rabbit	Corrosive
2-Mercaptobenzthiazole	Rabbit	Mild irritant
2,5-DI-TERT-AMYLHYDROQUINONE	Rabbit	Mild irritant
Acrylonitrile	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Phenol-Formaldehyde Polymer	Human	Sensitizing

	and animal	
Zinc Oxide	Guinea pig	Not classified
Amorphous Silice	Human and animal	Not classified
Formaldehyde	Guinea pig	Sensitizing
Antioxidant	Guinea pig	Not classified
Phenol	Guinea pig	Not classified
2-Mercaptobenzthiazole	Human and animal	Sensitizing
2,5-DI-TERT-AMYLHYDROQUINONE	Mouse	Sensitizing
Acrylonitrile	Human and animal	Sensitizing

Respiratory Sensitization

Name	Species	Value
Phenol-Formaldehyde Polymer	Human	Not classified
Formaldehyde	Human	Some positive data exist, but the data are not sufficient for classification

Germ Cell Mutagenicity

Name	Route	Value
Zinc Oxide	In Vitro	Some positive data exist, but the data are not sufficient for classification
Zinc Oxide	In vivo	Some positive data exist, but the data are not sufficient for classification
Amorphous Silice	In Vitro	Not mutagenic
Formaldehyde	In Vitro	Some positive data exist, but the data are not sufficient for classification
Formaldehyde	In vivo	Mutagenic
Antioxidant	In Vitro	Not mutagenic
Phenol	In Vitro	Some positive data exist, but the data are not sufficient for classification
Phenol	In vivo	Some positive data exist, but the data are not sufficient for classification
2-Mercaptobenzthiazole	In vivo	Not mutagenic
2-Mercaptobenzthiazole	In Vitro	Some positive data exist, but the data are not sufficient for classification
2,5-DI-TERT-AMYLHYDROQUINONE	In vivo	Not mutagenic
2,5-DI-TERT-AMYLHYDROQUINONE	In Vitro	Some positive data exist, but the data are not sufficient for classification
Acrylonitrile	In Vitro	Some positive data exist, but the data are not sufficient for classification
Acrylonitrile	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Amorphous Silice	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
Formaldehyde	Not Specified	Human and animal	Carcinogenic
Antioxidant	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification

Phenol	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Phenol	Ingestion	Rat	Some positive data exist, but the data are not sufficient for classification
2-Mercaptobenzthiazole	Inhalation	Human	Carcinogenic
2-Mercaptobenzthiazole	Ingestion	Multiple animal species	Carcinogenic
Acrylonitrile	Ingestion	Human and animal	Carcinogenic
Acrylonitrile	Inhalation	Human and animal	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
Zinc Oxide	Ingestion	Not classified for reproduction and/or development	Multiple animal species	NOAEL 125 mg/kg/day	premating & during gestation
Amorphous Silice	Ingestion	Not classified for female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Amorphous Silice	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Amorphous Silice	Ingestion	Not classified for development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
Formaldehyde	Ingestion	Not classified for male reproduction	Rat	NOAEL 100 mg/kg	not applicable
Formaldehyde	Inhalation	Not classified for development	Rat	NOAEL 10 ppm	during gestation
Antioxidant	Ingestion	Not classified for development	Rat	NOAEL 120 mg/kg/day	during organogenesis
Phenol	Ingestion	Not classified for female reproduction	Rat	NOAEL 321 mg/kg/day	2 generation
Phenol	Ingestion	Not classified for male reproduction	Rat	NOAEL 321 mg/kg/day	2 generation
Phenol	Ingestion	Not classified for development	Rat	NOAEL 120 mg/kg/day	during organogenesis
2-Mercaptobenzthiazole	Ingestion	Not classified for female reproduction	Rat	NOAEL 745 mg/kg/day	2 generation
2-Mercaptobenzthiazole	Ingestion	Not classified for male reproduction	Rat	NOAEL 788 mg/kg/day	2 generation
2-Mercaptobenzthiazole	Ingestion	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	Not classified for development	Rat	NOAEL 70 mg/kg/day	during organogenesis
Acrylonitrile	Ingestion	Not classified for female reproduction	Rat	NOAEL 35 mg/kg/day	3 generation
Acrylonitrile	Ingestion	Not classified for male reproduction	Mouse	LOAEL 10 mg/kg/day	60 days
Acrylonitrile	Inhalation	Not classified for development	Rat	NOAEL 0.09 mg/l	during organogenesis
Acrylonitrile	Ingestion	Toxic to development	Rat	NOAEL 25 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
Phenol-Formaldehyde Polymer	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Human and animal	NOAEL Not available	
Formaldehyde	Inhalation	respiratory system	Causes damage to organs	Rat	LOAEL 128 ppm	6 hours
Formaldehyde	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	
Phenol	Dermal	hematoppoitic system	Causes damage to organs	Rat	LOAEL 108 mg/kg	not available
Phenol	Dermal	heart | nervous system | kidney and/or bladder	Causes damage to organs	Rat	LOAEL 107 mg/kg	24 hours
Phenol	Dermal	liver	Not classified	Human	NOAEL Not available	not available
Phenol	Inhalation	respiratory irritation	May cause respiratory irritation	Multiple animal species	NOAEL Not available	not available
Phenol	Ingestion	kidney and/or bladder	Causes damage to organs	Rat	NOAEL 120 mg/kg/day	not applicable
Phenol	Ingestion	respiratory system	Causes damage to organs	Human	NOAEL not available	poisoning and/or abuse
Phenol	Ingestion	endocrine system | liver	Not classified	Rat	NOAEL 224 mg/kg	not applicable
Phenol	Ingestion	heart	Not classified	Human	NOAEL Not available	poisoning and/or abuse
Acrylonitrile	Dermal	nervous system	Causes damage to organs	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	nervous system	Causes damage to organs	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	liver	May cause damage to organs	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	respiratory irritation	May cause respiratory irritation	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	heart	Not classified	Human	NOAEL Not available	poisoning and/or abuse
Acrylonitrile	Inhalation	blood	Not classified	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Ingestion	nervous system	Causes damage to organs	Rat	NOAEL Not available	
Acrylonitrile	Ingestion	endocrine system	May cause damage to organs	Rat	NOAEL Not available	
Acrylonitrile	Ingestion	blood	Not classified	Multiple animal species	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Phenol-Formaldehyde Polymer	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure
Zinc Oxide	Ingestion	nervous system	Not classified	Rat	NOAEL 600 mg/kg/day	10 days
Zinc Oxide	Ingestion	endocrine system	Not classified	Other	NOAEL 500 mg/kg/day	6 months
Zinc Oxide	Ingestion	hematopoietic system	Not classified	Other	NOAEL 500 mg/kg/day	6 months
Zinc Oxide	Ingestion	kidney and/or bladder	Not classified	Other	NOAEL 500 mg/kg/day	6 months
Amorphous Silice	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure
Amorphous Silice	Inhalation	silicosis	Not classified	Human	NOAEL Not	occupational

					available	exposure
Formaldehyde	Dermal	respiratory system	Not classified	Mouse	NOAEL 80 mg/kg/day	60 weeks
Formaldehyde	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 0.3 ppm	28 months
Formaldehyde	Inhalation	liver	Not classified	Rat	NOAEL 20 ppm	13 weeks
Formaldehyde	Inhalation	hematopoietic system	Not classified	Mouse	NOAEL 15 ppm	3 weeks
Formaldehyde	Inhalation	nervous system	Not classified	Mouse	NOAEL 10 ppm	13 weeks
Formaldehyde	Inhalation	endocrine system	Not classified	Rat	NOAEL 15 ppm	28 months
Formaldehyde	Inhalation	immune system	Not classified	Rat	NOAEL 15 ppm	28 months
Formaldehyde	Inhalation	muscles	Not classified	Rat	NOAEL 15 ppm	28 months
Formaldehyde	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 15 ppm	28 months
Formaldehyde	Inhalation	gastrointestinal tract	Not classified	Rat	NOAEL 15 ppm	2 years
Formaldehyde	Inhalation	eyes	Not classified	Rat	NOAEL 14.3 ppm	2 years
Formaldehyde	Inhalation	vascular system	Not classified	Rat	NOAEL 14.3 ppm	2 years
Formaldehyde	Inhalation	heart	Not classified	Mouse	NOAEL 14.3 ppm	2 years
Formaldehyde	Ingestion	liver	Not classified	Rat	NOAEL 300 mg/kg/day	2 years
Formaldehyde	Ingestion	immune system	Not classified	Rat	NOAEL 20 mg/kg/day	4 weeks
Formaldehyde	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 15 mg/kg/day	24 months
Formaldehyde	Ingestion	nervous system	Not classified	Rat	NOAEL 109 mg/kg/day	2 years
Formaldehyde	Ingestion	heart	Not classified	Rat	NOAEL 300 mg/kg/day	2 years
Formaldehyde	Ingestion	endocrine system	Not classified	Rat	NOAEL 300 mg/kg/day	2 years
Formaldehyde	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 300 mg/kg/day	2 years
Formaldehyde	Ingestion	respiratory system	Not classified	Rat	NOAEL 300 mg/kg/day	2 years
Formaldehyde	Ingestion	vascular system	Not classified	Rat	NOAEL 300 mg/kg/day	2 years
Formaldehyde	Ingestion	skin	Not classified	Rat	NOAEL 109 mg/kg/day	2 years
Formaldehyde	Ingestion	muscles	Not classified	Rat	NOAEL 109 mg/kg/day	2 years
Formaldehyde	Ingestion	eyes	Not classified	Rat	NOAEL 109 mg/kg/day	2 years
Antioxidant	Ingestion	endocrine system	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	liver	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	heart	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	skin	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	immune system	Not classified	Rat	NOAEL 48 mg/kg/day	2 years

Antioxidant	Ingestion	muscles	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	nervous system	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	eyes	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	respiratory system	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Antioxidant	Ingestion	vascular system	Not classified	Rat	NOAEL 48 mg/kg/day	2 years
Phenol	Dermal	nervous system	May cause damage to organs though prolonged or repeated exposure	Rabbit	LOAEL 260 mg/kg/day	18 days
Phenol	Inhalation	heart	Causes damage to organs through prolonged or repeated exposure	Guinea pig	LOAEL 0.1 mg/l	41 days
Phenol	Inhalation	liver	Causes damage to organs through prolonged or repeated exposure	Guinea pig	LOAEL 0.1 mg/l	41 days
Phenol	Inhalation	kidney and/or bladder	Causes damage to organs through prolonged or repeated exposure	Guinea pig	LOAEL 0.1 mg/l	41 days
Phenol	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Guinea pig	LOAEL 0.1 mg/l	41 days
Phenol	Inhalation	nervous system	May cause damage to organs though prolonged or repeated exposure	Multiple animal species	LOAEL 0.1 mg/l	14 days
Phenol	Inhalation	hematopoietic system	Not classified	Human	NOAEL Not available	occupational exposure
Phenol	Inhalation	immune system	Not classified	Rat	NOAEL 0.1 mg/l	2 weeks
Phenol	Ingestion	kidney and/or bladder	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 12 mg/kg/day	14 days
Phenol	Ingestion	hematopoietic system	Causes damage to organs through prolonged or repeated exposure	Mouse	LOAEL 1.8 mg/kg/day	28 days
Phenol	Ingestion	nervous system	May cause damage to organs though prolonged or repeated exposure	Rat	LOAEL 308 mg/kg/day	13 weeks
Phenol	Ingestion	liver	Not classified	Rat	NOAEL 40 mg/kg/day	14 days
Phenol	Ingestion	respiratory system	Not classified	Rat	LOAEL 40 mg/kg/day	14 days
Phenol	Ingestion	immune system	Not classified	Mouse	NOAEL 1.8 mg/kg/day	28 days
Phenol	Ingestion	endocrine system	Not classified	Rat	NOAEL 120 mg/kg/day	14 days
Phenol	Ingestion	skin	Not classified	Multiple animal species	NOAEL 1,204 mg/kg/day	103 weeks
Phenol	Ingestion	bone, teeth, nails, and/or hair	Not classified	Multiple animal species	NOAEL 1,204 mg/kg/day	103 weeks
2-Mercaptobenzthiazole	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	heart	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	endocrine system	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	liver	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	immune system	Not classified	Rat	NOAEL 375 mg/kg/day	2 years

2-Mercaptobenzthiazole	Ingestion	nervous system	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	eyes	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2-Mercaptobenzthiazole	Ingestion	respiratory system	Not classified	Rat	NOAEL 375 mg/kg/day	2 years
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	endocrine system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	liver	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	heart	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	skin	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	immune system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	nervous system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	eyes	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	respiratory system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,5-DI-TERT-AMYLHYDROQUINONE	Ingestion	vascular system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
Acrylonitrile	Inhalation	nervous system	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	respiratory system	May cause damage to organs though prolonged or repeated exposure	Rat	LOAEL 0.045 mg/l	2 years
Acrylonitrile	Inhalation	heart	Not classified	Rat	NOAEL 0.18 mg/l	2 years
Acrylonitrile	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 0.18 mg/l	2 years
Acrylonitrile	Inhalation	gastrointestinal tract	Not classified	Human	NOAEL Not available	
Acrylonitrile	Inhalation	blood	Not classified	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	liver	Not classified	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Inhalation	immune system	Not classified	Human	NOAEL Not available	occupational exposure
Acrylonitrile	Ingestion	nervous system	May cause damage to organs though prolonged or repeated exposure	Rat	NOAEL 25 mg/kg/day	12 weeks
Acrylonitrile	Ingestion	endocrine system	May cause damage to organs though prolonged or repeated exposure	Rat	NOAEL 14 mg/kg/day	60 days
Acrylonitrile	Ingestion	liver	Not classified	Rat	NOAEL 25 mg/kg/day	2 years
Acrylonitrile	Ingestion	heart	Not classified	Rat	NOAEL 14 mg/kg/day	2 years
Acrylonitrile	Ingestion	blood	Not classified	Rat	LOAEL 14 mg/kg/day	2 years
Acrylonitrile	Ingestion	kidney and/or bladder	Not classified	Multiple animal species	NOAEL Not available	not available
Acrylonitrile	Ingestion	respiratory system	Not classified	Rat	NOAEL 25 mg/kg	2 years

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

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

SECTION 12: Ecological information

Ecotoxicological information

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

Chemical fate information

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

SECTION 13: Disposal considerations

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

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

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

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

SECTION 15: Regulatory information

15.1. US Federal Regulations
Contact 3M for more information.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Not Applicable.

Health Hazards
Carcinogenicity
Germ cell mutagenicity
Hazard Not Otherwise Classified (HNOC)
Respiratory or Skin Sensitization
Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

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

Ingredient	C.A.S. No	% by Wt
Zinc Oxide	1314-13-2	< 2.5
Phenol	108-95-2	Trade Secret 0.5 - 1.5
Formaldehyde	50-00-0	Trade Secret 0.5 - 1.5
2-Mercaptobenzthiazole	149-30-4	Trade Secret 0.1 - 1

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.

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.

Document Group:	11-1378-6	**Version Number:**	24.00
Issue Date:	06/23/26	**Supersedes Date:**	02/05/25

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