



Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier

3M™ Scotch-Weld™ Epoxy Adhesive EC-2214 Hi-Temp NF Gray

Product Identification Numbers

ID Number	UPC	ID Number	UPC
87-2500-0405-5	00048011986418	87-3300-0616-1	
87-3300-0617-9			

7000058940, 7100067347, 7100067887

1.2. Recommended use and restrictions on use

Recommended use

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

Serious Eye Damage/Irritation: Category 2B.

Skin Sensitizer: Category 1.

Carcinogenicity: Category 1A.

2.2. Label elements

Signal word

Danger

Symbols

Exclamation mark |Health Hazard |

Pictograms



Hazard Statements

Causes eye irritation.
May cause an allergic skin reaction.
May cause cancer.

Precautionary statements

Prevention:

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing vapors.
Wash exposed skin thoroughly after handling.
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 IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical attention.
If eye irritation persists or 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% of the mixture consists of ingredients of unknown acute oral toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Aluminum Pigments	7429-90-5	30 - 60
Epoxy Resin B	25068-38-6	15 - 40 Trade Secret *
Epoxy Resin A	28064-14-4	3 - 7 Trade Secret *
Nickel Salt	15751-00-5	1 - 5 Trade Secret *
Amorphous Silica	67762-90-7	1 - 5
Calcium Carbonate	471-34-1	1 - 5

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:

Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:

Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:

Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed

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

Condition

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. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. 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. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) 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 oxidizing agents. Store away from amines.

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
Inert or Nuisance Dust, Respirable fraction	471-34-1	OSHA	TWA(as total dust):50 millions of particles/cu. ft.(15 mg/m ³);TWA(respirable fraction):15 millions of particles/cu. ft.(5 mg/m ³)	
Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles	471-34-1	ACGIH	TWA(inhalable particulates):10 mg/m ³	
Particles (insoluble or poorly soluble) not otherwise specified, respirable particles	471-34-1	ACGIH	TWA(respirable particles):3 mg/m ³	
PARTICULATES NOT OTHERWISE REGULATED RESPIRABLE FRACTION	471-34-1	OSHA	TWA(respirable fraction):5 mg/m ³	
PARTICULATES NOT OTHERWISE REGULATED TOTAL DUST	471-34-1	OSHA	TWA(as total dust):15 mg/m ³	
Silica: Amorphous, including natural diatomaceous earth	67762-90-7	OSHA	TWA:20 millions of particles/cu. ft.;TWA concentration:0.8 mg/m ³	
Aluminum Pigments	7429-90-5	OSHA	TWA(as Al total dust):15 mg/m ³ ;TWA(as Al, respirable fraction):5 mg/m ³	
Particles (insoluble or poorly	7429-90-5	ACGIH	TWA(inhalable	

soluble) not otherwise specified, inhalable particles			particulates):10 mg/m3	
Particles (insoluble or poorly soluble) not otherwise specified, respirable particles	7429-90-5	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

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

Indirect Vented Goggles

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:

Paste

Color	Gray
Odor	Mild Epoxy
Odor threshold	No Data Available
pH	Not Applicable
Melting point	Not Applicable
Boiling Point	>=260 °C
Flash Point	>=480 °F [Test Method:Closed Cup]
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	1.5 g/ml
Relative Density	1.5 [Ref Std:WATER=1]
Solubility in Water	Nil
Solubility- non-water	No Data Available
Partition coefficient: n-octanol/ water	No Data Available
Autoignition temperature	Not Applicable
Decomposition temperature	No Data Available
Kinematic Viscosity	533,333 mm2/sec
Hazardous Air Pollutants	< 2 % weight [Test Method:Calculated]
Molecular weight	No Data Available
Volatile Organic Compounds	0 g/l [Details:EU VOC content]
Percent volatile	0.0 % weight
VOC Less H2O & Exempt Solvents	0.0 g/l [Test Method:calculated SCAQMD rule 443.1]

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

Avoid curing large quantities of material to prevent a premature reaction (exotherm) with production of intense heat and smoke.

10.5. Incompatible materials

Strong oxidizing agents
Strong acids
Strong bases
Amines

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. May cause additional health effects (see below).

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:

Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. May cause additional health effects (see below).

Additional Health Effects:

Carcinogenicity:

Contains a chemical or chemicals which can cause cancer.

Ingredient	CAS No.	Class Description	Regulation
Nickel Compounds (except alloys)	15751-00-5	Known human carcinogen	National Toxicology Program Carcinogens
Nickel compounds	15751-00-5	Grp. 1: Carcinogenic to humans	International Agency for Research on 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	Ingestion		No data available; calculated ATE >5,000 mg/kg
Aluminum Pigments	Dermal		LD50 estimated to be > 5,000 mg/kg
Aluminum Pigments	Ingestion		LD50 estimated to be > 5,000 mg/kg
Aluminum Pigments	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.888 mg/l
Epoxy Resin B	Dermal	Rat	LD50 > 1,600 mg/kg
Epoxy Resin B	Ingestion	Rat	LD50 > 1,000 mg/kg
Epoxy Resin A	Dermal	Rabbit	LD50 > 6,000 mg/kg
Epoxy Resin A	Inhalation-Dust/Mist	Rat	LC50 > 1.7 mg/l

	(4 hours)		
Epoxy Resin A	Ingestion	Rat	LD50 > 4,000 mg/kg
Amorphous Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Amorphous Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Amorphous Silica	Ingestion	Rat	LD50 > 5,110 mg/kg
Calcium Carbonate	Dermal	Rat	LD50 > 2,000 mg/kg
Calcium Carbonate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 3 mg/l
Calcium Carbonate	Ingestion	Rat	LD50 6,450 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Aluminum Pigments	Rabbit	No significant irritation
Epoxy Resin B	Rabbit	Mild irritant
Epoxy Resin A	Rabbit	Minimal irritation
Amorphous Silica	Rabbit	No significant irritation
Calcium Carbonate	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Aluminum Pigments	Rabbit	No significant irritation
Epoxy Resin B	Rabbit	Moderate irritant
Epoxy Resin A	Rabbit	Mild irritant
Amorphous Silica	Rabbit	No significant irritation
Calcium Carbonate	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
Aluminum Pigments	Guinea pig	Not classified
Epoxy Resin B	Human and animal	Sensitizing
Epoxy Resin A	Human and animal	Sensitizing
Amorphous Silica	Human and animal	Not classified
Nickel Salt	similar compounds	Sensitizing

Respiratory Sensitization

Name	Species	Value
Aluminum Pigments	Human	Not classified
Epoxy Resin B	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
Aluminum Pigments	In Vitro	Not mutagenic
Epoxy Resin B	In vivo	Not mutagenic
Epoxy Resin B	In Vitro	Some positive data exist, but the data are not sufficient for classification

Epoxy Resin A	In Vitro	Some positive data exist, but the data are not sufficient for classification
Amorphous Silica	In Vitro	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Epoxy Resin B	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Amorphous Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification
Nickel Salt	Not Specified	similar compounds	Carcinogenic

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

Name	Route	Value	Species	Test Result	Exposure Duration
Epoxy Resin B	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
Epoxy Resin B	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
Epoxy Resin B	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
Epoxy Resin B	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
Amorphous Silica	Ingestion	Not classified for female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Amorphous Silica	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Amorphous Silica	Ingestion	Not classified for development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
Calcium Carbonate	Ingestion	Not classified for development	Rat	NOAEL 625 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
Epoxy Resin B	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
Calcium Carbonate	Inhalation	respiratory system	Not classified	Rat	NOAEL 0.812 mg/l	90 minutes

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Aluminum Pigments	Inhalation	nervous system	Not classified	Human	NOAEL Not available	occupational exposure
Aluminum Pigments	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure
Epoxy Resin B	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
Epoxy Resin B	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
Epoxy Resin B	Ingestion	auditory system	Not classified	Rat	NOAEL	28 days

					1,000 mg/kg/day	
Epoxy Resin B	Ingestion	heart	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Epoxy Resin B	Ingestion	endocrine system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Epoxy Resin B	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Epoxy Resin B	Ingestion	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Epoxy Resin B	Ingestion	eyes	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Epoxy Resin B	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Amorphous Silica	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure
Amorphous Silica	Inhalation	silicosis	Not classified	Human	NOAEL Not available	occupational exposure
Calcium Carbonate	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure

Aspiration Hazard

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

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

SECTION 12: Ecological information**Ecotoxicological information**

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

Chemical fate information

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

SECTION 13: Disposal considerations**13.1. Disposal methods**

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

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

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

Respiratory or Skin Sensitization

Serious eye damage or eye irritation

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

<u>Ingredient</u>	<u>C.A.S. No</u>	<u>% by Wt</u>
Aluminum Pigments	7429-90-5	30 - 60
Nickel Salt	15751-00-5	Trade Secret 1 - 5

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: 1 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

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