



Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the SS586 Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods.

| | | | |
|------------------------|------------|-------------------------|------------|
| Document group: | 11-3198-6 | Version number: | 2.00 |
| Issue Date: | 13/09/2023 | Supersedes date: | 04/09/2023 |

IDENTIFICATION

1.1. Product identifier

3M™ Scotch-Weld™ Epoxy Adhesive EC-2216 B/A Gray

1.2. Recommended use and restrictions on use

Recommended use

2-part structural adhesive

1.3. Supplier's details

Address: 3M Technologies (S) Pte Ltd,10 Ang Mo Kio Street 65, Singapore 569059
Telephone: +65 6450 8888
Website: www.3m.com.sg

1.4. Emergency telephone number

Company Emergency Hotline: +65 6591 6601 (8.15am - 5.00pm, Monday - Friday)

This product is a kit or a multipart product which consists of multiple, independently packaged components. An SDS for each of these components is included. Please do not separate the component SDSs from this cover page. The document numbers of the SDSs for components of this product are:

10-9142-0, 10-9143-8

TRANSPORT INFORMATION

International Regulations

UN No.: None assigned

UN Proper shipping name: None assigned

Transportation Class (IMO): None assigned

Transportation Class (IATA): None assigned

Other Dangerous Goods Descriptions (IMO): Not restricted, as per IMDG code 2.10.2.7, marine pollutant exception.

Other Dangerous Goods Descriptions (IATA): Not restricted, as per Special Provision A197, environmentally hazardous substance exception.

Packing Group: None assigned

Marine pollutant: None assigned

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.

3M Singapore SDSs are available at www.3m.com.sg



Safety Data Sheet

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| | | | |
|------------------------|------------|-------------------------|------------|
| Document group: | 10-9142-0 | Version number: | 3.00 |
| Issue Date: | 14/03/2024 | Supersedes date: | 29/05/2023 |

SECTION 1: Identification

1.1. Product identifier

3M™ Scotch-Weld™ Epoxy Adhesive EC-2216 B/A Gray, Part B

1.2. Recommended use and restrictions on use

Recommended use

Part B of 2-part adhesive

1.3. Supplier's details

Address: 3M Technologies (S) Pte Ltd, 10 Ang Mo Kio Street 65, Singapore 569059
Telephone: +65 6450 8888
Website: www.3m.com.sg

1.4. Emergency telephone number

+65 6591 6601 (8.15am - 5.00pm, Monday - Friday)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Serious Eye Damage/Irritation: Category 2B.

Skin Sensitizer: Category 1.

Chronic Aquatic Toxicity: Category 2.

2.2. Label elements

SIGNAL WORD

WARNING!

Symbols

Exclamation mark | Environment

Pictograms



HAZARD STATEMENTS

H320 Causes eye irritation.
 H317 May cause an allergic skin reaction.
 H411 Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention:

P280E Wear protective gloves.
 P273 Avoid release to the environment.

Response:

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

Disposal:

P501 Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Other hazards

Although titanium dioxide is classified as a carcinogen, exposures associated with this health effect are not expected during normal, intended use of this product.

SECTION 3: Composition/information on ingredients

This material is a mixture.

| Ingredient | CAS Nbr | % by Wt |
|---|------------|-----------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | 25068-38-6 | 70 - 80 |
| Kaolin | 1332-58-7 | 20 - 30 |
| Titanium dioxide | 13463-67-7 | 0.1 - 0.6 |

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

| <u>Substance</u> | <u>Condition</u> |
|---------------------------------|--------------------|
| Aldehydes. | During combustion. |
| Hydrocarbons. | During combustion. |
| Carbon monoxide. | During combustion. |
| Carbon dioxide. | During combustion. |
| Hydrogen Chloride | During combustion. |
| Ketones. | During combustion. |
| Toxic vapour, gas, particulate. | 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. 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. For larger spills, cover drains and build dykes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorised person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and Safety Data Sheet. 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. 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. Avoid contact with oxidising agents (eg. chlorine, chromic acid etc.)

7.2. Conditions for safe storage including any incompatibilities

Store away from acids. Store away from oxidising agents.

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 |
|-------------------|----------------|----------------|--|--------------------------------|
| Kaolin | 1332-58-7 | ACGIH | TWA(respirable fraction):2 mg/m ³ | A4: Not class. as human carcin |
| Kaolin | 1332-58-7 | Singapore PELs | TWA(as respirable dust)(8 hours):2 mg/m ³ | |
| Titanium dioxide | 13463-67-7 | ACGIH | TWA(Respirable nanoscale particles):0.2 mg/m ³ ;TWA(Respirable finescale particles):2.5 mg/m ³ | A3: Confirmed animal carcin. |
| Titanium dioxide | 13463-67-7 | Singapore PELs | TWA(8 hours):10 mg/m ³ | |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

Singapore PELs : Singapore. Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order

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/vapours/spray. If ventilation is not adequate, use respiratory protection equipment. Provide appropriate local exhaust when product is heated. Provide appropriate local exhaust ventilation for cutting, grinding, sanding or machining.

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:

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 (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 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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|--|
| Physical state | Liquid. |
| Color | Off-White |
| Odor | Slight Epoxy |
| Odour threshold | No data available. |
| pH | Not applicable. |
| Melting point/Freezing point | No data available. |
| Boiling point/Initial boiling point/Boiling range | >=260 °C |
| Flash point | >=248.9 °C [Test Method:Closed Cup] |
| Evaporation rate | Not applicable. |
| Flammability (solid, gas) | Not applicable. |
| Flammable Limits(LEL) | No data available. |
| Flammable Limits(UEL) | No data available. |
| Vapour pressure | <=186,158.4 Pa [@ 55 °C] |
| Vapor Density and/or Relative Vapor Density | No data available. |
| Density | 1.33 g/ml |
| Relative density | 1.33 [Ref Std:WATER=1] |
| Water solubility | Nil |
| Solubility- non-water | No data available. |
| Partition coefficient: n-octanol/water | No data available. |
| Autoignition temperature | No data available. |
| Decomposition temperature | No data available. |
| Viscosity/Kinematic Viscosity | 75,000 - 150,000 mPa-s |
| Volatile organic compounds (VOC) | 0.8 g/l [Test Method:EPA method 24A] |
| Percent volatile | 0.06 % weight [Test Method:Tested per ASTM protocol] |
| VOC less H ₂ O & exempt solvents | 0.8 g/l [Test Method:EPA method 24A] |
| Molecular weight | No data available. |

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is considered to be non reactive under normal use conditions

10.2 Chemical stability

Stable.

10.3 Possibility of hazardous reactions

Hazardous polymerisation will not occur.

10.4 Conditions to avoid

Heat is generated during cure. Do not cure a mass larger than 50 grams in a confined space to prevent a premature exothermic reaction with production of intense heat and smoke.

10.5 Incompatible materials

Strong acids.

Strong oxidising agents.

10.6 Hazardous decomposition products**Substance**

None known.

Condition

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 labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1 Information on Toxicological effects**Signs and Symptoms of Exposure**

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

Inhalation

Respiratory tract irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin contact

Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness. Allergic skin reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye contact

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 diarrhoea.

Toxicological Data

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

Acute Toxicity

| Name | Route | Species | Value |
|---|--------------------------------|---------|--|
| Overall product | Ingestion | | No data available; calculated ATE >5,000 mg/kg |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Dermal | Rat | LD50 > 1,600 mg/kg |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Ingestion | Rat | LD50 > 1,000 mg/kg |
| Kaolin | Dermal | | LD50 estimated to be > 5,000 mg/kg |
| Kaolin | Ingestion | Human | LD50 > 15,000 mg/kg |
| Titanium dioxide | Dermal | Rabbit | LD50 > 10,000 mg/kg |
| Titanium dioxide | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 6.82 mg/l |
| Titanium dioxide | Ingestion | Rat | LD50 > 10,000 mg/kg |

ATE = acute toxicity estimate

Skin Corrosion/Irritation

| Name | Species | Value |
|------|---------|-------|
| | | |

| | | |
|---|------------------------|---------------------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Rabbit | Mild irritant |
| Kaolin | Professional judgement | No significant irritation |
| Titanium dioxide | Rabbit | No significant irritation |

Serious Eye Damage/Irritation

| Name | Species | Value |
|---|------------------------|---------------------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Rabbit | Moderate irritant |
| Kaolin | Professional judgement | No significant irritation |
| Titanium dioxide | Rabbit | No significant irritation |

Sensitization:

Skin Sensitisation

| Name | Species | Value |
|---|------------------|----------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Human and animal | Sensitising |
| Titanium dioxide | Human and animal | Not classified |

Respiratory Sensitisation

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

Germ Cell Mutagenicity

| Name | Route | Value |
|---|----------|--|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | In vivo | Not mutagenic |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| Titanium dioxide | In Vitro | Not mutagenic |
| Titanium dioxide | In vivo | Not mutagenic |

Carcinogenicity

| Name | Route | Species | Value |
|---|------------|-------------------------|--|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Dermal | Mouse | Some positive data exist, but the data are not sufficient for classification |
| Kaolin | Inhalation | Multiple animal species | Not carcinogenic |
| Titanium dioxide | Ingestion | Multiple animal species | Not carcinogenic |
| Titanium dioxide | Inhalation | Rat | Carcinogenic. |

Reproductive Toxicity

Reproductive and/or Developmental Effects

| Name | Route | Value | Species | Test result | Exposure Duration |
|---|-----------|--|---------|---------------------|-------------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Ingestion | Not classified for female reproduction | Rat | NOAEL 750 mg/kg/day | 2 generation |

3M™ Scotch-Weld™ Epoxy Adhesive EC-2216 B/A Gray, Part B

| | | | | | |
|---|-----------|--------------------------------------|--------|---------------------|----------------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Ingestion | Not classified for male reproduction | Rat | NOAEL 750 mg/kg/day | 2 generation |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Dermal | Not classified for development | Rabbit | NOAEL 300 mg/kg/day | during organogenesis |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Ingestion | Not classified for development | Rat | NOAEL 750 mg/kg/day | 2 generation |

Target Organ(s)**Specific Target Organ Toxicity - single exposure**

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

Specific Target Organ Toxicity - repeated exposure

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|---|------------|--|--|---------|-----------------------|-----------------------|
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Dermal | liver | Not classified | Rat | NOAEL 1,000 mg/kg/day | 2 years |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Dermal | nervous system | Not classified | Rat | NOAEL 1,000 mg/kg/day | 13 weeks |
| 4,4'-isopropylidenediphenol-epichlorohydrin polymer | Ingestion | auditory system heart endocrine system hematopoietic system liver eyes kidney and/or bladder | Not classified | Rat | NOAEL 1,000 mg/kg/day | 28 days |
| Kaolin | Inhalation | pneumoconiosis | Causes damage to organs through prolonged or repeated exposure | Human | NOAEL NA | occupational exposure |
| Kaolin | Inhalation | pulmonary fibrosis | Not classified | Rat | NOAEL Not available | |
| Titanium dioxide | Inhalation | respiratory system | Some positive data exist, but the data are not sufficient for classification | Rat | LOAEL 0.01 mg/l | 2 years |
| Titanium dioxide | Inhalation | pulmonary fibrosis | 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

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity**Acute aquatic hazard:**

GHS Acute 2: Toxic to aquatic life.

Chronic aquatic hazard:

GHS Chronic 2: Toxic to aquatic life with long lasting effects.

No product test data available.

| Material | CAS Nbr | Organism | Type | Exposure | Test endpoint | Test result |
|--|------------|------------------|--------------|----------|---------------|--------------|
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Activated sludge | Estimated | 3 hours | IC50 | >100 mg/l |
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Green algae | Estimated | 72 hours | EC50 | >11 mg/l |
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Rainbow trout | Estimated | 96 hours | LC50 | 2 mg/l |
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Water flea | Estimated | 48 hours | EC50 | 1.8 mg/l |
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Green algae | Estimated | 72 hours | NOEC | 4.2 mg/l |
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Water flea | Estimated | 21 days | NOEC | 0.3 mg/l |
| Kaolin | 1332-58-7 | Water flea | Experimental | 48 hours | LC50 | >1,100 mg/l |
| Titanium dioxide | 13463-67-7 | Activated sludge | Experimental | 3 hours | NOEC | >=1,000 mg/l |
| Titanium dioxide | 13463-67-7 | Diatom | Experimental | 72 hours | EC50 | >10,000 mg/l |
| Titanium dioxide | 13463-67-7 | Fathead minnow | Experimental | 96 hours | LC50 | >100 mg/l |
| Titanium dioxide | 13463-67-7 | Water flea | Experimental | 48 hours | EC50 | >100 mg/l |
| Titanium dioxide | 13463-67-7 | Diatom | Experimental | 72 hours | NOEC | 5,600 mg/l |

12.2. Persistence and degradability

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|--|------------|---------------------------------|----------|----------------------|-------------------|-------------------------------------|
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Estimated Biodegradation | 28 days | BOD | 5 %BOD/COD | OECD 301F - Manometric respirometry |
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Estimated Hydrolysis | | Hydrolytic half-life | 117 hours (t 1/2) | |
| Kaolin | 1332-58-7 | Data not available-insufficient | N/A | N/A | N/A | N/A |
| Titanium dioxide | 13463-67-7 | Data not available-insufficient | N/A | N/A | N/A | N/A |

12.3 : Bioaccumulative potential

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|--|------------|---|----------|------------------------|-------------|----------|
| 4,4'-isopropylidenediph enol-epichlorohydrin polymer | 25068-38-6 | Estimated Bioconcentration | | Log Kow | 3.242 | |
| Kaolin | 1332-58-7 | Data not available or insufficient for classification | N/A | N/A | N/A | N/A |
| Titanium dioxide | 13463-67-7 | Experimental BCF - Fish | 42 days | Bioaccumulation factor | 9.6 | |

12.4. Mobility in soil

Please contact manufacturer for more details

12.5 Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Disposal methods

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

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

SECTION 14: Transport Information

International Regulations

UN No.: None assigned

UN Proper shipping name: None assigned

Transportation Class (IMO): None assigned

Transportation Class (IATA): None assigned

Other Dangerous Goods Descriptions (IMO): Not restricted, as per IMDG code 2.10.2.7, marine pollutant exception.

Other Dangerous Goods Descriptions (IATA): Not restricted, as per Special Provision A197, environmentally hazardous substance exception.

Packing Group: None assigned

Marine pollutant: None assigned

SECTION 15: Regulatory information

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

Global inventory status

Contact 3M for more information. The components of this material are in compliance with the provisions of the Korea Chemical Control Act. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain

restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory. The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

This product may contain component(s) that are regulated by the following:

Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations: this product is subject to SDS, labelling, PEL and other requirements in the Act/Regulations.

Fire Safety (Petroleum and Flammable Materials) Regulations: This product is subject to the requirements in the Regulations

SECTION 16: Other information

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.

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Safety Data Sheet

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| Document group: | 10-9143-8 | Version number: | 2.01 |
| Issue Date: | 23/10/2023 | Supersedes date: | 13/09/2023 |

SECTION 1: Identification

1.1. Product identifier

3M™ Scotch-Weld™ Epoxy Adhesive EC-2216 B/A Gray, Part A

1.2. Recommended use and restrictions on use

Recommended use

Adhesive, Part A of two part adhesive

1.3. Supplier's details

Address: 3M Technologies (S) Pte Ltd,10 Ang Mo Kio Street 65, Singapore 569059
Telephone: +65 6450 8888
Website: www.3m.com.sg

1.4. Emergency telephone number

+65 6591 6601 (8.15am - 5.00pm, Monday - Friday)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

Serious Eye Damage/Irritation: Category 2A
Skin Corrosion/Irritation: Category 2.
Skin Sensitizer: Category 1A.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (single exposure): Category 3.
Acute Aquatic Toxicity: Category 1.
Chronic Aquatic Toxicity: Category 1.

2.2. Label elements

SIGNAL WORD

DANGER!

Symbols

Exclamation mark | Health Hazard | Environment |

Pictograms



HAZARD STATEMENTS

- H319 Causes serious eye irritation.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H336 May cause drowsiness or dizziness.
- H360 May damage fertility or the unborn child.

- H410 Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention:

- P201 Obtain special instructions before use.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P280E Wear protective gloves.
- P273 Avoid release to the environment.

Response:

- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
- P308 + P313 IF exposed or concerned: Get medical advice/attention.

Disposal:

- P501 Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Other hazards

Persons previously sensitised to amines may develop a cross-sensitisation reaction to certain other amines. Although titanium dioxide is classified as a carcinogen, exposures associated with this health effect are not expected during normal, intended use of this product. A similar mixture has been tested for eye damage/irritation and the test results do not meet the criteria for classification.

SECTION 3: Composition/information on ingredients

This material is a mixture.

| Ingredient | CAS Nbr | % by Wt |
|--|------------|---------|
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | 45 - 65 |
| Kaolin | 1332-58-7 | 30 - 50 |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | < 5 |
| Titanium dioxide | 13463-67-7 | < 1 |
| Toluene | 108-88-3 | < 0.75 |
| Carbon black | 1333-86-4 | < 0.1 |

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

Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. 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). Central nervous system depression (headache, dizziness, drowsiness, incoordination, nausea, slurred speech, giddiness, and unconsciousness).

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

Amine compounds.
Carbon monoxide.
Carbon dioxide.
Irritant vapours or gases.

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. 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. For larger spills, cover drains and build dykes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorised person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and Safety Data Sheet. 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/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. Avoid contact with oxidising agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (eg. gloves, respirators...) as required.

7.2. Conditions for safe storage including any incompatibilities

Store in a well-ventilated place. Keep container tightly closed. Store away from oxidising agents.

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 |
|------------------|------------|----------------|---|---|
| Toluene | 108-88-3 | ACGIH | TWA:20 ppm | A4: Not class. as human carcin, Ototoxicant |
| Toluene | 108-88-3 | Singapore PELs | TWA(8 hours):188 mg/m3(50 ppm) | |
| Kaolin | 1332-58-7 | ACGIH | TWA(respirable fraction):2 mg/m3 | A4: Not class. as human carcin |
| Kaolin | 1332-58-7 | Singapore PELs | TWA(as respirable dust)(8 hours):2 mg/m3 | |
| Carbon black | 1333-86-4 | ACGIH | TWA(inhalable fraction):3 mg/m3 | A3: Confirmed animal carcin. |
| Carbon black | 1333-86-4 | Singapore PELs | TWA(8 hours):3.5 mg/m3 | |
| Titanium dioxide | 13463-67-7 | ACGIH | TWA(Respirable nanoscale particles):0.2 mg/m3;TWA(Respirable finescale particles):2.5 mg/m3 | A3: Confirmed animal carcin. |
| Titanium dioxide | 13463-67-7 | Singapore PELs | TWA(8 hours):10 mg/m3 | |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

Singapore PELs : Singapore. Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order

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/vapours/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 (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 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.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---------------------------------------|
| Physical state | Liquid. |
| Color | Gray |
| Odor | Pungent Odor |
| Odour threshold | No data available. |
| pH | No data available. |
| Melting point/Freezing point | Not applicable. |
| Boiling point/Initial boiling point/Boiling range | >=152.2 °C |
| Flash point | >=151.7 °C [Test Method:Closed Cup] |
| Evaporation rate | No data available. |
| Flammability (solid, gas) | Not applicable. |
| Flammable Limits(LEL) | No data available. |
| Flammable Limits(UEL) | No data available. |
| Vapour pressure | <=186,158.4 Pa [@ 55 °C] |
| Vapor Density and/or Relative Vapor Density | No data available. |
| Relative density | 1.26 [Ref.Std:WATER=1] |
| Water solubility | Nil |
| Solubility- non-water | No data available. |
| Partition coefficient: n-octanol/water | No data available. |
| Autoignition temperature | No data available. |
| Decomposition temperature | No data available. |
| Viscosity/Kinematic Viscosity | 40,000 - 80,000 mPa-s |
| Volatile organic compounds (VOC) | ± 43 g/l [Test Method:EPA method 24A] |
| Percent volatile as Text | Negligible |
| VOC less H2O & exempt solvents | ± 32 g/l [Test Method:EPA method 24A] |

Molecular weight

No data available.

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 is generated during cure. Do not cure a mass larger than 50 grams in a confined space to prevent a premature exothermic reaction with production of intense heat and smoke.

10.5 Incompatible materials

Strong oxidising agents.

10.6 Hazardous decomposition products

| <u>Substance</u> | <u>Condition</u> |
|------------------|------------------|
| None known. | |

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

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

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.

Eye contact

Severe eye irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion

May be harmful if swallowed.

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

Additional Health Effects:

Single exposure may cause target organ effects:

Central nervous system (CNS) depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Reproductive/Developmental Toxicity:

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Additional information:

Persons previously sensitised to amines may develop a cross-sensitisation reaction to certain other amines.

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 | Ingestion | | No data available; calculated ATE >2,000 - =5,000 mg/kg |
| ALIPHATIC POLYMER DIAMINE | Dermal | Rat | LD50 > 2,000 mg/kg |
| ALIPHATIC POLYMER DIAMINE | Ingestion | Rat | LD50 > 2,000 mg/kg |
| Kaolin | Dermal | | LD50 estimated to be > 5,000 mg/kg |
| Kaolin | Ingestion | Human | LD50 > 15,000 mg/kg |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Dermal | Rabbit | LD50 2,525 mg/kg |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Ingestion | Rat | LD50 2,850 mg/kg |
| Titanium dioxide | Dermal | Rabbit | LD50 > 10,000 mg/kg |
| Titanium dioxide | Inhalation-Dust/Mist (4 hours) | Rat | LC50 > 6.82 mg/l |
| Titanium dioxide | Ingestion | Rat | LD50 > 10,000 mg/kg |
| Toluene | Dermal | Rat | LD50 12,000 mg/kg |
| Toluene | Inhalation-Vapor (4 hours) | Rat | LC50 30 mg/l |
| Toluene | Ingestion | Rat | LD50 5,550 mg/kg |
| Carbon black | Dermal | Rabbit | LD50 > 3,000 mg/kg |
| Carbon black | Ingestion | Rat | LD50 > 8,000 mg/kg |

ATE = acute toxicity estimate

Skin Corrosion/Irritation

| Name | Species | Value |
|--|------------------------|---------------------------|
| ALIPHATIC POLYMER DIAMINE | Rat | Irritant |
| Kaolin | Professional judgement | No significant irritation |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Rabbit | Corrosive |
| Titanium dioxide | Rabbit | No significant irritation |
| Toluene | Rabbit | Irritant |
| Carbon black | Rabbit | No significant irritation |

Serious Eye Damage/Irritation

| Name | Species | Value |
|------|---------|-------|
|------|---------|-------|

| | | |
|--|------------------------|---------------------------|
| ALIPHATIC POLYMER DIAMINE | In vitro data | Severe irritant |
| Kaolin | Professional judgement | No significant irritation |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Rabbit | Corrosive |
| Titanium dioxide | Rabbit | No significant irritation |
| Toluene | Rabbit | Moderate irritant |
| Carbon black | Rabbit | No significant irritation |

Sensitization:

Skin Sensitisation

| Name | Species | Value |
|--|------------------------|----------------|
| ALIPHATIC POLYMER DIAMINE | Guinea pig | Sensitising |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Professional judgement | Sensitising |
| Titanium dioxide | Human and animal | Not classified |
| Toluene | Guinea pig | Not classified |

Respiratory Sensitisation

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

Germ Cell Mutagenicity

| Name | Route | Value |
|--|----------|--|
| ALIPHATIC POLYMER DIAMINE | In Vitro | Not mutagenic |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | In Vitro | Not mutagenic |
| Titanium dioxide | In Vitro | Not mutagenic |
| Titanium dioxide | In vivo | Not mutagenic |
| Toluene | In Vitro | Not mutagenic |
| Toluene | In vivo | Not mutagenic |
| Carbon black | In Vitro | Not mutagenic |
| Carbon black | In vivo | Some positive data exist, but the data are not sufficient for classification |

Carcinogenicity

| Name | Route | Species | Value |
|------------------|------------|-------------------------|--|
| Kaolin | Inhalation | Multiple animal species | Not carcinogenic |
| Titanium dioxide | Ingestion | Multiple animal species | Not carcinogenic |
| Titanium dioxide | Inhalation | Rat | Carcinogenic. |
| Toluene | Dermal | Mouse | Some positive data exist, but the data are not sufficient for classification |
| Toluene | Ingestion | Rat | Some positive data exist, but the data are not sufficient for classification |
| Toluene | Inhalation | Mouse | Some positive data exist, but the data are not sufficient for classification |
| Carbon black | Dermal | Mouse | Not carcinogenic |
| Carbon black | Ingestion | Mouse | Not carcinogenic |
| Carbon black | Inhalation | Rat | Carcinogenic. |

Reproductive Toxicity

Reproductive and/or Developmental Effects

| Name | Route | Value | Species | Test result | Exposure Duration |
|--|------------|--|---------|-----------------------|----------------------------|
| ALIPHATIC POLYMER DIAMINE | Ingestion | Not classified for female reproduction | Rat | NOAEL 1,000 mg/kg/day | prematuring into lactation |
| ALIPHATIC POLYMER DIAMINE | Ingestion | Not classified for male reproduction | Rat | NOAEL 1,000 mg/kg/day | 29 days |
| ALIPHATIC POLYMER DIAMINE | Ingestion | Not classified for development | Rat | NOAEL 1,000 mg/kg/day | prematuring into lactation |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Ingestion | Not classified for female reproduction | Rat | NOAEL 600 mg/kg/day | prematuring into lactation |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Ingestion | Not classified for male reproduction | Rat | NOAEL 600 mg/kg/day | 59 days |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Ingestion | Not classified for development | Rat | NOAEL 600 mg/kg/day | prematuring into lactation |
| Toluene | Inhalation | Not classified for female reproduction | Human | NOAEL Not available | occupational exposure |
| Toluene | Inhalation | Not classified for male reproduction | Rat | NOAEL 2.3 mg/l | 1 generation |
| Toluene | Ingestion | Toxic to development | Rat | LOAEL 520 mg/kg/day | during gestation |
| Toluene | Inhalation | Toxic to development | Human | NOAEL Not available | poisoning and/or abuse |

Target Organ(s)

Specific Target Organ Toxicity - single exposure

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|--|------------|-----------------------------------|--|------------------------|---------------------|------------------------|
| ALIPHATIC POLYMER DIAMINE | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | similar health hazards | Irritation Positive | |
| ALIPHATIC POLYMER DIAMINE | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Rat | NOAEL Not available | |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | similar health hazards | NOAEL Not available | |
| Toluene | Inhalation | central nervous system depression | May cause drowsiness or dizziness | Human | NOAEL Not available | |
| Toluene | Inhalation | respiratory irritation | Some positive data exist, but the data are not sufficient for classification | Human | NOAEL Not available | |
| Toluene | Inhalation | immune system | Not classified | Mouse | NOAEL 0.004 mg/l | 3 hours |
| Toluene | Ingestion | central nervous system depression | May cause drowsiness or dizziness | Human | NOAEL Not available | poisoning and/or abuse |

Specific Target Organ Toxicity - repeated exposure

| Name | Route | Target Organ(s) | Value | Species | Test result | Exposure Duration |
|---------------------------|-----------|---|----------------|---------|-----------------------|-------------------|
| ALIPHATIC POLYMER DIAMINE | Ingestion | heart skin endocrine system gastrointestinal tract bone, teeth, nails, and/or hair hematopoietic system liver immune system muscles nervous system eyes kidney and/or | Not classified | Rat | NOAEL 1,000 mg/kg/day | 29 days |

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| | | | | | | |
|--|------------|---|--|-------------------------|-----------------------|------------------------|
| | | bladder respiratory system vascular system | | | | |
| Kaolin | Inhalation | pneumoconiosis | Causes damage to organs through prolonged or repeated exposure | Human | NOAEL NA | occupational exposure |
| Kaolin | Inhalation | pulmonary fibrosis | Not classified | Rat | NOAEL Not available | |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | Ingestion | gastrointestinal tract heart endocrine system bone, teeth, nails, and/or hair hematopoietic system liver immune system muscles nervous system eyes kidney and/or bladder respiratory system vascular system | Not classified | Rat | NOAEL 600 mg/kg/day | 59 days |
| Titanium dioxide | Inhalation | respiratory system | Some positive data exist, but the data are not sufficient for classification | Rat | LOAEL 0.01 mg/l | 2 years |
| Titanium dioxide | Inhalation | pulmonary fibrosis | Not classified | Human | NOAEL Not available | occupational exposure |
| Toluene | Inhalation | auditory system eyes olfactory system | Causes damage to organs through prolonged or repeated exposure | Human | NOAEL Not available | poisoning and/or abuse |
| Toluene | Inhalation | nervous system | May cause damage to organs though prolonged or repeated exposure | Human | NOAEL Not available | poisoning and/or abuse |
| Toluene | Inhalation | respiratory system | Some positive data exist, but the data are not sufficient for classification | Rat | LOAEL 2.3 mg/l | 15 months |
| Toluene | Inhalation | heart liver kidney and/or bladder | Not classified | Rat | NOAEL 11.3 mg/l | 15 weeks |
| Toluene | Inhalation | endocrine system | Not classified | Rat | NOAEL 1.1 mg/l | 4 weeks |
| Toluene | Inhalation | immune system | Not classified | Mouse | NOAEL Not available | 20 days |
| Toluene | Inhalation | bone, teeth, nails, and/or hair | Not classified | Mouse | NOAEL 1.1 mg/l | 8 weeks |
| Toluene | Inhalation | hematopoietic system vascular system | Not classified | Human | NOAEL Not available | occupational exposure |
| Toluene | Inhalation | gastrointestinal tract | Not classified | Multiple animal species | NOAEL 11.3 mg/l | 15 weeks |
| Toluene | Ingestion | nervous system | Some positive data exist, but the data are not sufficient for classification | Rat | NOAEL 625 mg/kg/day | 13 weeks |
| Toluene | Ingestion | heart | Not classified | Rat | NOAEL 2,500 mg/kg/day | 13 weeks |
| Toluene | Ingestion | liver kidney and/or bladder | Not classified | Multiple animal species | NOAEL 2,500 mg/kg/day | 13 weeks |
| Toluene | Ingestion | hematopoietic system | Not classified | Mouse | NOAEL 600 mg/kg/day | 14 days |
| Toluene | Ingestion | endocrine system | Not classified | Mouse | NOAEL 105 mg/kg/day | 28 days |
| Toluene | Ingestion | immune system | Not classified | Mouse | NOAEL 105 mg/kg/day | 4 weeks |
| Carbon black | Inhalation | pneumoconiosis | Not classified | Human | NOAEL Not available | occupational exposure |

Aspiration Hazard

| Name | Value |
|---------|-------------------|
| Toluene | Aspiration hazard |

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

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity

Acute aquatic hazard:

GHS Acute 1: Very toxic to aquatic life.

Chronic aquatic hazard:

GHS Chronic 1: Very toxic to aquatic life with long lasting effects.

No product test data available.

| Material | CAS Nbr | Organism | Type | Exposure | Test endpoint | Test result |
|--|------------|------------------|--------------|----------|---------------|--------------|
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Fathead minnow | Experimental | 96 hours | LL50 | 2.16 mg/l |
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Green algae | Experimental | 72 hours | EL50 | 0.43 mg/l |
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Water flea | Experimental | 48 hours | EL50 | 0.57 mg/l |
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Green algae | Experimental | 72 hours | NOEL | 0.28 mg/l |
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Activated sludge | Experimental | 3 hours | EC50 | 410.3 mg/l |
| Kaolin | 1332-58-7 | Water flea | Experimental | 48 hours | LC50 | >1,100 mg/l |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Golden Orfe | Experimental | 96 hours | LC50 | >1,000 mg/l |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Green algae | Experimental | 72 hours | ErC50 | >500 mg/l |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Water flea | Experimental | 48 hours | EC50 | 218.16 mg/l |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Green algae | Experimental | 72 hours | ErC10 | 5.4 mg/l |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Bacteria | Experimental | 17 hours | EC50 | 4,000 mg/l |
| Titanium dioxide | 13463-67-7 | Activated sludge | Experimental | 3 hours | NOEC | >=1,000 mg/l |
| Titanium dioxide | 13463-67-7 | Diatom | Experimental | 72 hours | EC50 | >10,000 mg/l |
| Titanium dioxide | 13463-67-7 | Fathead minnow | Experimental | 96 hours | LC50 | >100 mg/l |
| Titanium dioxide | 13463-67-7 | Water flea | Experimental | 48 hours | EC50 | >100 mg/l |
| Titanium dioxide | 13463-67-7 | Diatom | Experimental | 72 hours | NOEC | 5,600 mg/l |
| Toluene | 108-88-3 | Coho Salmon | Experimental | 96 hours | LC50 | 5.5 mg/l |

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| | | | | | | |
|--------------|-----------|------------------|---|----------|------|------------------------------|
| Toluene | 108-88-3 | Grass Shrimp | Experimental | 96 hours | LC50 | 9.5 mg/l |
| Toluene | 108-88-3 | Green algae | Experimental | 72 hours | EC50 | 12.5 mg/l |
| Toluene | 108-88-3 | Leopard frog | Experimental | 9 days | LC50 | 0.39 mg/l |
| Toluene | 108-88-3 | Pink Salmon | Experimental | 96 hours | LC50 | 6.41 mg/l |
| Toluene | 108-88-3 | Water flea | Experimental | 48 hours | EC50 | 3.78 mg/l |
| Toluene | 108-88-3 | Coho Salmon | Experimental | 40 days | NOEC | 1.39 mg/l |
| Toluene | 108-88-3 | Diatom | Experimental | 72 hours | NOEC | 10 mg/l |
| Toluene | 108-88-3 | Water flea | Experimental | 7 days | NOEC | 0.74 mg/l |
| Toluene | 108-88-3 | Activated sludge | Experimental | 12 hours | IC50 | 292 mg/l |
| Toluene | 108-88-3 | Bacteria | Experimental | 16 hours | NOEC | 29 mg/l |
| Toluene | 108-88-3 | Bacteria | Experimental | 24 hours | EC50 | 84 mg/l |
| Toluene | 108-88-3 | Redworm | Experimental | 28 days | LC50 | >150 mg per kg of bodyweight |
| Toluene | 108-88-3 | Soil microbes | Experimental | 28 days | NOEC | <26 mg/kg (Dry Weight) |
| Carbon black | 1333-86-4 | Activated sludge | Experimental | 3 hours | EC50 | >=100 mg/l |
| Carbon black | 1333-86-4 | N/A | Data not available or insufficient for classification | N/A | N/A | N/A |

12.2. Persistence and degradability

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|--|------------|---------------------------------|----------|-------------------------------|-----------------------------------|-------------------------------------|
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Experimental Biodegradation | 28 days | BOD | 0 %BOD/ThOD | OECD 301F - Manometric respirometry |
| Kaolin | 1332-58-7 | Data not available-insufficient | N/A | N/A | N/A | N/A |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Experimental Biodegradation | 25 days | CO2 evolution | -8 %CO2 evolution/THCO2 evolution | OECD 301B - Modified sturm or CO2 |
| Titanium dioxide | 13463-67-7 | Data not available-insufficient | N/A | N/A | N/A | N/A |
| Toluene | 108-88-3 | Experimental Biodegradation | 20 days | BOD | 80 %BOD/ThOD | APHA Std Meth Water/Wastewater |
| Toluene | 108-88-3 | Experimental Photolysis | | Photolytic half-life (in air) | 5.2 days (t 1/2) | |
| Carbon black | 1333-86-4 | Data not available-insufficient | N/A | N/A | N/A | N/A |

12.3 : Bioaccumulative potential

| Material | CAS Nbr | Test type | Duration | Study Type | Test result | Protocol |
|--|------------|---|----------|------------------------|-------------|------------|
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Modeled Bioconcentration | | Bioaccumulation factor | 42 | Catalogic™ |
| ALIPHATIC POLYMER DIAMINE | 68911-25-1 | Modeled Bioconcentration | | Log Kow | 11.7 | Episuite™ |
| Kaolin | 1332-58-7 | Data not available or insufficient for classification | N/A | N/A | N/A | N/A |
| 3,3'-Oxybis(ethyleneoxy)bis(propylamine) | 4246-51-9 | Experimental Bioconcentration | | Log Kow | -1.25 | |
| Titanium dioxide | 13463-67-7 | Experimental BCF - Fish | 42 days | Bioaccumulation factor | 9.6 | |
| Toluene | 108-88-3 | Experimental BCF - Other | 72 hours | Bioaccumulation factor | 90 | |

| | | | | | | |
|--------------|-----------|---|-----|---------|------|-----|
| Toluene | 108-88-3 | Experimental Bioconcentration | | Log Kow | 2.73 | |
| Carbon black | 1333-86-4 | Data not available or insufficient for classification | N/A | N/A | N/A | N/A |

12.4. Mobility in soil

Please contact manufacturer for more details

12.5 Other adverse effects

No information available.

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.

SECTION 14: Transport Information

International Regulations

UN No.: None assigned

UN Proper shipping name: None assigned

Transportation Class (IMO): None assigned

Transportation Class (IATA): None assigned

Other Dangerous Goods Descriptions (IMO): Not restricted, as per IMDG code 2.10.2.7, marine pollutant exception.

Other Dangerous Goods Descriptions (IATA): Not restricted, as per Special Provision A197, environmentally hazardous substance exception.

Packing Group: None assigned

Marine pollutant: None assigned

SECTION 15: Regulatory information

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

Global inventory status

Contact 3M for more information. The components of this material are in compliance with the provisions of the Korea Chemical Control Act. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information. The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information. The components of this product are in compliance with the new substance notification requirements of CEPA. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory. The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the

active portion of the TSCA Inventory.

This product may contain component(s) that are regulated by the following:

Workplace Safety and Health Act & Workplace Safety and Health (General Provisions) Regulations: this product is subject to SDS, labelling, PEL and other requirements in the Act/Regulations.

Fire Safety (Petroleum and Flammable Materials) Regulations: This product is subject to the requirements in the Regulations

SECTION 16: Other information

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.

3M Singapore SDSs are available at www.3m.com.sg