Safety Data Sheet

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

Document group:	36-4098-4	**Version number:**	3.00
Issue Date:	23/09/2025	**Supersedes date:**	20/03/2024

IDENTIFICATION

1.1. Product identifier
3M™ Scotchcast™ Inline Resin Power Cable Splice Kits (82-AN, 82-A1N, 82-A2N, 82-A3N), with 3M™ Scotchcast™ Resin 4N

1.2. Recommended use and restrictions on use

Recommended use
Electrical

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:

24-9848-3, 35-7972-9

TRANSPORT INFORMATION

International Regulations

UN No.: UN3267
UN Proper shipping name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
Transportation Class (IMO): 8-8 Corrosives
Transportation Class (IATA): 8-8 Corrosives
Other Dangerous Goods Descriptions (IMO): None assigned
Other Dangerous Goods Descriptions (IATA): None assigned
Packing Group: III
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

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

Document group:	24-9848-3	**Version number:**	5.01
Issue Date:	30/10/2025	**Supersedes date:**	02/01/2025

SECTION 1: Identification

1.1. Product identifier
3M™ Scotchcast™ Electrical Insulating Resin 4N, Part A and 3M™ Scotchcast™ Electrical Insulating Resin 4, Part A

1.2. Recommended use and restrictions on use

Recommended use
Electrical, Part A of Resin 4 & Resin 4N

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 2.
Skin Sensitizer: Category 1.
Reproductive Toxicity: Category 1B.
Chronic Aquatic Toxicity: Category 2.

2.2. Label elements
SIGNAL WORD
DANGER!

Symbols
Exclamation mark |Health Hazard | Environment |

Pictograms

HAZARD STATEMENTS

H319	Causes serious eye irritation.
H317	May cause an allergic skin reaction.
H360	May damage fertility or the unborn child.
H411	Toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention:

P201	Obtain special instructions before use.
P273	Avoid release to the environment.
P280E	Wear protective gloves.

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.
P308 + P313	IF exposed or concerned: Get medical attention.
P333 + P313	If skin irritation or rash occurs: Get medical attention.
P391	Collect spillage.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	CAS Nbr	% by Wt
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	80 - 100
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	3 - 7

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	Condition
Carbon monoxide.	During combustion.
Carbon dioxide.	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. 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. 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

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. Use personal protective equipment (eg. gloves, respirators…) as required.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits
No occupational exposure limit values exist for any of the components listed in Section 3 of this Safety Data Sheet.

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 (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 vapours and particulates
Half facepiece or full facepiece supplied-air respirator

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.
Specific Physical Form:	Resin
Color	Amber
Odor	Mild Epoxy
Odour threshold	*No data available.*
pH	*No data available.*
Melting point/Freezing point	*No data available.*
Boiling point/Initial boiling point/Boiling range	>= 93.9 ºC
Flash point	>= 93.9 ºC [*Test Method:*Closed Cup]
Evaporation rate	*No data available.*
Flammability	Not applicable.
Flammable Limits(LEL)	*No data available.*
Flammable Limits(UEL)	*No data available.*
Vapour pressure	<= 186,158.4 Pa [@ 55 ºC]
Relative Vapor Density	*No data available.*
Density	1.16 g/ml
Relative density	1.16 [*Ref Std:*WATER=1]
Water solubility	Negligible
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	*No data available.*
Autoignition temperature	*No data available.*
Decomposition temperature	*No data available.*
Kinematic Viscosity	3,879 mm²/sec
Volatile organic compounds (VOC)	*No data available.*
Percent volatile as Text	Negligible
VOC less H2O & exempt solvents	*No data available.*
Average particle size	*No data available.*
Bulk density	*No data available.*
Molecular weight	*No data available.*
Softening point	*No data available.*

Particle Characteristics	*Not applicable.*

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
None known.

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 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. May cause additional health effects (see below).

Additional Health Effects:

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

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
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	Rat	LD50 > 1,600 mg/kg
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Rat	LD50 > 1,000 mg/kg
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Dermal	Rabbit	LD50 > 4,000 mg/kg
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Rabbit	Mild irritant
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Rabbit	Mild irritant

Serious Eye Damage/Irritation

Name	Species	Value
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Rabbit	Moderate irritant
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Rabbit	No significant irritation

Sensitization:

Skin Sensitisation

Name	Species	Value
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Human and animal	Sensitising
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Guinea pig	Sensitising

Respiratory Sensitisation

Name	Species	Value
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	In vivo	Not mutagenic
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	In Vitro	Some positive data exist, but the data are not sufficient for classification
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	In vivo	Not mutagenic
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Ingestion	Not classified for male reproduction	Rat	NOAEL 150 mg/kg/day	2 generation
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Dermal	Not classified for development	Rat	NOAEL 200 mg/kg/day	during organogenesis
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Ingestion	Not classified for development	Rabbit	NOAEL 375 mg/kg/day	during gestation
Oxirane, mono[(C12-14-alkyloxy)methyl]	Ingestion	Toxic to female reproduction	Rat	NOAEL 10	2 generation

derivatives				mg/kg/day	

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether 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
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Dermal	nervous system | respiratory system	Not classified	Rat	NOAEL 100 mg/kg/day	14 weeks
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Dermal	blood | liver | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 100 mg/kg/day	13 weeks
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Ingestion	immune system	Not classified	Rat	NOAEL 750 mg/kg/day	13 weeks
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 100 mg/kg/day	13 weeks
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	Ingestion	hematopoietic system | nervous system | eyes	Not classified	Rat	NOAEL 750 mg/kg/day	13 weeks

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

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

SECTION 12: Ecological information

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
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Green algae	Estimated	72 hours	EC50	>11 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Rainbow trout	Estimated	96 hours	LC50	2 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Water flea	Estimated	48 hours	EC50	1.8 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Green algae	Estimated	72 hours	NOEC	4.2 mg/l
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Water flea	Estimated	21 days	NOEC	0.3 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Green algae	Experimental	72 hours	IC50	843.75 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Rainbow trout	Experimental	96 hours	No tox obs at lmt of water sol	>100 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Water flea	Experimental	48 hours	EL50	7.2 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Green algae	Experimental	72 hours	NOEC	500 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Midge	Experimental	28 days	NOEC	100 mg/kg (Dry Weight)
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Water flea	Experimental	21 days	NOEL	56 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Activated sludge	Analogous Compound	180 minutes	EC50	>100 mg/l
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Cabbage	Experimental	21 days	EC50	847.92 mg/kg (Dry Weight)
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Redworm	Experimental	28 days	NOEC	1,000 mg/kg (Dry Weight)
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Soil microbes	Experimental	28 days	EC50	>1,000 mg/kg (Dry Weight)

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Estimated Biodegradation	28 days	BOD	5 %BOD/COD	OECD 301F - Manometric respirometry
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Estimated Hydrolysis		Hydrolytic half-life	4.9 days (t 1/2)	
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Experimental Biodegradation	28 days	BOD	87 %BOD/ThOD	OECD 301F - Manometric respirometry

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
2,2-Bis(p-hydroxyphenyl)propane diglycidyl ether polymer	25085-99-8	Estimated Bioconcentration		Log Kow	3.242	
Oxirane, mono[(C12-14-alkyloxy)methyl] derivatives	68609-97-2	Experimental Bioconcentration		Log Kow	>6	OECD 117 log Kow HPLC method

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 waste product in a permitted industrial waste facility. As a disposal alternative, incinerate 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 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.

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

Safety Data Sheet

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

Document group:	35-7972-9	**Version number:**	4.00
Issue Date:	09/12/2025	**Supersedes date:**	30/10/2025

SECTION 1: Identification

1.1. Product identifier
3M™ Scotchcast™ Electrical Insulating Resin 4N, Part B

1.2. Recommended use and restrictions on use

Recommended use
Electrical, Part B of Resin 4N

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
Acute Toxicity (oral): Category 4.
Skin Corrosion/Irritation: Category 1.
Serious Eye Damage/Irritation: Category 1.
Skin Sensitizer: Category 1.
Carcinogenicity: Category 1B.
Reproductive Toxicity: Category 2.
Specific Target Organ Toxicity (repeated exposure): Category 1.
Chronic Aquatic Toxicity: Category 1.

2.2. Label elements
SIGNAL WORD
DANGER!

Symbols
Corrosion | Exclamation mark |Health Hazard | Environment |

Pictograms

HAZARD STATEMENTS

H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H350	May cause cancer.
H361	Suspected of damaging fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure: respiratory system.
H373	May cause damage to organs through prolonged or repeated exposure: blood or blood-forming organs | endocrine system | gastrointestinal tract | immune system | kidney/urinary tract | liver.
H410	Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

Prevention:

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P273	Avoid release to the environment.
P280J	Wear protective gloves, protective clothing, eye protection, face protection, and if needed, respiratory protection (see SDS Section 8).

Response:

P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER or doctor.
P333 + P313	If skin irritation or rash occurs: Get medical attention.
P391	Collect spillage.

2.3. Other hazards

Persons previously sensitised to amines may develop a cross-sensitisation reaction to certain other amines. - May cause chemical gastrointestinal burns. Aspiration hazard classification does not apply due to the kinematic viscosity of the product.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	CAS Nbr	% by Wt
Phenol, Styrenated	61788-44-1	15 - 40
N-AMINOETHYLPIPERAZINE	140-31-8	10 - 22
Alkyl Acids, Reaction Products With Triethylenetetramine	68919-79-9	10 - 20
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	64742-11-6	10 - 20
Alykl Acids, Reaction Products With TETA	Trade Secret	4 - 10

And DGEBA		
Reaction product of cycloaliphatic amine with aromatic epoxy resin	Trade Secret	1 - 8
Thermal cracked residuum (petroleum)	64741-80-6	3 - 7
PETROLEUM DISTILLATES	64741-81-7	3 - 7
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	1 - 5
Triethylenetetramine	112-24-3	0.1 - 2
Bis[(dimethylamino)methyl]phenol	71074-89-0	0.1 - 1
Carbon black	1333-86-4	< 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 flush with large amounts of water for at least 15 minutes. Remove contaminated clothing. Get immediate medical attention. Wash clothing before reuse.

Eye contact
Immediately flush with large amounts of water for at least 15 minutes. Remove contact lenses if easy to do. Continue rinsing. Immediately get medical attention.

If swallowed
Rinse mouth. Do not induce vomiting. Get immediate medical attention.

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

Skin burns (localized redness, swelling, itching, intense pain, blistering, and tissue destruction). Allergic skin reaction (redness, swelling, blistering, and itching). Serious damage to the eyes (corneal cloudiness, severe pain, tearing, ulcerations, and significantly impaired or loss of vision). 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
Use a fire fighting agent suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Amine compounds.	During combustion.
Carbon monoxide.	During combustion.
Carbon dioxide.	During combustion.
Oxides of nitrogen.	During combustion.

5.3. Special protective actions for fire-fighters
No special protective actions for fire-fighters are anticipated.

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. 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. For large spills, if necessary, get assistance from professional spill clean up team. For small spills, carefully neutralise spill by adding appropriate dilute acid such as vinegar. Work slowly to avoid boiling or spattering. Continue to add neutralising agent until reaction stops. Let cool before collecting. 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
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. Use personal protective equipment (eg. gloves, respirators…) as required.

7.2. Conditions for safe storage including any incompatibilities
Store away from acids.

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
Triethylenetetramine	112-24-3	AIHA	TWA:6 mg/m3(1 ppm)	SKIN
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	
Oil Mist, mineral	64742-11-6	Singapore PELs	TWA(as mist)(8 hours):5 mg/m3;STEL(as mist)(15 minutes):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:
Full face shield.
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.

For prolonged or repeated contact, gloves made from the following material(s) are recommended (breakthrough times are >4 hours): Butyl rubber.

Any glove recommended for prolonged/repeated contact is also suitable for short-term/splash contact.

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 vapours and particulates
Half facepiece or full facepiece supplied-air respirator

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.
Specific Physical Form:	Resin
Color	Black
Odor	Moderate Amine
Odour threshold	*No data available.*

pH	10 - 12
Melting point/Freezing point	*No data available.*
Boiling point/Initial boiling point/Boiling range	319.4 ºC
Flash point	No flash point
Evaporation rate	*No data available.*
Flammability	Not applicable.
Flammable Limits(LEL)	*No data available.*
Flammable Limits(UEL)	*No data available.*
Vapour pressure	533.3 Pa
Relative Vapor Density	*No data available.*
Density	1.03 g/ml
Relative density	1.03 [*Ref Std:*WATER=1]
Water solubility	660 ppm [@ 77 ºF]
Solubility- non-water	*No data available.*
Partition coefficient: n-octanol/water	*No data available.*
Autoignition temperature	*No data available.*
Decomposition temperature	*No data available.*
Kinematic Viscosity	4,369 mm²/sec
Volatile organic compounds (VOC)	*No data available.*
Percent volatile	3 - 5 %
VOC less H2O & exempt solvents	*No data available.*
Average particle size	*No data available.*
Bulk density	*No data available.*
Molecular weight	*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 polymerisation will not occur.

10.4 Conditions to avoid
None known.

10.5 Incompatible materials
Strong acids.

No data available.

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 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
May be harmful if inhaled. Respiratory tract irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. May cause additional health effects (see below).

Skin contact
May be harmful in contact with skin.
Corrosive (skin burns): Signs/symptoms may include localised redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction. Allergic skin reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Eye contact
Corrosive (eye burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion
Harmful if swallowed.
Gastrointestinal corrosion: Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea; blood in the faeces and/or vomitus may also be seen. May cause additional health effects (see below).

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects:
Hematopoietic effects: Signs/symptoms may include generalised 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. Immunological effects: Signs/symptoms may include alterations in the number of circulating immune cells, allergic skin and/or respiratory reaction, and changes in immune function. Gastrointestinal Effects: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Endocrine effects: Signs/symptoms may include disruption of gonadal, thyroid, adrenal, or pancreatic function, changes in hormone production, alterations in circulating hormone levels, and/or changes in tissue response to hormones. Respiratory effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish coloured skin (cyanosis), sputum production, changes in lung function tests, and 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.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

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

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 >2,000 - =5,000 mg/kg
Overall product	Inhalation-Dust/Mist(4 hr)		No data available; calculated ATE >5 - =12.5 mg/l
Overall product	Ingestion		No data available; calculated ATE >300 - =2,000 mg/kg
Phenol, Styrenated	Dermal	Rat	LD50 > 2,000 mg/kg
Phenol, Styrenated	Ingestion	Rat	LD50 > 2,000 mg/kg
N-AMINOETHYLPIPERAZINE	Dermal	Rabbit	LD50 865 mg/kg
N-AMINOETHYLPIPERAZINE	Ingestion	Rat	LD50 1,470 mg/kg
Alkyl Acids, Reaction Products With Triethylenetetramine	Ingestion	Rat	LD50 > 2,000 mg/kg
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	similar compounds	LD50 > 3,000 mg/kg
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 > 5 mg/l
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Ingestion	similar compounds	LD50 > 5,000 mg/kg
Alkyl Acids, Reaction Products With Triethylenetetramine	Dermal	similar health hazards	LD50 estimated to be > 5,000 mg/kg
PETROLEUM DISTILLATES	Dermal	similar compounds	LD50 > 2,000 mg/kg
PETROLEUM DISTILLATES	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 4.1 mg/l
PETROLEUM DISTILLATES	Ingestion	similar compounds	LD50 4,320 mg/kg
Thermal cracked residuum (petroleum)	Dermal	similar compounds	LD50 > 2,000 mg/kg
Thermal cracked residuum (petroleum)	Inhalation-Dust/Mist (4 hours)	similar compounds	LC50 4.1 mg/l
Thermal cracked residuum (petroleum)	Ingestion	similar compounds	LD50 4,320 mg/kg
2,4,6-Tris(dimethylaminomethyl)-phenol	Dermal	Rat	LD50 1,280 mg/kg
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	Rat	LD50 1,000 mg/kg
Triethylenetetramine	Dermal	Rat	LD50 1,465 mg/kg
Triethylenetetramine	Ingestion	Rat	LD50 1,591 mg/kg
Bis[(dimethylamino)methyl]phenol	Ingestion		LD50 estimated to be 300 - 2,000 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
Phenol, Styrenated	Rabbit	No significant irritation
N-AMINOETHYLPIPERAZINE	Rabbit	Corrosive

Alkyl Acids, Reaction Products With Triethylenetetramine	In vitro data	No significant irritation
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	similar compounds	Mild irritant
PETROLEUM DISTILLATES	similar compounds	No significant irritation
Thermal cracked residuum (petroleum)	similar compounds	No significant irritation
2,4,6-Tris(dimethylaminomethyl)-phenol	Rabbit	Corrosive
Triethylenetetramine	Rabbit	Corrosive
Bis[(dimethylamino)methyl]phenol	similar compounds	Corrosive
Carbon black	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Phenol, Styrenated	Rabbit	Mild irritant
N-AMINOETHYLPIPERAZINE	Rabbit	Corrosive
Alkyl Acids, Reaction Products With Triethylenetetramine	In vitro data	Severe irritant
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	similar compounds	No significant irritation
PETROLEUM DISTILLATES	similar compounds	Mild irritant
Thermal cracked residuum (petroleum)	similar compounds	Mild irritant
2,4,6-Tris(dimethylaminomethyl)-phenol	Rabbit	Corrosive
Triethylenetetramine	Rabbit	Corrosive
Bis[(dimethylamino)methyl]phenol	similar compounds	Corrosive
Carbon black	Rabbit	No significant irritation

Sensitization:

Skin Sensitisation

Name	Species	Value
Phenol, Styrenated	Mouse	Sensitising
N-AMINOETHYLPIPERAZINE	Guinea pig	Sensitising
Alkyl Acids, Reaction Products With Triethylenetetramine	Guinea pig	Sensitising
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	similar compounds	Not classified
PETROLEUM DISTILLATES	Guinea pig	Not classified
Thermal cracked residuum (petroleum)	similar compounds	Not classified
2,4,6-Tris(dimethylaminomethyl)-phenol	Guinea pig	Not classified
Triethylenetetramine	Guinea pig	Sensitising

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
N-AMINOETHYLPIPERAZINE	In vivo	Not mutagenic
N-AMINOETHYLPIPERAZINE	In Vitro	Some positive data exist, but the data are not sufficient for classification
Alkyl Acids, Reaction Products With Triethylenetetramine	In Vitro	Not mutagenic
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	In Vitro	Some positive data exist, but the data are not sufficient for classification
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	In vivo	Some positive data exist, but the data are not sufficient for classification
PETROLEUM DISTILLATES	In Vitro	Some positive data exist, but the data are not sufficient for classification
Thermal cracked residuum (petroleum)	In Vitro	Some positive data exist, but the data are not sufficient for classification
2,4,6-Tris(dimethylaminomethyl)-phenol	In Vitro	Not mutagenic
Triethylenetetramine	In vivo	Not mutagenic
Triethylenetetramine	In Vitro	Some positive data exist, but the data are not sufficient for classification
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
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	similar compounds	Carcinogenic.
PETROLEUM DISTILLATES	Dermal	similar compounds	Carcinogenic.
Thermal cracked residuum (petroleum)	Dermal	similar compounds	Carcinogenic.
Triethylenetetramine	Dermal	Mouse	Not carcinogenic
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
N-AMINOETHYLPIPERAZINE	Ingestion	Not classified for female reproduction	Rat	NOAEL 598 mg/kg/day	premating & during gestation
N-AMINOETHYLPIPERAZINE	Ingestion	Not classified for male reproduction	Rat	NOAEL 409 mg/kg/day	32 days
N-AMINOETHYLPIPERAZINE	Ingestion	Toxic to development	Rabbit	NOAEL 75 mg/kg/day	during gestation
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Ingestion	Not classified for male reproduction	similar compounds	NOAEL 125 mg/kg/day	13 weeks
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	Toxic to development	similar compounds	NOAEL 5 mg/kg/day	during gestation
PETROLEUM DISTILLATES	Dermal	Toxic to development	similar compounds	NOAEL 0.05 mg/kg/day	during gestation
Thermal cracked residuum (petroleum)	Dermal	Toxic to development	similar compounds	NOAEL 0.05 mg/kg/day	during gestation

2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	Not classified for male reproduction	Rat	NOAEL 150 mg/kg/day	2 generation
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	Not classified for female reproduction	Rat	NOAEL 50 mg/kg/day	2 generation
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	Not classified for development	Rabbit	NOAEL 15 mg/kg/day	during gestation
Triethylenetetramine	Dermal	Not classified for development	Rabbit	NOAEL 125 mg/kg/day	during organogenesis
Triethylenetetramine	Ingestion	Not classified for development	Rat	NOAEL 750 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
N-AMINOETHYLPIPERAZINE	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification		NOAEL Not available	
Alkyl Acids, Reaction Products With Triethylenetetramine	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL not available	
2,4,6-Tris(dimethylaminomethyl)-phenol	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	
Triethylenetetramine	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	NOAEL Not available	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
N-AMINOETHYLPIPERAZINE	Dermal	skin	Not classified	Rat	NOAEL 100 mg/kg/day	29 days
N-AMINOETHYLPIPERAZINE	Dermal	hematopoietic system	Not classified	Rat	NOAEL 1,000 mg/kg/day	29 days
N-AMINOETHYLPIPERAZINE	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	29 days
N-AMINOETHYLPIPERAZINE	Dermal	kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	29 days
N-AMINOETHYLPIPERAZINE	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 0.2 mg/m³	13 weeks
N-AMINOETHYLPIPERAZINE	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 53.8 mg/m³	13 weeks
N-AMINOETHYLPIPERAZINE	Inhalation	eyes	Not classified	Rat	NOAEL 53.8 mg/m³	13 weeks
N-AMINOETHYLPIPERAZINE	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 53.8 mg/m³	13 weeks
N-AMINOETHYLPIPERAZINE	Ingestion	heart	Not classified	Rat	NOAEL 598 mg/kg/day	28 days
N-AMINOETHYLPIPERAZINE	Ingestion	endocrine system	Not classified	Rat	NOAEL 598 mg/kg/day	28 days

N-AMINOETHYLPIPERAZINE	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 598 mg/kg/day	28 days
N-AMINOETHYLPIPERAZINE	Ingestion	liver	Not classified	Rat	NOAEL 598 mg/kg/day	28 days
N-AMINOETHYLPIPERAZINE	Ingestion	nervous system	Not classified	Rat	NOAEL 598 mg/kg/day	28 days
N-AMINOETHYLPIPERAZINE	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 598 mg/kg/day	28 days
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	endocrine system	May cause damage to organs though prolonged or repeated exposure	similar compounds	LOAEL 30 mg/kg/day	90 days
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	gastrointestinal tract	May cause damage to organs though prolonged or repeated exposure	similar compounds	LOAEL 30 mg/kg/day	90 days
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	hematopoietic system	May cause damage to organs though prolonged or repeated exposure	similar compounds	LOAEL 30 mg/kg/day	90 days
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	liver	May cause damage to organs though prolonged or repeated exposure	similar compounds	LOAEL 30 mg/kg/day	90 days
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	immune system	May cause damage to organs though prolonged or repeated exposure	similar compounds	LOAEL 30 mg/kg/day	90 days
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	Dermal	kidney and/or bladder	May cause damage to organs though prolonged or repeated exposure	similar compounds	LOAEL 30 mg/kg/day	90 days
PETROLEUM DISTILLATES	Dermal	hematopoietic system	Causes damage to organs through prolonged or repeated exposure	similar compounds	NOAEL 1.06 mg/kg/day	13 weeks
PETROLEUM DISTILLATES	Dermal	liver	May cause damage to organs though prolonged or repeated exposure	similar compounds	NOAEL 10.6 mg/kg/day	13 weeks
PETROLEUM DISTILLATES	Dermal	immune system	May cause damage to organs though prolonged or repeated exposure	similar compounds	NOAEL 10.6 mg/kg/day	13 weeks
Thermal cracked residuum (petroleum)	Dermal	hematopoietic system	Causes damage to organs through prolonged or repeated exposure	similar compounds	NOAEL 1.06 mg/kg/day	13 weeks
Thermal cracked residuum (petroleum)	Dermal	liver	May cause damage to organs though prolonged or repeated exposure	similar compounds	NOAEL 10.6 mg/kg/day	13 weeks
Thermal cracked residuum (petroleum)	Dermal	immune system	May cause damage to organs though prolonged or repeated exposure	similar compounds	NOAEL 10.6 mg/kg/day	13 weeks
2,4,6-Tris(dimethylaminomethyl)-phenol	Dermal	skin	Not classified	Rat	NOAEL 25 mg/kg/day	4 weeks
2,4,6-Tris(dimethylaminomethyl)-phenol	Dermal	liver	Not classified	Rat	NOAEL 125 mg/kg/day	4 weeks
2,4,6-Tris(dimethylaminomethyl)-phenol	Dermal	nervous system	Not classified	Rat	NOAEL 125 mg/kg/day	4 weeks
2,4,6-Tris(dimethylaminomethyl)-phenol	Dermal	auditory system	Not classified	Rat	NOAEL 125 mg/kg/day	4 weeks
2,4,6-Tris(dimethylaminomethyl	Dermal	hematopoietic system	Not classified	Rat	NOAEL 125 mg/kg/day	4 weeks

)-phenol						
2,4,6-Tris(dimethylaminomethyl)-phenol	Dermal	eyes	Not classified	Rat	NOAEL 125 mg/kg/day	4 weeks
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	heart	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	endocrine system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	hematopoietic system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	liver	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	muscles	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	nervous system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	respiratory system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	vascular system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	auditory system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	skin	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	bone, teeth, nails, and/or hair	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	immune system	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
2,4,6-Tris(dimethylaminomethyl)-phenol	Ingestion	eyes	Not classified	Rat	NOAEL 150 mg/kg/day	90 days
Carbon black	Inhalation	pneumoconiosis	Not classified	Human	NOAEL Not available	occupational exposure

Aspiration Hazard

Name	Value
PETROLEUM DISTILLATES	Aspiration hazard
Thermal cracked residuum (petroleum)	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 2: 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
Phenol, Styrenated	61788-44-1	Green algae	Experimental	72 hours	ErC50	1.35 mg/l
Phenol, Styrenated	61788-44-1	Medaka	Experimental	96 hours	LC50	5.6 mg/l
Phenol, Styrenated	61788-44-1	Water flea	Experimental	48 hours	EC50	4.6 mg/l
Phenol, Styrenated	61788-44-1	Zebra Fish	Analogous Compound	63 days	NOEC	0.0618 mg/l
Phenol, Styrenated	61788-44-1	Green algae	Experimental	72 hours	NOEC	0.42 mg/l
Phenol, Styrenated	61788-44-1	Water flea	Experimental	21 days	NOEC	0.2 mg/l
Phenol, Styrenated	61788-44-1	Activated sludge	Experimental	3 hours	EC50	362 mg/l
N-AMINOETHYLPIPERAZINE	140-31-8	Bacteria	Experimental	17 hours	EC10	100 mg/l
N-AMINOETHYLPIPERAZINE	140-31-8	Golden Orfe	Experimental	96 hours	LC50	368 mg/l
N-AMINOETHYLPIPERAZINE	140-31-8	Green algae	Experimental	72 hours	EC50	>1,000 mg/l
N-AMINOETHYLPIPERAZINE	140-31-8	Water flea	Experimental	48 hours	EC50	58 mg/l
N-AMINOETHYLPIPERAZINE	140-31-8	Green algae	Experimental	72 hours	NOEC	31 mg/l
Alkyl Acids, Reaction Products With Triethylenetetramine	68919-79-9	Green algae	Experimental	72 hours	EC50	24 mg/l
Alkyl Acids, Reaction Products With Triethylenetetramine	68919-79-9	Water flea	Experimental	48 hours	EC50	31 mg/l
Alkyl Acids, Reaction Products With Triethylenetetramine	68919-79-9	Green algae	Experimental	72 hours	EC10	1.5 mg/l
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	64742-11-6	Green algae	Analogous Compound	72 hours	EbC50	3.1 mg/l
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	64742-11-6	Water flea	Analogous Compound	48 hours	EC50	1.4 mg/l
Alykl Acids,	Trade Secret	N/A	Data not available	N/A	N/A	N/A

Reaction Products With TETA And DGEBA			or insufficient for classification			
Reaction product of cycloaliphatic amine with aromatic epoxy resin	Trade Secret	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
PETROLEUM DISTILLATES	64741-81-7	Green algae	Estimated	72 hours	EL50	0.32 mg/l
PETROLEUM DISTILLATES	64741-81-7	Rainbow trout	Estimated	96 hours	LL50	79 mg/l
PETROLEUM DISTILLATES	64741-81-7	Water flea	Estimated	48 hours	EL50	0.22 mg/l
PETROLEUM DISTILLATES	64741-81-7	Green algae	Estimated	72 hours	NOEL	0.05 mg/l
Thermal cracked residuum (petroleum)	64741-80-6	Green algae	Estimated	72 hours	EL50	0.32 mg/l
Thermal cracked residuum (petroleum)	64741-80-6	Rainbow trout	Estimated	96 hours	LL50	79 mg/l
Thermal cracked residuum (petroleum)	64741-80-6	Water flea	Estimated	48 hours	EL50	0.22 mg/l
Thermal cracked residuum (petroleum)	64741-80-6	Green algae	Estimated	72 hours	NOEL	0.05 mg/l
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	N/A	Experimental	96 hours	LC50	718 mg/l
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	Common Carp	Experimental	96 hours	LC50	>100 mg/l
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	Green algae	Experimental	72 hours	EC50	46.7 mg/l
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	Water flea	Experimental	48 hours	EC50	>100 mg/l
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	Green algae	Experimental	72 hours	NOEC	6.44 mg/l
Triethylenetetramine	112-24-3	Green algae	Experimental	72 hours	EC50	27.4 mg/l
Triethylenetetramine	112-24-3	Guppy	Experimental	96 hours	LC50	570 mg/l
Triethylenetetramine	112-24-3	Water flea	Experimental	48 hours	EC50	37.4 mg/l
Triethylenetetramine	112-24-3	Green algae	Experimental	72 hours	NOEC	0.468 mg/l
Triethylenetetramine	112-24-3	Water flea	Experimental	21 days	NOEC	2.86 mg/l
Bis[(dimethylamino)methyl]phenol	71074-89-0	N/A	Data not available or insufficient for classification	N/A	N/A	NA
Carbon black	1333-86-4	Green algae	Experimental	72 hours	No tox obs at lmt of water sol	>100 mg/l
Carbon black	1333-86-4	Zebra Fish	Experimental	96 hours	No tox obs at lmt of water sol	>100 mg/l
Carbon black	1333-86-4	Green algae	Experimental	72 hours	No tox obs at lmt of water sol	100 mg/l
Carbon black	1333-86-4	Activated sludge	Experimental	3 hours	NOEC	>800 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Phenol, Styrenated	61788-44-1	Experimental Biodegradation	28 days	BOD	7 %BOD/ThOD	OECD 301F - Manometric respirometry
Phenol, Styrenated	61788-44-1	Analogous Compound Biodegradation		Half-life (t 1/2)	34.9 days (t 1/2)	
Phenol, Styrenated	61788-44-1	Analogous Compound Soil Metabolism Aerobic		Half-life (t 1/2)	12.5 days (t 1/2)	
N-AMINOETHYLPIPERAZINE	140-31-8	Experimental Biodegradation	28 days	BOD	0 %BOD/ThOD	OECD 301C - MITI test (I)
Alkyl Acids, Reaction Products With Triethylenetetramine	68919-79-9	Experimental Biodegradation	28 days	CO2 evolution	6 %CO2 evolution/THCO2 evolution	OECD 301B - Modified sturm or CO2
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	64742-11-6	Analogous Compound Biodegradation	28 days	BOD	0 %BOD/ThOD	
Alykl Acids, Reaction Products With TETA And DGEBA	Trade Secret	Modeled Biodegradation	28 days	BOD	35 %BOD/ThOD	Catalogic™
Reaction product of cycloaliphatic amine with aromatic epoxy resin	Trade Secret	Data not available-insufficient	N/A	N/A	N/A	N/A
PETROLEUM DISTILLATES	64741-81-7	Data not available-insufficient	N/A	N/A	N/A	N/A
Thermal cracked residuum (petroleum)	64741-80-6	Data not available-insufficient	N/A	N/A	N/A	N/A
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	Experimental Biodegradation	28 days	BOD	4 %BOD/ThOD	OECD 301D - Closed bottle test
Triethylenetetramine	112-24-3	Experimental Biodegradation	20 days	BOD	0 %BOD/ThOD	OECD 301D - Closed bottle test
Bis[(dimethylamino)methyl]phenol	71074-89-0	Modeled Biodegradation	28 days	BOD	41 %CO2 evolution/THCO2 evolution	Catalogic™
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
Phenol, Styrenated	61788-44-1	Experimental BCF - Fish	10 days	Bioaccumulation factor	10395	
Phenol, Styrenated	61788-44-1	Experimental Bioconcentration		Log Kow	>4	
N-AMINOETHYLPIPERAZINE	140-31-8	Experimental Bioconcentration		Log Kow	0.3	
Alkyl Acids, Reaction Products	68919-79-9	Data not available or insufficient for	N/A	N/A	N/A	N/A

With Triethylenetetramine		classification				
HEAVY NAPHTHENIC DISTILLATE SOLVENT PETROLEUM EXTRACTS	64742-11-6	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Alykl Acids, Reaction Products With TETA And DGEBA	Trade Secret	Modeled Bioconcentration		Bioaccumulation factor	7.4	Catalogic™
Reaction product of cycloaliphatic amine with aromatic epoxy resin	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
PETROLEUM DISTILLATES	64741-81-7	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
Thermal cracked residuum (petroleum)	64741-80-6	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
2,4,6-Tris(dimethylaminomethyl)-phenol	90-72-2	Experimental Bioconcentration		Log Kow	-0.66	830.7550 Part.Coef Shake Flask
Triethylenetetramine	112-24-3	Experimental BCF - Fish	42 days	Bioaccumulation factor	<5.0	OECD305-Bioconcentration
Bis[(dimethylamino)methyl]phenol	71074-89-0	Modeled Bioconcentration		Log Kow	-2.34	ACD/Labs ChemSketch™
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 waste product in a permitted industrial waste facility. As a disposal alternative, incinerate 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.: UN3267
UN Proper shipping name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.

Transportation Class (IMO): 8-8 Corrosives

Transportation Class (IATA): 8-8 Corrosives
Other Dangerous Goods Descriptions (IMO): None assigned
Other Dangerous Goods Descriptions (IATA): None assigned
Packing Group: III
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 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.
Environmental Protection and Management (Hazardous Substances) 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