



Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the GHS guidelines & India Hazardous substances (Classification, Labeling & Packaging) Draft Rules 2011.

SECTION 1: Identification

1.1. Product identifier

Protective Material PM3870

Product Identification Numbers

UU-0109-6242-9 UU-0109-6243-7 UU-0109-6244-5

1.2. Recommended use and restrictions on use

Recommended use

Coating.

1.3. Supplier's details

Address: 3M India Limited, plot-48-51, Electronic city, Hosur road, Bangalore-560100
Telephone: 080-45543000, contact Product EHS team
E Mail: productehs.in@mmm.com
Website: <http://solutions.3mindia.co.in>

1.4. Emergency telephone number

080-45543000 (Contact hours: 8:00 AM to 5:00 PM)

SECTION 2: Hazard identification

Under MSIHC Rules, information is noted below on flammability, acute toxicity and explosivity relevant to this product. In line with international standards, information on other hazard classes and associated precautionary statements relevant to this product are included as well.

2.1. Classification of the substance or mixture

Skin Corrosion/Irritation: Category 2.

Specific Target Organ Toxicity (single exposure): Category 1.

2.2. Label elements

Signal Word

DANGER!

Symbols

Exclamation mark | Health Hazard |

Pictograms



HAZARD STATEMENTS:

- H315 Causes skin irritation.
- H370 Causes damage to organs:
cardiovascular system
nervous system
kidney/urinary tract
respiratory system

PRECAUTIONARY STATEMENTS

Prevention:

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

Response:

P308 + P311 IF exposed or concerned: Call a POISON CENTER or doctor/physician.

2.3. Other hazards

Eye damage/irritation class. not applied based on test data This material has been tested for eye damage/irritation and the test results do not meet the criteria for classification. Skin corrosion/irritation class. based on test data This material has been tested for skin corrosion/irritation and the test results are reflected in the assigned classification. Acute aquatic env. toxicity class. based on test data This material has been tested for acute aquatic environmental toxicity and the test results are reflected in the assigned classification.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	CAS Nbr	% by Wt
Water	7732-18-5	60 - 70
Hydrocarbon Urethane Polymer	Trade Secret	20 - 25
Ethylene glycol	107-21-1	< 10
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.-hydroxy-	60828-78-6	< 1.2
2-Octyl-3(2H)-Isothiazolone	26530-20-1	< 0.02

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

No need for first aid is anticipated.

If swallowed

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

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

See Section 11.1 Information on toxicological effects

4.3. Indication of any immediate medical attention and special treatment required

This product contains ethylene glycol. Effects of oral ethylene glycol poisoning can be divided into three stages which generally occur over a time-course of hours to days following ingestion: Stage 1 (neurological effects), stage2 (cardiopulmonary effects) and stage 3 (renal effects). If ethylene glycol poisoning is confirmed, intravenous (IV) administration of ethanol should be considered. Additional pharmacologic and supportive care should be based on the treating physician's judgement.

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

Aldehydes.
Amine compounds.
Carbon monoxide.
Carbon dioxide.
Ketones.
Oxides of nitrogen.
Oxides of sulphur.

Condition

During combustion.
During combustion.
During combustion.
During combustion.
During combustion.
During combustion.
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. 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. Seal the container. Dispose of collected

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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 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. Avoid release to the environment.

7.2. Conditions for safe storage including any incompatibilities

Store away from heat. Store away from acids. Store away from strong bases.

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
Ethylene glycol	107-21-1	ACGIH	TWA(Vapor fraction):25 ppm;STEL(Vapor fraction):50 ppm;STEL(Inhalable aerosol):10 mg/m ³	A4: Not class. as human carcin

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

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

None required.

Skin/hand protection

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.

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

Nitrile rubber.

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.
Specific Physical Form:	Emulsion
Color	Milky White
Odor	Typical Odor
Odour threshold	<i>No data available.</i>
pH	5 - 8
Melting point/Freezing point: NA	-8 °C [<i>Test Method: Estimated</i>]
Boiling point/Initial boiling point/Boiling range	100 °C
Flash point	No flash point [<i>Test Method: Closed Cup</i>]
Evaporation rate	1 [<i>Ref Std: WATER=1</i>]
Flammability (solid, gas)	Not applicable.
Flammable Limits(LEL)	<i>Not applicable.</i>
Flammable Limits(UEL)	<i>Not applicable.</i>
Vapour pressure	2,338.5 Pa [<i>@ 20 °C</i>]
Vapor Density and/or Relative Vapor Density	0.62 [<i>Ref Std: AIR=1</i>]
Density	1.02 kg/l [<i>@ 20 °C</i>]
Relative density	1.02 [<i>Ref Std: WATER=1</i>]
Water solubility	Miscible
Solubility- non-water	<i>No data available.</i>
Partition coefficient: n-octanol/water	<i>No data available.</i>
Autoignition temperature	<i>No data available.</i>
Decomposition temperature	220 °C
Viscosity/Kinematic Viscosity	5 - 20 mPa-s [<i>@ 20 °C</i>]
Volatile organic compounds (VOC)	
Percent volatile	24 - 26 %
VOC less H2O & exempt solvents	
Molecular weight	<i>Not applicable.</i>

Nanoparticles

This material does not contain nanoparticles.

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.

Temperatures above the boiling point.

10.5 Incompatible materials

Strong acids.

Strong bases.

10.6 Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
Hydrocarbons.	During Storage
Toxic Vapor/Gas	During Storage

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

Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain.

Eye contact

Contact with the eyes during product use is not expected to result in significant irritation.

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:

Single exposure may cause target organ effects:

Cardiac effects: Signs/symptoms may include irregular heartbeat (arrhythmia), changes in heart rate, damage to heart muscle, heart attack, and may be fatal. Neurological effects: Signs/symptoms may include personality changes, lack of coordination, sensory loss, tingling or numbness of the extremities, weakness, tremors, and changes in blood pressure and heart rate.

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.

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.

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Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Hydrocarbon Urethane Polymer	Dermal		LD50 estimated to be > 5,000 mg/kg
Hydrocarbon Urethane Polymer	Ingestion	Rat	LD50 > 2,000 mg/kg
Ethylene glycol	Ingestion	Human	LD50 1,600 mg/kg
Ethylene glycol	Inhalation-Dust/Mist (4 hours)	Other	LC50 estimated to be 5 - 12.5 mg/l
Ethylene glycol	Dermal	Rabbit	9,530 mg/kg
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.-hydroxy-	Dermal	Rabbit	LD50 8,874 mg/kg
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.-hydroxy-	Ingestion	Rat	LD50 3,300 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Overall product	In vitro data	Irritant
Hydrocarbon Urethane Polymer	In vitro data	No significant irritation
Ethylene glycol	Rabbit	Minimal irritation
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.-hydroxy-	Rabbit	Irritant

Serious Eye Damage/Irritation

Name	Species	Value
Overall product	In vitro data	No significant irritation
Hydrocarbon Urethane Polymer	In vitro data	No significant irritation
Ethylene glycol	Rabbit	Mild irritant
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.-hydroxy-	Rabbit	Corrosive

Sensitization:**Skin Sensitisation**

Name	Species	Value
Overall product	Mouse	Not classified
Hydrocarbon Urethane Polymer	Mouse	Not classified
Ethylene glycol	Human	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
Ethylene glycol	In Vitro	Not mutagenic
Ethylene glycol	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Ethylene glycol	Ingestion	Multiple animal species	Not carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Ethylene glycol	Dermal	Not classified for development	Mouse	NOAEL 3,549 mg/kg/day	during organogenesis
Ethylene glycol	Ingestion	Not classified for development	Mouse	LOAEL 750 mg/kg/day	during organogenesis
Ethylene glycol	Inhalation	Not classified for development	Mouse	NOAEL 1,000 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
Ethylene glycol	Ingestion	heart nervous system kidney and/or bladder respiratory system	Causes damage to organs	Human	NOAEL Not available	poisoning and/or abuse
Ethylene glycol	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	poisoning and/or abuse
Ethylene glycol	Ingestion	liver	Not classified	Human	NOAEL Not available	poisoning and/or abuse
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.g a.-hydroxy-	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
Ethylene glycol	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 200 mg/kg/day	2 years
Ethylene glycol	Ingestion	vascular system	Not classified	Rat	NOAEL 200 mg/kg/day	2 years
Ethylene glycol	Ingestion	heart hematopoietic system liver immune system muscles	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
Ethylene glycol	Ingestion	respiratory system	Not classified	Mouse	NOAEL 12,000 mg/kg/day	2 years
Ethylene glycol	Ingestion	skin endocrine system bone, teeth, nails, and/or hair nervous system eyes	Not classified	Multiple animal species	NOAEL 1,000 mg/kg/day	2 years
Poly(oxy-1,2-ethanediyl), .alpha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.ome ga.-hydroxy-	Ingestion	liver kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg	89 days

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:

Not acutely toxic to aquatic life by GHS criteria.

Chronic aquatic hazard:

Not chronically toxic to aquatic life by GHS criteria.

Material	Organism	Type	Exposure	Test endpoint	Test result
Protective Material PM3870	Water flea Daphnid	Laboratory	48 hours	Aquatic Toxicity - Acute	>100 mg/l
Protective Material PM3870	Fish	Laboratory	96 hours	Aquatic Toxicity - Acute	>100 mg/l
Protective Material PM3870	Algae	Laboratory	72 hours	Aquatic Toxicity - Acute	>100 mg/l

Material	CAS Nbr	Organism	Type	Exposure	Test endpoint	Test result
Ethylene glycol	107-21-1	Green Algae	Experimental	72 hours	NOEC	1,000 mg/l
Ethylene glycol	107-21-1	Water flea	Experimental	21 days	NOEC	100 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Ethylene glycol	107-21-1	Experimental Biodegradation	14 days	BOD	90 % BOD/ThBOD	OECD 301C - MITI test (I)
Poly(oxy-1,2-ethanediyl), .al pha.-[3,5-dimethyl-1-(2-methylpropyl)hexyl]-.omega.-hydroxy-	60828-78-6	Experimental Biodegradation	28 days	BOD	20 % weight	OECD 301D - Closed bottle test

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
Ethylene glycol	107-21-1	Experimental Bioconcentration		Log Kow	-1.36	Other methods
Poly(oxy-1,2-ethanediyl), .al pha.-[3,5-dimethyl-1-(2-methylpropyl)h	60828-78-6	Estimated Bioconcentration		Log Kow	3.82	Estimated: Octanol-water partition coefficient

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exyl]-.omega.-hydroxy-						
2-Octyl-3(2H)-Isothiazolone	26530-20-1	Experimental BCF - Bluegill	67 days	Bioaccumulation factor	165	Other methods

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

Not hazardous for transportation.

Air Transport (IATA) Regulations

UN No Not applicable

Proper Shipping Name Not applicable

Hazard Class/Division Not applicable

Subsidiary Risk Not applicable

Packing Group: Not applicable

Marine Transport (IMDG)

UN No Not applicable

Proper Shipping Name Not applicable

Hazard Class/Division Not applicable

Subsidiary Risk Not applicable

Packing Group: Not applicable

Environmental Hazards: Not applicable

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.

Applicable Environmental, Health and Safety Regulations

The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989

Hazardous Waste(Management , Handling & Transboundary) Rules, 2008

Hazardous Chemicals (Classification, Packaging and Labelling Draft Rules), 2011

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The following ingredients are listed as hazardous on Part II of Schedule I of the India Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) rules

Ethylene glycol

The following ingredients are classified as hazardous based on the criteria listed under Part I of Schedule I of the India Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) rules:

The product is classified as Non-Hazardous as per MSIHC Rules, 1989.

SECTION 16: Other information

NFPA Hazard Classification

Health: 2 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

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

Revision information:

Section 1: Product identification numbers information was modified.

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