Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the Malaysia Occupational Safety and Health (Chemical Classification, Labelling and Safety Data Sheets) Regulations 2013.

SECTION 1: Identification

1.1. Product identifier
3M™ Screen Printing UV Ink 9806 Mixing White

Product Identification Numbers
75-3470-5597-4 75-3472-5671-3

1.2. Recommended use and restrictions on use

Recommended use
Screen Printing Ink, Ink

1.3. Supplier's details
ADDRESS: 3M Malaysia Sdn. Bhd., Level 8, Block F, Oasis Square, No.2, Jalan PJU 1A/7A, Ara Damansara 47301 Petaling, Jaya, Selangor
Telephone: 03-7884 2888
E Mail: 3mmyehsr@mmm.com
Website: www.3M.com.my

1.4. Emergency telephone number
+60 03-7884 2888

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture
Serious Eye Damage/Irritation: Category 2.
Skin Sensitizer: Category 1.
Carcinogenicity: Category 2.
Reproductive Toxicity: Category 1B.
Specific Target Organ Toxicity (repeated exposure): Category 1.
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.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure: respiratory system.
H411	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/vapors/spray.
P273	Avoid release to the environment.
P280K	Wear protective gloves and respiratory protection.
P281	Use personal protective equipment as required.

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 advice/attention.
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

None known

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	C.A.S. No.	% by Wt
PHENOXY ETHYL ACRYLATE	48145-04-6	30 - 40
TITANIUM DIOXIDE	13463-67-7	10 - 20
VINYLCAPROLACTAM	2235-00-9	10 - 20
METHACRYLATE POLYMER	Trade Secret	10 - 20
ALIPHATIC URETHANE ACRYLATE	Trade Secret	7 - 13
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	1 - 5

PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	1 - 5
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	1 - 5
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	< 1.0
TMPEOTA	28961-43-5	< 1.0
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	< 0.5
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	< 0.5

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

4.3. Indication of any immediate medical attention and special treatment required
Not applicable.

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
Closed containers exposed to heat from fire may build pressure and explode.

Hazardous Decomposition or By-Products

Substance	Condition
Formaldehyde	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion

5.3. Special protective actions for fire-fighters
Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture. 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 dikes 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 authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. 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/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
Store in a well-ventilated place. Keep container tightly closed. Keep cool. Protect from sunlight. Store away from heat. Store away from oxidizing 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	C.A.S. No.	Agency	Limit type	Additional Comments
DUST, INERT OR NUISANCE	13463-67-7	Malaysia OELs	TWA (proposed)(respirable particles)(8 hours):3 mg/m3;TWA (proposed)(Inhalable particulate)(8 hours):10 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	Malaysia OELs	TWA(8 hours):10 mg/m3	
VINYLCAPROLACTAM	2235-00-9	Manufacturer determined	TWA(8 hours):0.1 ppm(0.57 mg/m3)	

ACGIH : American Conference of Governmental Industrial Hygienists
CMRG : Chemical Manufacturer's Recommended Guidelines
Malaysia OELs : Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
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 exposure assessment. The following protective clothing material(s) are recommended: 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 vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Specific Physical Form:	Liquid
Color	White
Odor	Slight Acrylate
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point/Freezing point	*Not Applicable*
Boiling point/Initial boiling point/Boiling range	> 148.9 ºC
Flash Point	> 93.3 ºC [*Test Method:*Pensky-Martens Closed Cup]
Evaporation rate	< 1 [*Ref Std:*BUOAC=1]

Flammability	Not Applicable
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Pressure	< 160 Pa [@ 20 ºC]
Vapor Density and/or Relative Vapor Density	*No Data Available*
Density	Approximately 1.3 g/ml
Relative Density	Approximately 1.3 [*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	*No Data Available*
Volatile Organic Compounds	6 g/l
Percent volatile	1 - 5 % weight
VOC Less H2O & Exempt Solvents	6 g/l

Particle Characteristics	*Not Applicable*

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization may occur. Upon loss of initiator or with exposure to heat.

10.4. Conditions to avoid
Sparks and/or flames
Heat

10.5. Incompatible materials
Strong oxidizing agents

10.6. Hazardous decomposition products

Substance	**Condition**
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

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

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

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

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May cause additional health effects (see below).

Skin Contact:
Contact with the skin during product use is not expected to result in significant irritation. 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 diarrhea.

May cause additional health effects (see below).

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects:
Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

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.

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
PHENOXY ETHYL ACRYLATE	Dermal	Rat	LD50 > 2,000 mg/kg
PHENOXY ETHYL ACRYLATE	Ingestion	Rat	LD50 > 5,000 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
METHACRYLATE POLYMER	Dermal		LD50 estimated to be > 5,000 mg/kg
METHACRYLATE POLYMER	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
VINYLCAPROLACTAM	Dermal	Rabbit	LD50 1,700 mg/kg
VINYLCAPROLACTAM	Ingestion	Rat	LD50 1,049 mg/kg
PHOSPHINE OXIDE, DIPHENYL(2,4,6-	Dermal	Professio	LD50 estimated to be > 5,000 mg/kg

TRIMETHYLBENZOYL)-		nal judgeme nt	
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Dermal	Rat	LD50 > 2,000 mg/kg
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Ingestion	Rat	LD50 967 mg/kg
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Ingestion	Rat	LD50 > 5,000 mg/kg
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	Dermal	Rat	LD50 6,929 mg/kg
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	Ingestion	Rat	LD50 1,694 mg/kg
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Dermal		LD50 estimated to be 1,000 - 2,000 mg/kg
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Ingestion	Rat	LD50 1,860 mg/kg
TMPEOTA	Dermal	Rabbit	LD50 > 13,200 mg/kg
TMPEOTA	Ingestion	Rat	LD50 > 2,000 mg/kg
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Dermal	Rabbit	LD50 > 2,000 mg/kg
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Ingestion	Rat	LD50 > 2,000 mg/kg
OCTAMETHYLCYCLOTETRASILOXANE	Dermal	Rat	LD50 > 2,400 mg/kg
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 36 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	Ingestion	Rat	LD50 > 4,800 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
PHENOXY ETHYL ACRYLATE	Rabbit	No significant irritation
TITANIUM DIOXIDE	Rabbit	No significant irritation
VINYLCAPROLACTAM	Rabbit	Minimal irritation
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Rabbit	No significant irritation
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Rabbit	No significant irritation
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	Rabbit	No significant irritation
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Rabbit	Irritant
TMPEOTA	Rabbit	Minimal irritation
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Rabbit	Minimal irritation
OCTAMETHYLCYCLOTETRASILOXANE	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
PHENOXY ETHYL ACRYLATE	Rabbit	No significant irritation
TITANIUM DIOXIDE	Rabbit	No significant irritation
VINYLCAPROLACTAM	Rabbit	Severe irritant
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Rabbit	No significant irritation
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Rabbit	No significant irritation
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	Rabbit	Mild irritant
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Rabbit	Severe irritant
TMPEOTA	Rabbit	Severe irritant
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Rabbit	Severe irritant
OCTAMETHYLCYCLOTETRASILOXANE	Rabbit	No significant irritation

Sensitization:

Skin Sensitization

Name	Species	Value
PHENOXY ETHYL ACRYLATE	Guinea pig	Sensitizing
TITANIUM DIOXIDE	Human and animal	Not classified
VINYLCAPROLACTAM	Mouse	Sensitizing
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Mouse	Sensitizing
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Guinea pig	Sensitizing
TMPEOTA	Guinea pig	Sensitizing
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Mouse	Sensitizing
OCTAMETHYLCYCLOTETRASILOXANE	Human and animal	Not classified

Respiratory Sensitization

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

Germ Cell Mutagenicity

Name	Route	Value
TITANIUM DIOXIDE	In Vitro	Not mutagenic
TITANIUM DIOXIDE	In vivo	Not mutagenic
VINYLCAPROLACTAM	In Vitro	Not mutagenic
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	In Vitro	Not mutagenic
TMPEOTA	In vivo	Not mutagenic
TMPEOTA	In Vitro	Some positive data exist, but the data are not sufficient for classification
OCTAMETHYLCYCLOTETRASILOXANE	In vivo	Not mutagenic
OCTAMETHYLCYCLOTETRASILOXANE	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
TITANIUM DIOXIDE	Ingestion	Multiple animal species	Not carcinogenic
TITANIUM DIOXIDE	Inhalation	Rat	Carcinogenic
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	Rat	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
PHENOXY ETHYL ACRYLATE	Ingestion	Not classified for male reproduction	Rat	NOAEL 800 mg/kg/day	43 days
PHENOXY ETHYL ACRYLATE	Ingestion	Toxic to female reproduction	Rat	NOAEL 300 mg/kg/day	premating into lactation
PHENOXY ETHYL ACRYLATE	Ingestion	Toxic to development	Rat	NOAEL 300 mg/kg/day	premating into lactation
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Ingestion	Toxic to female reproduction	Rat	LOAEL 40 mg/kg/day	1 generation
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Ingestion	Toxic to development	Rat	LOAEL 40 mg/kg/day	1 generation
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Ingestion	Not classified for development	Rat	NOAEL 150 mg/kg/day	during gestation

PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Ingestion	Toxic to female reproduction	Rat	NOAEL 200 mg/kg/day	premating into lactation
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Ingestion	Toxic to male reproduction	Rat	NOAEL 60 mg/kg/day	85 days
TMPEOTA	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating into lactation
TMPEOTA	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	29 days
TMPEOTA	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	during organogenesis
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	Not classified for male reproduction	Rat	NOAEL 8.5 mg/l	2 generation
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	Not classified for development	Rabbit	NOAEL 6 mg/l	during organogenesis
OCTAMETHYLCYCLOTETRASILOXANE	Ingestion	Not classified for development	Rabbit	NOAEL 100 mg/kg	during organogenesis
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	Toxic to female reproduction	Rat	NOAEL 3.6 mg/l	2 generation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
VINYLCAPROLACTAM	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL Not available	
TMPEOTA	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
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
VINYLCAPROLACTAM	Inhalation	respiratory system	Causes damage to organs through prolonged or repeated exposure	Rat	NOAEL 0.001 mg/l	28 days
VINYLCAPROLACTAM	Inhalation	blood | liver | kidney and/or bladder | eyes	Not classified	Rat	NOAEL 0.18 mg/l	90 days
VINYLCAPROLACTAM	Ingestion	liver	Not classified	Rat	NOAEL 260 mg/kg/day	3 months
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Ingestion	peripheral nervous system | eyes	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 75 mg/kg/day	90 days
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Ingestion	skin | blood | liver | kidney and/or bladder | nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days
TMPEOTA	Ingestion	gastrointestinal tract	Not classified	Rat	NOAEL 100 mg/kg/day	29 days
TMPEOTA	Ingestion	endocrine system | hematopoietic system | liver | immune system | nervous system | kidney and/or	Not classified	Rat	NOAEL 1,000 mg/kg/day	29 days

		bladder				
OCTAMETHYLCYCLOTETRASILOXANE	Dermal	hematopoietic system	Not classified	Rabbit	NOAEL 960 mg/kg/day	3 weeks
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	liver	Not classified	Rat	NOAEL 8.5 mg/l	13 weeks
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	endocrine system | immune system | kidney and/or bladder	Not classified	Rat	NOAEL 8.5 mg/l	2 generation
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	hematopoietic system	Not classified	Rat	NOAEL 8.5 mg/l	13 weeks
OCTAMETHYLCYCLOTETRASILOXANE	Ingestion	liver	Not classified	Rat	NOAEL 1,600 mg/kg/day	2 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 labeling, 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 #	Organism	Type	Exposure	Test Endpoint	Test Result
PHENOXY ETHYL ACRYLATE	48145-04-6	Activated sludge	Experimental	3 hours	EC50	177 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Golden Orfe	Experimental	96 hours	LC50	10 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Green algae	Experimental	72 hours	EC50	4.4 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Water flea	Experimental	48 hours	EC50	1.21 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Green algae	Experimental	72 hours	EC10	0.71 mg/l
METHACRYLATE POLYMER	Trade Secret	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
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
VINYLCAPROLACTAM	2235-00-9	Bacteria	Experimental	17 hours	EC50	622 mg/l
VINYLCAPROLACTAM	2235-00-9	Green algae	Experimental	72 hours	ErC50	>100 mg/l
VINYLCAPROLACTAM	2235-00-9	Water flea	Experimental	48 hours	EC50	>100 mg/l
VINYLCAPROLACTAM	2235-00-9	Zebra Fish	Experimental	96 hours	LC50	307 mg/l
VINYLCAPROLACTAM	2235-00-9	Green algae	Experimental	72 hours	NOEC	25 mg/l
ALIPHATIC URETHANE ACRYLATE	Trade Secret	N/A	Data not available or insufficient for classification	N/A	N/A	N/A
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Activated sludge	Experimental	3 hours	EC50	>100 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Green algae	Experimental	72 hours	ErC50	1.6 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Water flea	Experimental	24 hours	EC50	15.3 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Zebra Fish	Experimental	96 hours	LC50	9 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Green algae	Experimental	72 hours	ErC10	0.92 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Water flea	Experimental	21 days	EC10	1.75 mg/l
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	Activated sludge	Experimental	3 hours	EC20	>1,000 mg/l
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	Common Carp	Experimental	96 hours	LC50	1.4 mg/l
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	Green algae	Experimental	72 hours	EC50	>2.01 mg/l
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBEN	Trade Secret	Water flea	Experimental	48 hours	EC50	3.53 mg/l

ZOYL)-						
PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	Green algae	Experimental	72 hours	EC10	1.56 mg/l
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	Activated sludge	Experimental	180 minutes	EC50	>1,000 mg/l
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	Green algae	Experimental	72 hours	ErC50	1.95 mg/l
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	Water flea	Experimental	48 hours	EC50	>119 mg/l
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	Green algae	Experimental	72 hours	NOEC	0.194 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Golden Orfe	Experimental	96 hours	LC50	10 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Green algae	Experimental	72 hours	ErC50	3.2 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Water flea	Experimental	48 hours	EC50	10.56 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Green algae	Experimental	72 hours	NOEC	<1 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Activated sludge	Experimental	3 hours	EC50	770 mg/l
TMPEOTA	28961-43-5	Green algae	Experimental	72 hours	ErC50	2.2 mg/l
TMPEOTA	28961-43-5	Water flea	Experimental	48 hours	EC50	70.7 mg/l
TMPEOTA	28961-43-5	Zebra Fish	Experimental	96 hours	LC50	1.95 mg/l
TMPEOTA	28961-43-5	Green algae	Experimental	72 hours	ErC10	0.323 mg/l
TMPEOTA	28961-43-5	Activated sludge	Experimental	3 hours	EC20	292 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL TRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Activated sludge	Experimental	3 hours	EC20	507 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL TRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Green algae	Experimental	72 hours	ErC50	12.2 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL TRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Water flea	Experimental	48 hours	EC50	91.4 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL	52408-84-1	Zebra Fish	Experimental	96 hours	LC50	5.74 mg/l

TRIS[POLYPROPYLENE GLYCOL ACRYLATE]						
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL TRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Green algae	Experimental	72 hours	NOEC	0.921 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Blackworm	Experimental	28 days	NOEC	0.73 mg/kg (Dry Weight)
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Midge	Experimental	14 days	LC50	>170 mg/kg (Dry Weight)
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Mysid Shrimp	Experimental	96 hours	LC50	>0.0091 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Rainbow Trout	Experimental	96 hours	LC50	>0.022 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Water flea	Experimental	48 hours	EC50	>0.015 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Rainbow Trout	Experimental	93 days	NOEC	0.0044 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Water flea	Experimental	21 days	NOEC	0.015 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Activated sludge	Experimental	3 hours	EC50	>10,000 mg/l

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
PHENOXY ETHYL ACRYLATE	48145-04-6	Experimental Biodegradation	28 days	Biological Oxygen Demand	22.3 %BOD/ThOD	OECD 301D - Closed Bottle Test
PHENOXY ETHYL ACRYLATE	48145-04-6	Estimated Photolysis		Photolytic half-life (in air)	9.7 hours (t 1/2)	
METHACRYLATE POLYMER	Trade Secret	Data not availbl-insufficient	N/A	N/A	N/A	N/A
TITANIUM DIOXIDE	13463-67-7	Data not availbl-insufficient	N/A	N/A	N/A	N/A
VINYLCAPROLACTAM	2235-00-9	Experimental Biodegradation	28 days	Dissolv. Organic Carbon Deplet	30-40 %removal of DOC	OECD 301A - DOC Die Away Test
VINYLCAPROLACTAM	2235-00-9	Experimental Biodegradation		Dissolv. Organic Carbon Deplet	98 %removal of DOC	OECD 302B Zahn-Wellens/EVPA
VINYLCAPROLACTAM	2235-00-9	Experimental Hydrolysis		Hydrolytic half-life (pH 7)	>1 years (t 1/2)	OECD 111 Hydrolysis func of pH
VINYLCAPROLACTAM	2235-00-9	Experimental Hydrolysis		Hydrolytic half-life acidic pH	6.5 hours (t 1/2)	OECD 111 Hydrolysis func of pH
ALIPHATIC URETHANE ACRYLATE	Trade Secret	Data not availbl-insufficient	N/A	N/A	N/A	N/A
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Experimental Biodegradation	28 days	Carbon dioxide evolution	≤1 %CO2 evolution/THCO2 evolution	OECD 301B - Mod. Sturm or CO2

PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	Experimental Biodegradation	28 days	Biological Oxygen Demand	≤10 %BOD/ThOD	OECD 301F - Manometric Respiro
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	Experimental Biodegradation	28 days	Carbon dioxide evolution	90 %CO2 evolution/THCO2 evolution	OECD 301B - Mod. Sturm or CO2
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Experimental Biodegradation	28 days	Carbon dioxide evolution	98 %CO2 evolution/THCO2 evolution	OECD 301B - Mod. Sturm or CO2
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Experimental Hydrolysis		Hydrolytic half-life (pH 7)	313 days (t 1/2)	OECD 111 Hydrolysis func of pH
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Experimental Hydrolysis		Hydrolytic half-life basic pH	4.65 days (t 1/2)	OECD 111 Hydrolysis func of pH
TMPEOTA	28961-43-5	Experimental Biodegradation	28 days	Carbon dioxide evolution	60 %CO2 evolution/THCO2 evolution	OECD 301B - Mod. Sturm or CO2
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL TRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Experimental Biodegradation	28 days	Carbon dioxide evolution	72-85 %CO2 evolution/THCO2 evolution	OECD 301B - Mod. Sturm or CO2
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental Biodegradation	29 days	Carbon dioxide evolution	3.7 %CO2 evolution/THCO2 evolution	OECD 310 CO2 Headspace
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental Photolysis		Photolytic half-life (in air)	31 days (t 1/2)	
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental Hydrolysis		Hydrolytic half-life (pH 7)	69.3-144 hours (t 1/2)	OECD 111 Hydrolysis func of pH

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
PHENOXY ETHYL ACRYLATE	48145-04-6	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.58	
METHACRYLATE POLYMER	Trade Secret	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	
VINYLCAPROLACTAM	2235-00-9	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.2	similar to OECD 107
ALIPHATIC URETHANE ACRYLATE	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Experimental BCF - Fish	56 days	Bioaccumulation Factor	<10	
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Trade Secret	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	3.09	

PHOSPHINE OXIDE, DIPHENYL(2,4,6-TRIMETHYLBENZOYL)-	Trade Secret	Experimental BCF - Fish	56 days	Bioaccumulation Factor	≤40	
2-HYDROXY-2-METHYL-1-PHENYL-1-PROPANONE	7473-98-5	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.62	OECD 107 log Kow shke flsk mtd
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.105	OECD 117 log Kow HPLC method
TMPEOTA	28961-43-5	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.89	OECD 107 log Kow shke flsk mtd
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYL TRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.52	OECD 107 log Kow shke flsk mtd
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental BCF - Fish	28 days	Bioaccumulation Factor	12400	40CFR 797.1520-Fish Bioaccumm
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	6.49	OECD 123 log Kow slow stir

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

According to the Environmental Quality (Scheduled Wastes) Regulations 2005, scheduled waste has to be sent to a prescribed premise for recycling, treatment or disposal. Please approach Kualiti Alam for proper schedule waste classification and disposal.

SECTION 14: Transport Information

Marine Transport (IMDG)

UN Number:UN3082
Proper Shipping Name:ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: None assigned.
Hazard Class/Division:9
Subsidiary Risk: None assigned.
Packing Group:III
Limited Quantity: None assigned.
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
None assigned.

Air Transport (IATA)

UN Number:UN3082
Proper Shipping Name:ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Technical Name: None assigned.
Hazard Class/Division:9
Subsidiary Risk: None assigned.
Packing Group:III
Limited Quantity: None assigned.
Marine Pollutant: None assigned.
Marine Pollutant Technical Name: None assigned.
Other Dangerous Goods Descriptions:
None assigned.

Transportation classifications are provided as a customer service. As for shipping, YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. 3M's transportation classifications are based on product formulation, packaging, 3M policies and 3M's understanding of applicable current regulations. 3M does not guarantee the accuracy of this classification information. This information applies only to transportation classification and not the packaging, labeling or marking requirements. The above information is only for reference. If you are shipping by air or ocean, YOU are advised to check & meet applicable regulatory requirements.

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 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.

SECTION 16: Other information

DISCLAIMER: The information in this Safety Data Sheet (SDS) 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 SDS or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own evaluation to satisfy themselves as to the suitability of the product for their own intended applications. In addition, this SDS is being provided to convey health and safety information. If you are the importer of record of this product into Malaysia, you are responsible for all applicable regulatory requirements, including, but not limited to, product registrations/notifications, substance volume tracking, and potential substance registration/notification.

3M Malaysia SDSs are available at www.3M.com.my