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 9849 Lemon Yellow

Product Identification Numbers
75-3470-6909-0 75-3472-5664-8

1.2. Recommended use and restrictions on use

Recommended use
Screen Printing Ink, Ink

For Industrial or Professional use only

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.
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.
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
General:

P102	Keep out of reach of children.
P101	If medical advice is needed, have product container or label at hand.

Prevention:

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P280E	Wear protective gloves.
P281	Use personal protective equipment as required.
P273	Avoid release to the environment.

Response:

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

Storage:

P405	Store locked up.

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
BISMUTH VANADATE	14059-33-7	10 - 20

VINYLCAPROLACTAM	2235-00-9	10 - 20
METHACRYLATE POLYMER	Trade Secret	10 - 20
ALIPHATIC URETHANE ACRYLATE	70766-56-2	7 - 13
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	119313-12-1	1 - 5
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	1 - 5
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	112945-52-5	1 - 5
Aluminum Salt	Trade Secret	1 - 5
Zinc Salt	Trade Secret	1 - 5
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	0.1 - 1.0
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	0.1 - 1.0
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	0.1 - 1.0
TMPEOTA	28961-43-5	< 1.0

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
No critical symptoms or effects. See Section 11.1, information on toxicological effects.

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
Aldehydes	During Combustion

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
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
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
Provide local exhaust ventilation at transfer points. 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	Yellow
Odor	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 (solid, gas)	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*
Viscosity/Kinematic Viscosity	*No Data Available*
Volatile Organic Compounds	5 g/l
Percent volatile	1 - 5 % weight
VOC Less H2O & Exempt Solvents	5 g/l

Nanoparticles
This material contains 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 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.

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 ATE2,000 - 5,000 mg/kg
PHENOXY ETHYL ACRYLATE	Dermal	Rat	LD50 > 2,000 mg/kg
PHENOXY ETHYL ACRYLATE	Ingestion	Rat	LD50 > 5,000 mg/kg
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
BISMUTH VANADATE	Dermal		LD50 estimated to be > 5,000 mg/kg
BISMUTH VANADATE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.2 mg/l
BISMUTH VANADATE	Ingestion	Rat	LD50 > 5,000 mg/kg
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Dermal	Rabbit	LD50 > 5,000 mg/kg
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Ingestion	Rat	LD50 > 5,110 mg/kg

1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Dermal	Rat	LD50 > 2,000 mg/kg
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Ingestion	Rat	LD50 > 5,000 mg/kg
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
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
.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
TMPEOTA	Dermal	Rabbit	LD50 > 13,000 mg/kg
TMPEOTA	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 > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
PHENOXY ETHYL ACRYLATE	Rabbit	No significant irritation
VINYLCAPROLACTAM	Rabbit	Minimal irritation
BISMUTH VANADATE	Rabbit	No significant irritation
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Rabbit	No significant irritation
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Rabbit	No significant irritation
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Rabbit	No significant irritation
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Rabbit	Irritant
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Rabbit	Minimal irritation
TMPEOTA	Rabbit	Minimal irritation
OCTAMETHYLCYCLOTETRASILOXANE	Rabbit	Minimal irritation

Serious Eye Damage/Irritation

Name	Species	Value
PHENOXY ETHYL ACRYLATE	Rabbit	No significant irritation
VINYLCAPROLACTAM	Rabbit	Severe irritant
BISMUTH VANADATE	Rabbit	No significant irritation
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Rabbit	No significant irritation
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Rabbit	No significant irritation
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	Rabbit	No significant irritation
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Rabbit	Severe irritant
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Rabbit	Severe irritant
TMPEOTA	Rabbit	Severe irritant
OCTAMETHYLCYCLOTETRASILOXANE	Rabbit	No significant irritation

Sensitization:

Skin Sensitization

Name	Species	Value

PHENOXY ETHYL ACRYLATE	Guinea pig	Sensitizing
VINYLCAPROLACTAM	Mouse	Sensitizing
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Human and animal	Not classified
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Guinea pig	Not classified
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	Guinea pig	Sensitizing
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	Mouse	Sensitizing
TMPEOTA	Guinea pig	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
VINYLCAPROLACTAM	In Vitro	Not mutagenic
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	In Vitro	Not mutagenic
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	In Vitro	Not mutagenic
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	In vivo	Not mutagenic
OCTAMETHYLCYCLOTETRASILOXANE	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Not Specified	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
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
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Ingestion	Not classified for female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Ingestion	Not classified for development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Ingestion	Not classified for female reproduction	Rat	NOAEL 300 mg/kg/day	1 generation
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Ingestion	Not classified for male reproduction	Rat	NOAEL 300 mg/kg/day	1 generation
1-BUTANONE, 2-(DIMETHYLAMINO)-	Ingestion	Toxic to development	Rat	NOAEL 30	1 generation

1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-				mg/kg/day	
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
OCTAMETHYLCYCLOTETRASILOXANE	Inhalation	Not classified for male reproduction	Rat	NOAEL 8.5 mg/l	2 generation
OCTAMETHYLCYCLOTETRASILOXANE	Ingestion	Toxic to female reproduction	Rabbit	NOAEL 50 mg/kg/day	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	

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
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
BISMUTH VANADATE	Inhalation	respiratory system	May cause damage to organs though prolonged or repeated exposure	Rat	NOAEL 0.02 mg/l	28 days
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	Inhalation	respiratory system | silicosis	Not classified	Human	NOAEL Not available	occupational exposure
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	Ingestion	endocrine system | hematopoietic system | liver | kidney and/or bladder	Not classified	Rat	NOAEL 500 mg/kg/day	28 days
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
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	Effect Concentration 50%	177 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Golden Orfe	Experimental	96 hours	Lethal Concentration 50%	10 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Green algae	Experimental	72 hours	Effect Concentration 50%	4.4 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Water flea	Experimental	48 hours	Effect Concentration 50%	1.21 mg/l
PHENOXY ETHYL ACRYLATE	48145-04-6	Green algae	Experimental	72 hours	Effect Concentration 10%	0.71 mg/l
BISMUTH VANADATE	14059-33-7	Green algae	Estimated	72 hours	Effect Concentration 50%	>100 mg/l
BISMUTH VANADATE	14059-33-7	Zebra Fish	Estimated	96 hours	Lethal Concentration 50%	>100 mg/l
BISMUTH VANADATE	14059-33-7	Water flea	Experimental	48 hours	Effect Concentration 50%	>100 mg/l
METHACRYLATE POLYMER	Trade Secret		Data not available or insufficient for classification			N/A
VINYLCAPROLACTAM	2235-00-9	Bacteria	Experimental	17 hours	Effect Concentration	622 mg/l

					50%	
VINYLCAPROLACTAM	2235-00-9	Green algae	Experimental	72 hours	Effect Concentration 50%	>100 mg/l
VINYLCAPROLACTAM	2235-00-9	Water flea	Experimental	48 hours	Effect Concentration 50%	>100 mg/l
VINYLCAPROLACTAM	2235-00-9	Zebra Fish	Experimental	96 hours	Lethal Concentration 50%	307 mg/l
VINYLCAPROLACTAM	2235-00-9	Green algae	Experimental	72 hours	No obs Effect Conc	25 mg/l
ALIPHATIC URETHANE ACRYLATE	70766-56-2		Data not available or insufficient for classification			N/A
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	119313-12-1	Activated sludge	Experimental	30 minutes	Inhibitory Concentration 50%	>5.9 mg/l
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	119313-12-1	Green Algae	Experimental	72 hours	Effect Concentration 50%	>0.5 mg/l
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	119313-12-1	Zebra Fish	Experimental	96 hours	Lethal Concentration 50%	0.46 mg/l
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-	119313-12-1	Green Algae	Experimental	72 hours	No obs Effect Conc	0.5 mg/l

MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-						
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Activated sludge	Experimental	3 hours	Effect Concentration 50%	>100 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Green algae	Experimental	72 hours	Effect Concentration 50%	1.6 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Water flea	Experimental	24 hours	Effect Concentration 50%	15.3 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Zebra Fish	Experimental	96 hours	Lethal Concentration 50%	9 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Green algae	Experimental	72 hours	Effect Concentration 10%	0.92 mg/l
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHI	71868-10-5	Water flea	Experimental	21 days	Effect Concentration 10%	1.75 mg/l

O)PHENYL]-2-(4-MORPHOLINYL)-						
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	112945-52-5	Green Algae	Experimental	72 hours	Effect Concentration 50%	>100 mg/l
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	112945-52-5	Water flea	Experimental	24 hours	Effect Concentration 50%	>100 mg/l
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	112945-52-5	Zebra Fish	Experimental	96 hours	Lethal Concentration 50%	>100 mg/l
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	112945-52-5	Green Algae	Experimental	72 hours	No obs Effect Conc	60 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Activated sludge	Experimental	3 hours	Effect Concentration 20%	507 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Green algae	Experimental	72 hours	Effect Concentration 50%	12.2 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Water flea	Experimental	48 hours	Effect Concentration 50%	91.4 mg/l
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-	52408-84-1	Zebra Fish	Experimental	96 hours	Lethal Concentration 50%	5.74 mg/l

PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]						
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Green algae	Experimental	72 hours	No obs Effect Conc	0.921 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Activated sludge	Experimental	3 hours	Effect Concentration 50%	770 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Golden Orfe	Experimental	96 hours	Lethal Concentration 50%	10 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Green Algae	Experimental	72 hours	Effect Concentration 50%	3.2 mg/l
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Water flea	Experimental	48 hours	Effect Concentration 50%	10.56 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Rainbow Trout	Experimental	93 days	No obs Effect Conc	0.0044 mg/l
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Water flea	Experimental	21 days	No obs Effect Conc	0.0079 mg/l
TMPEOTA	28961-43-5	Activated sludge	Experimental	3 hours	Effect Concentration 20%	292 mg/l
TMPEOTA	28961-43-5		Data not available or insufficient for classification			N/A

12.2. Persistence and degradability

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
PHENOXYETHYL ACRYLATE	48145-04-6	Estimated Photolysis		Photolytic half-life (in air)	9.7 hours (t 1/2)	Non-standard method

PHENOXY ETHYL ACRYLATE	48145-04-6	Experimental Biodegradation	28 days	Biological Oxygen Demand	22.3 % BOD/ThBOD	OECD 301D - Closed Bottle Test
BISMUTH VANADATE	14059-33-7	Data not availbl-insufficient			N/A	
METHACRYLATE POLYMER	Trade Secret	Data not availbl-insufficient			N/A	
VINYLCAPROLACTAM	2235-00-9	Experimental Biodegradation	28 days	Dissolv. Organic Carbon Deplet	30-40 % weight	OECD 301A - DOC Die Away Test
ALIPHATIC URETHANE ACRYLATE	70766-56-2	Data not availbl-insufficient			N/A	
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	119313-12-1	Experimental Biodegradation	28 days	Dissolv. Organic Carbon Deplet	3 % weight	Non-standard method
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Experimental Biodegradation	28 days	Carbon dioxide evolution	≤1 % weight	OECD 301B - Mod. Sturm or CO2
SYNTHETIC AMORPHOUS SILICA, FUMED, CRYSTALLINE FREE	112945-52-5	Data not availbl-insufficient			N/A	
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Experimental Biodegradation	28 days	Carbon dioxide evolution	72-85 % weight	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
OCTAMETHY	556-67-2	Experimental		Photolytic half-	31 days (t 1/2)	Non-standard method

LCYCLOTETRASILOXANE		Photolysis		life (in air)		
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental Hydrolysis		Hydrolytic half-life	69.3-144 hours (t 1/2)	Non-standard method
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental Biodegradation	28 days	Carbon dioxide evolution	3.7 % weight	OECD 310 CO2 Headspace
TMPEOTA	28961-43-5	Experimental Biodegradation	28 days	Carbon dioxide evolution	58-61 % weight	OECD 301B - Mod. Sturm or CO2

12.3. Bioaccumulative potential

Material	CAS No.	Test Type	Duration	Study Type	Test Result	Protocol
PHENOXYETHYL ACRYLATE	48145-04-6	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.58	Non-standard method
BISMUTH VANADATE	14059-33-7	Experimental BCF - Other	56 days	Bioaccumulation Factor	<14	OECD 305E-Bioaccum Fl-thru fis
METHACRYLATE POLYMER	Trade Secret	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
VINYLCAPROLACTAM	2235-00-9	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.2	Non-standard method
ALIPHATIC URETHANE ACRYLATE	70766-56-2	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
1-BUTANONE, 2-(DIMETHYLAMINO)-1-[4-(4-MORPHOLINYL)PHENYL]-2-(PHENYLMETHYL)-	119313-12-1	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.91	Non-standard method
1-PROPANONE, 2-METHYL-1-[4-(METHYLTHIO)PHENYL]-2-(4-MORPHOLINYL)-	71868-10-5	Experimental BCF - Other	56 days	Bioaccumulation Factor	<10	Non-standard method
SYNTHETIC AMORPHOUS	112945-52-5	Data not available or	N/A	N/A	N/A	N/A

SILICA, FUMED, CRYSTALLINE FREE		insufficient for classification				
.ALPHA.,.ALPHA.',.ALPHA."-1,2,3-PROPANETRIYLTRIS[POLYPROPYLENE GLYCOL ACRYLATE]	52408-84-1	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.52	Non-standard method
DIETHYLENE GLYCOL ETHYL ETHER ACRYLATE	7328-17-8	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	1.105	Non-standard method
OCTAMETHYLCYCLOTETRASILOXANE	556-67-2	Experimental BCF - Fathead Minnow	28 days	Bioaccumulation Factor	12400	Non-standard method
TMPEOTA	28961-43-5	Experimental Bioconcentration		Log of Octanol/H2O part. coeff	2.89	Non-standard 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

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

Not hazardous for transportation.

Marine Transport (IMDG)

UN Number: None assigned.
Proper Shipping Name: None assigned.
Technical Name: None assigned.
Hazard Class/Division: None assigned.
Subsidiary Risk: None assigned.
Packing Group: None assigned.
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: None assigned.
Proper Shipping Name: None assigned.
Technical Name: None assigned.
Hazard Class/Division: None assigned.
Subsidiary Risk: None assigned.
Packing Group: None assigned.
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 chemical notification requirements of TSCA. This product complies with Measures on Environmental Management of New Chemical Substances. All ingredients are listed on or exempt from on China IECSC inventory.

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