

## GPS Safety Summary

**Substance Name:**

**Methyl acrylate**

### 1. General Statement

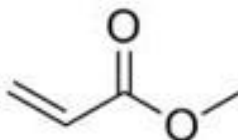
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Methyl acrylate is a reactive material that will readily polymerise if not properly controlled by inhibitors. It is mostly used as a co-monomer and also as a chemical intermediate to produce other monomers and molecules. The resulting materials are ingredients used in coatings, elastomers, water treatment, leather finishing, adhesives/sealants, thickeners, surfactants, fibres, plastics, textiles, inks and pharmaceutical intermediates.

### 2. Chemical Identity

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<b>Name:</b>	Methyl acrylate
<b>Brand names:</b>	NORSOCRYL <sup>®</sup> MA
<b>Chemical name (IUPAC):</b>	Methyl prop-2-enoate
<b>CAS number:</b>	96-33-3
<b>EC number:</b>	202-500-6
<b>Molecular formula:</b>	C <sub>4</sub> H <sub>6</sub> O <sub>2</sub>
<b>Structure:</b>	



### 3. Use and applications

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Methyl acrylate has two main industrial uses:

- **Use as a chemical intermediate:**  
 Methyl acrylate is transformed into a variety of other chemicals, such as Dimethylaminoethyl acrylate (DMAEA). These ingredients are used in:
  - chemical and pharmaceutical intermediates;
  - waste water treatment chemicals.
- **Use as monomer for polymerisation:**  
 The homo- and copolymers derived from Methyl acrylate are used in:
  - manufacture of fibres of both woven and non-woven textiles;
  - manufacture of various plastics;
  - water-based paints and coatings;
  - construction adhesives and pressure-sensitive adhesives;
  - coatings for textiles, wood and paper;
  - leather finishing, particularly for nubuck and suede.

Methyl acrylate is not sold to consumers.

## 4. Physical / Chemical properties

Methyl acrylate is a highly flammable, volatile liquid organic substance with the following physicochemical properties:

Property	Value
Physical state	Liquid at 20°C and 1013 hPa
Colour	Colourless
Odour	Acrid, pungent
Molecular weight	86.1 g/mol
Density	0.95 g/cm <sup>3</sup> at 20°C
Vapour pressure	90 hPa at 20°C
Freezing / boiling points	-76.5°C / 80.1°C at 1013 hPa
Flash point – flammability	-2.8°C at 1013 hPa – highly flammable liquid and vapour
Self-ignition temperature	468°C at 1013 hPa
Explosive / oxidizing properties	Not expected based on structure
Water solubility	60 g/L at 20°C
Octanol-water partition coefficient (Log K <sub>ow</sub> )	0.74 at 25°C

## 5. Health Effects

Methyl acrylate is a hazardous chemical which should be handled with care.

Effect Assessment	Results
Acute Toxicity Oral / inhalation / dermal	Harmful if swallowed. Swallowing may result in burns of the mouth and throat. Prolonged or widespread skin contact may result in absorption of harmful amounts. High vapour concentrations could cause serious adverse effects to the lungs which may result in death.
Irritation / corrosion Skin / eye/ respiratory tract	Contact may cause skin irritation. Causes serious eye irritation and damage. Signs of irritation may include pain, excessive tearing, and corneal changes. Excessive exposure to vapour may cause serious irritation to upper respiratory tract (nose and throat) and lungs.
Sensitisation	May cause an allergic skin reaction: low sensitizing potential by skin contact.
Toxicity after repeated exposure Oral / inhalation / dermal	The predominant effect is local irritation. Does not cause toxicity to internal organs after repeated exposure in animal studies.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause genetic effects.
Carcinogenicity	Did not cause cancer in long-term animal inhalation studies.
Reproductive / Developmental Toxicity	Did not cause birth defects in laboratory animals. No adverse effects were seen in the foetus at doses that were not toxic to the mother.

## 6. Environmental Effects

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In aquatic organisms, Methyl acrylate is acutely toxic to fish, invertebrates and algae and harmful to invertebrates and algae (no data in fish) upon long-term exposure.

Methyl acrylate is unlikely to persist in the environment since it biodegrades rapidly in sewage treatment plants. It is not expected to bind significantly to soil or sediment due to its low adsorption coefficient ( $\log K_{oc} = 0.808$ ). If released to air, photochemical degradation is expected to occur within days. It is not expected to accumulate in the food chain, *i.e.*, the bioaccumulative potential is low due to the low octanol-water partition coefficient ( $\log K_{ow} = 0.74$ ).

Effect Assessment	Result
Aquatic Toxicity	Acute: toxic. Chronic: harmful.

Fate and behaviour	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

\*: Persistent, Bioaccumulative and Toxic (PBT)

\*\* : very Persistent and very Bioaccumulative (vPvB)

## 7. Exposure

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### 7.1 Human health

#### **Consumers:**

Consumers are not directly exposed to Methyl acrylate because it is transformed into other substances present in consumer products.

Indirect exposure via the environment is negligible due to the biodegradability and low bioaccumulative potential.

#### **Workers:**

Methyl acrylate is industrially manufactured and used almost entirely within closed systems, minimizing the occupational exposure potential. Exposure may occur either in manufacturing facilities or in facilities using Methyl acrylate. Workers may be exposed during cleaning, maintenance, transfer, sampling and analysis.

Procedures, controls, collective and personal risk management measures are in place, which limit the occupational exposure during the manufacture and use of the substance. Workers who might accidentally come into contact with the undiluted substance should follow the safety measures recommended in the Extended Safety Data Sheet.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

## 7.2 Environment

Methyl acrylate is industrially manufactured and used in closed systems in a continuous or batch process or consumed by polymerisation or use as a process regulator, minimizing release to the environment. Potential releases may occur via wastewater and exhaust gases.

Procedures, controls and risk management measures are in place, which limit the environmental exposure.

The main expected release compartment is the atmosphere due to the volatility. Any released amount is expected to be photodegraded. Distribution to wastewater is expected to be moderate and any release would biodegrade rapidly in waste water treatment plants while the non-degraded remainder would ultimately evaporate to the atmosphere.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

## 8. Risk Management recommendations

Human health measures		
<b>Organizational</b>	Collect the latest available Safety Data Sheet. Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. Handle and store according to the indications of the Safety Data Sheet.	
<b>Engineering controls</b>	Should be handled in well ventilated areas. Prevention of inflammation and unscheduled polymerisation should be in place. Provide appropriate local exhaust ventilation at points of emission. Ensure that eye- and handwash stations and safety showers are close to workstation locations.	
<b>Protection</b>	<b>Eye/Face protection:</b>	Tightly fitting safety goggles
	<b>Skin protection:</b>	Protective suit
	<b>Hand protection:</b>	Neoprene gloves tested to EN374
	<b>Respiratory protection:</b>	Respirator conforming to EN 140 with type A/P2 filter if ventilation is insufficient
Environment protective measures		
Do not release into the environment. Do not let product enter drains. Incinerate any waste. Use waste water treatment systems. Do not spread sludge to soil.		

## 9. Regulatory Information / Classification and Labelling



### 9.1 Regulatory Information

This substance has notably been registered and assessed under:

- EU Regulation EC 1907/2006 (REACH)
- OECD HPV and SIDS (Screening Information Data Set) programs
- US EPA IRIS program

## 9.2 Classification and labelling

Under GHS, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
<ul style="list-style-type: none"> <li>– Flammable liquids: Category 2.</li> <li>– Acute toxicity - Inhalation: Category 3.</li> <li>– Acute toxicity - Dermal: Category 4.</li> <li>– Acute toxicity - Oral: Category 4.</li> <li>– Skin irritation: Category 2.</li> <li>– Eye irritation: Category 2.</li> <li>– Specific target organ toxicity - single exposure (inhalation): Category 3.</li> <li>– Skin sensitization: Category 1.</li> <li>– Chronic aquatic toxicity: Category 3.</li> </ul>	
Signal word	
Danger	
Pictograms	
– GHS02: Flame	
– GHS06: Skull and crossbones	
Hazard statements	
<ul style="list-style-type: none"> <li>– H225: Highly flammable liquid and vapour.</li> <li>– H331: Toxic if inhaled.</li> <li>– H312: Harmful in contact with skin.</li> <li>– H302: Harmful if swallowed.</li> <li>– H315: Causes skin irritation.</li> <li>– H319: Causes serious eye irritation.</li> <li>– H335: May cause respiratory irritation.</li> <li>– H317: May cause an allergic skin reaction.</li> <li>– H412: Harmful to aquatic life with long lasting effects.</li> </ul>	
Alternative/Additional classification according to Globally Harmonized System (GHS)	
<ul style="list-style-type: none"> <li>– Serious eye damage: Category 1; Causes serious eye damage.*</li> <li>– Acute aquatic toxicity: Category 2; Toxic to aquatic life.</li> </ul>	

\*: self-classification based on actual data overrides CLP harmonized classification in Category 2

## 10. Contact Information within Company

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For further information on this substance or product safety summary in general, please contact:

- **ICCA portal where the GPS Safety Summary is posted:**  
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>
- Arkema-acrylics-reach-uses@arkema.com

## 11. Date of Issues / Revision

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- Date of issue: 2012/09/04
- Date of revision:

## 12. Disclaimer

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The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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