GPS Safety Summary

Substance Name:

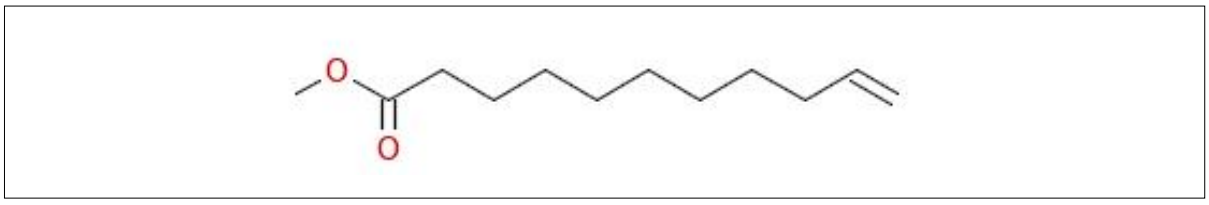
Methyl undec-10-enoate

1. General Statement

Methyl undec-10-enoate is produced for the use as a precursor for undecylenic derivatives for cosmetics and personal care. It is also used as an intermediate in the synthesis of aromatic chemicals and as an additive in formulations requiring its anti-odour properties. With its bifunctional nature (presence of an ester function and a terminal double bond at the end of the chains), it can be used as a synthesis support (modified silicones, polymers…).
The substance is manufactured and handled in industrial settings.

2. Chemical Identity

Name:	Methyl undec-10-enoate
Brand names:	Methyl undecylenate
Chemical name (IUPAC):	Methyl undec-10-enoate
CAS number(s):	111-81-9
EC number:	203-910-8
Molecular formula:	$C_{12}H_{22}O_2$
Structure:	



3. Use and applications

Methyl undec-10-enoate is used as an intermediate in the synthesis of chemicals such as food aroma and fragrances for perfumes. It is also used as an additive in the formulation of fragrances or odor removing agents. These odor removal agents are sold to and thus used by consumers.

4. Physical / Chemical properties

Methyl undec-10-enoate is a colourless liquid with the following physical/chemical properties:

Property	Value
Physical state	Liquid
Colour	Colourless
Odour	Penetrating
Density	0,885 g/cm^3 at 20°C

Melting range	-26,4°C to -21,1°C at 1013 hPa
Boiling range	253,5°C to 259,06°C at 1013 hPa
Flammability	Not flammable
Explosive / oxidizing properties	Not expected based on its structure
Self-ignition temperature	250°C at 990 hPa
Vapour pressure	210 Pa at 25°C
Mol weight	198,3 g/mol
Water solubility	0,794 mg/L at 20°C
Flash point	115°C at 1013 hPa
Octanol-water partition coefficient (LogKow)	4,4 to 5,3

5. Health Effects

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	*Oral*: Harmful if swallowed. *Inhalation*: Harmful if inhaled. *Dermal*: Based on the available test data, not expected to cause significant effect after acute dermal exposure.
Irritation / corrosion Skin / eye/ respiratory tract	Based on the available test data, not expected to cause irritation or corrosion.
Sensitisation	Based on the available test data, not expected to cause allergic skin reactions.
Toxicity after repeated exposure Oral / inhalation / dermal	Based on the available test data on a similar substance, not expected to cause adverse effects after repeated exposure.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause adverse genetic effects.
Carcinogenicity	Based on the information from the repeated exposure and reproduction studies, not expected to cause cancer under normal use conditions.
Toxicity for reproduction	Based on the available test data on a similar substance, not expected to cause adverse effects on reproduction.

6. Environmental Effects

Effect Assessment	Result
Aquatic Toxicity	Very toxic to fish and algae. Toxic to aquatic invertebrates.

Fate and behaviour	Result
Biodegradation	Based on the available test data: not readily biodegradable.
Bioaccumulation potential	Based on the estimated bioconcentration factor: low potential for bioaccumulation.
PBT / vPvB conclusion	Not considered to be PBT or vPvB.

7. Exposure

7.1 Human health

Considering the life cycle of the substance (manufacture, use as intermediate of synthesis and as ingredient in formulation), workers and then consumers may be exposed to methyl undec-10-enoate.

Worker exposure can occur in facilities manufacturing or using the substance. These activities are mainly undertaken in closed systems resulting in a low exposure. However when workers are exposed, during handling, loading, mixing, sampling or maintenance operations, they should follow the recommended safety measures in the extended Safety Data Sheet (eSDS).

Consumers are likely to be exposed to methyl undec-10-enoate when using consumer products such as odor removal products. However this exposure is very low as the methyl undec-10-enoate concentration in this type of products is below 2%.

7.2 Environment

In industrial sites manufacturing and using methyl undec-10-enoate, releases to the environment occur mostly to the air compartment with lower emissions to the water. However on site waste water treatment is required for all sites manufacturing and using the substance.

Bioaccumulation is not expected.

Risk assessment showed that the substance will pose no risk to the food chain or to humans exposed via the environment.

8. Risk Management recommendations

<table>
<tr><th colspan="3">Human health measures</th></tr>
<tr><td>Organizational</td><td colspan="2">Implement good basic standards of occupational hygiene.
Ensure operatives are well informed of the hazards and trained to minimise exposures.
Refer to the latest available extended safety data sheet (eSDS).</td></tr>
<tr><td>Engineering controls</td><td colspan="2">Should be handled in well ventilated areas.
Provide appropriate local exhaust ventilation at points of emission.
Ensure that eye- and handwash stations and safety showers are close to workstation locations.</td></tr>
<tr><td rowspan="4">Protection</td><td>Eye/Face protection:</td><td>Tightly fitting safety goggles</td></tr>
<tr><td>Skin protection:</td><td>Protective suit</td></tr>
<tr><td>Hand protection:</td><td>Solvent-resistant gloves tested to standard EN374</td></tr>
<tr><td>Respiratory protection:</td><td>In case of insufficient ventilation, wear suitable respiratory equipment.</td></tr>
<tr><th colspan="3">Environment protective measures</th></tr>
<tr><td colspan="3">On-site waste water treatment is required.
Do not release into the environment. Do not let product enter drains. Dam up with inert material. Destroy absorbed product in accordance with local and national regulations. Limit industrial sewage sludge spreading</td></tr>
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9. Regulatory Information / Classification and Labelling

9.1 Regulatory Information

This substance has been registered under:

- EU Regulation EC 1907/2006 (REACH)

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 CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
According to REGULATION (EC) no 1272/2008: – Acute Toxicity; Oral; Category 4; Harmful if swallowed. – Acute Toxicity; Inhalation; Category 4; Harmful if inhaled. – Aquatic Chronic; Category 1; Very toxic to aquatic life with long lasting effects. – Aquatic Acute; Category 1; Very toxic to aquatic life.	
Signal word	
– Warning	
Pictogram	
– GHS07: exclamation mark	
– GHS09: environment	
Hazard statement	
– H302: Harmful if swallowed. – H332: Harmful if inhaled. – H410: Very toxic to aquatic life with long lasting effects.	
Additional Classification according Global Harmonized System (GHS)	
– None	

10. Contact Information within Company

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

- arkema.reach-dpt1@arkema.com
- ICCA portal where the GPS Safety Summary is posted: http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/

11. Date of Issues / Revision

- Date of issue: 2013/02/10
- Date of revision:

12. Disclaimer

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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