



DE HEKSERIJ

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Issue date: 2/17/2022 Revision date: 3/4/2026 Supersedes version of: 8/12/2025 Version: 3.2

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: alpha-Ionone
IUPAC name	: 4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one
EC-No.	: 204-841-6
CAS-No.	: 127-41-3
REACH registration No.	: 01-2119965149-27
Product code	: 23010
Formula	: C13H20O
Product group	: Trade product

1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses

Intended for general public	
Main use category	: Professional use, Consumer use
Use of the substance/mixture	: Fragrance raw material

1.3. Details of the supplier of the safety data sheet

De Hekserij
Sporstraat 57
8271 RG IJsselmuiden
Nederland
T +31 383 557 927
hekserij@hekserij.nl, www.hekserij.nl

1.4. Emergency telephone number

No additional information available

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Hazardous to the aquatic environment – Chronic Hazard, H412
Category 3
Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Harmful to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Signal word (CLP)	: -
Hazard statements (CLP)	: H412 - Harmful to aquatic life with long lasting effects.
Precautionary statements (CLP)	: P102 - Keep out of reach of children. P273 - Avoid release to the environment. P501 - Dispose of contents and container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

Contains no PBT and/or vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type	: Mono-constituent
Name	: alpha-Ionone
CAS-No.	: 127-41-3
EC-No.	: 204-841-6

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one	CAS-No.: 127-41-3 EC-No.: 204-841-6 REACH-no: 01-2119965149-27	≥ 80	Aquatic Chronic 3, H412
4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one	CAS-No.: 14901-07-6 EC-No.: 238-969-9 REACH-no: 01-2119937833-30	≤ 20	Aquatic Chronic 2, H411

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: If you feel unwell, seek medical advice.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Wash skin with plenty of water.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Call a poison center or a doctor if you feel unwell.

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

Symptoms/effects after inhalation	: Although no appropriate human or animal health effects data are known to exist, this material is expected to be an inhalation hazard.
Symptoms/effects after skin contact	: None under normal conditions.
Symptoms/effects after eye contact	: None under normal conditions.
Symptoms/effects after ingestion	: None under normal conditions.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: No fire hazard.
Explosion hazard	: No direct explosion hazard.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

5.3. Advice for firefighters

- Firefighting instructions : Fight fire from safe distance and protected location. Do not enter fire area without proper protective equipment, including respiratory protection.
- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Stop leak if safe to do so. Notify authorities if product enters sewers or public waters. Absorb spillage to prevent material damage.

For non-emergency personnel

- Protective equipment : Wear recommended personal protective equipment.
- Emergency procedures : Ventilate spillage area.

For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Evacuate unnecessary personnel. Stop leak if safe to do so.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Absorb spilled material with sand or earth. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Stop leak without risks if possible.
- Methods for cleaning up : Take up liquid spill into absorbent material.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : Not expected to present a significant hazard under anticipated conditions of normal use.
- Precautions for safe handling : Ensure good ventilation of the work station. Wear personal protective equipment.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Keep in a cool, well-ventilated place away from heat.
- Storage conditions : Keep cool. Protect from sunlight.
- Packaging materials : Always store product in container of same material as original container.

7.3. Specific end use(s)

No additional information available

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

DNEL and PNEC

alpha-Ionone (127-41-3)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	0.28 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0.987 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	0.1 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0.174 mg/m ³
Long-term - systemic effects, dermal	0.1 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	3.4 µg/l
PNEC aqua (marine water)	0.34 µg/l
PNEC aqua (intermittent, freshwater)	13.8 µg/l
PNEC aqua (intermittent, marine water)	1.38 µg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.984 mg/kg dwt
PNEC sediment (marine water)	98.4 µg/kg dw
PNEC (Soil)	
PNEC soil	0.195 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	13.1 mg/l

8.2. Exposure controls

Appropriate engineering controls

Appropriate engineering controls:

Ensure good ventilation of the work station.

Personal protection equipment

Personal protective equipment:

Wear recommended personal protective equipment.

Personal protective equipment symbol(s):



Eye and face protection

Eye protection:

Safety glasses

Skin protection

Skin and body protection:

Wear suitable protective clothing

Hand protection:

Protective gloves

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Respiratory protection

Respiratory protection:

In case of insufficient ventilation, wear suitable respiratory equipment

Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: light yellow.
Odour	: Not available
Odour threshold	: Not available
Melting point	: < -15.6 °C Atm. press.: 965,7 hPa Decomposition: 'no' Sublimation: 'no'
Freezing point	: Not available
Boiling point	: 207.7 °C Atm. press.: 968,6 hPa Decomposition: 'no'
Flammability	: Not applicable
Lower explosion limit	: Not available
Upper explosion limit	: Not available
Flash point	: 112 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: 4.55 Temp.: 29 °C Concentration: 1 other:
Viscosity, kinematic	: Not available
Solubility	: Not available
Partition coefficient n-octanol/water (Log Kow)	: Not available
Vapour pressure	: 3.61 Pa Temp.: 25 °C
Vapour pressure at 50°C	: Not available
Density	: 0.9219 g/cm ³ Type: 'density' Temp.: 20 °C
Relative density	: Not available
Relative vapour density at 20°C	: Not available
Particle characteristics	: Not applicable

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one (127-41-3)	
LD50 oral rat	> 2000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: OECD Guideline 423 (Acute Oral toxicity - Acute Toxic Class Method)
LD50 dermal rat	> 2000 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 402 (Acute Dermal Toxicity)

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
LD50 oral rat	4590 mg/kg bodyweight Animal: rat, Guideline: other:
Skin corrosion/irritation	: Not classified pH: 4.55 Temp.: 29 °C Concentration: 1 other:

4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one (127-41-3)	
pH	4.55 Temp.: 29 °C Concentration: 1 other:

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
pH	5.67 Temp.: 24 °C Concentration: 1 vol%
Serious eye damage/irritation	: Not classified pH: 4.55 Temp.: 29 °C Concentration: 1 other:

4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one (127-41-3)	
pH	4.55 Temp.: 29 °C Concentration: 1 other:

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
pH	5.67 Temp.: 24 °C Concentration: 1 vol%
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified

4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one (127-41-3)	
LOAEL (animal/female, F0/P)	1000 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: other:
NOAEL (animal/male, F0/P)	11.8 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: other:
NOAEL (animal/female, F1)	> 10 mg/kg bodyweight Animal: rat, Animal sex: female, Guideline: other:
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified.
Aspiration hazard	: Not classified

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
Viscosity, kinematic	19.8 mm ² /s Temp.: 27 °C

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Harmful to aquatic life with long lasting effects.

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Harmful to aquatic life with long lasting effects.

4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one (127-41-3)	
LC50 - Fish [1]	6.8 mg/l Test organisms (species): <i>Leuciscus idus</i>
LC50 - Fish [2]	1.376 mg/l Test organisms (species): other:
EC50 72h - Algae [1]	50.26 mg/l Test organisms (species): <i>Chlorella vulgaris</i>
NOEC (chronic)	0.17 mg/l Test organisms (species): <i>Daphnia magna</i> Duration: '21 d'
NOEC chronic fish	0.173 mg/l Test organisms (species): other: Duration: '28 d'

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
LC50 - Fish [1]	2.572 mg/l Test organisms (species): <i>Oryzias latipes</i>
EC50 - Crustacea [1]	1.642 mg/l Test organisms (species): <i>Daphnia magna</i>
EC50 72h - Algae [1]	3.223 mg/l Test organisms (species): <i>Raphidocelis subcapitata</i> (previous names: <i>Pseudokirchneriella subcapitata</i> , <i>Selenastrum capricornutum</i>)

12.2. Persistence and degradability

alpha-Ionone (127-41-3)	
Persistence and degradability	Not rapidly degradable

4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one (127-41-3)	
Persistence and degradability	Not rapidly degradable

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
Persistence and degradability	Not rapidly degradable

12.3. Bioaccumulative potential

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
BCF - Fish [1]	159
Partition coefficient n-octanol/water (Log Kow)	1.903 pH value: 5.7; Temp.: 27 °C

12.4. Mobility in soil

4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one (14901-07-6)	
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.824

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

No additional information available

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional waste regulation	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	: Disposal must be done according to official regulations.
Additional information	: Do not re-use empty containers.

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
Not regulated for transport				
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU-Regulations

REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	Applicable on	Entry title or description
3(c)	alpha-Ionone ; 4-(2,6,6-trimethylcyclohex-2-ene-1-yl)-but-3-ene-2-one ; 4-(2,6,6-trimethylcyclohex-1-ene-1-yl)-but-3-ene-2-one	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1

REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

REACH Candidate List (SVHC)

Contains no substance(s) listed on the REACH Candidate List

PIC Regulation (Prior Informed Consent)

Contains no substance(s) listed on the PIC list (Regulation EU 649/2012 concerning the export and import of hazardous chemicals)

POP Regulation (Persistent Organic Pollutants)

Contains no substance(s) listed on the POP list (Regulation EU 2019/1021 on persistent organic pollutants)

Ozone Regulation (2024/590)

Not listed on the Ozone Depletion list (Regulation EU 2024/590)

Council Regulation (EC) for the control of dual-use items

Contains no substance subject to the COUNCIL REGULATION (EC) for the control of dual-use items

Explosives Precursors Regulation (EU 2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

Drug Precursors Regulation (EC 273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

National regulations

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed
SZW-lijst van mutagene stoffen : The substance is not listed
SZW-lijst van reprotoxische stoffen – Borstvoeding : The substance is not listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : The substance is not listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling : The substance is not listed

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:	
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstracts Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disruptor

Full text of H- and EUH-statements:	
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment – Chronic Hazard, Category 3
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

alpha-Ionone

Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Safety Data Sheet (SDS), EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.