1. PRODUCT AND COMPANY IDENTIFICATION

Product name : β-Ionone
Product Number : I12603
Brand : Aldrich
Supplier : Sigma-Aldrich Corporation
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
No known OSHA hazards

GHS Classification
Acute aquatic toxicity (Category 2)

GHS Label elements, including precautionary statements
Pictogram : none
Signal word : none
Hazard statement(s) : H401 Toxic to aquatic life.
Precautionary statement(s) : none

HMIS Classification
Health hazard: 0
Flammability: 1
Physical hazards: 0

NFPA Rating
Health hazard: 0
Fire: 1
Reactivity Hazard: 0

Potential Health Effects
Inhalation : May be harmful if inhaled. May cause respiratory tract irritation.
Skin : May be harmful if absorbed through skin. May cause skin irritation.
Eyes : May cause eye irritation.
Ingestion : May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Synonyms: 4-(2,6,6-Trimethyl-1-cyclohexenyl)-3-buten-2-one beta-ionone

Formula: C_{13}H_{20}O
Molecular Weight: 192.30 g/mol

No ingredients are hazardous according to OSHA criteria.

4. FIRST AID MEASURES

   General advice
   Consult a physician. Show this safety data sheet to the doctor in attendance.

   If inhaled
   If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

   In case of skin contact
   Wash off with soap and plenty of water. Consult a physician.

   In case of eye contact
   Flush eyes with water as a precaution.

   If swallowed
   Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

   Conditions of flammability
   Not flammable or combustible.

   Suitable extinguishing media
   Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

   Special protective equipment for firefighters
   Wear self contained breathing apparatus for fire fighting if necessary.

   Hazardous combustion products
   Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. ACCIDENTAL RELEASE MEASURES

   Personal precautions
   Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

   Environmental precautions
   Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

   Methods and materials for containment and cleaning up
   Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

   Conditions for safe storage
   Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

   Contains no substances with occupational exposure limit values.

   Personal protective equipment

   Respiratory protection
   Respiratory protection not required. For nuisance exposures use type OV/AG (US) or type ABEK (EU EN 14387) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
**Hand protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Eye protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

**Skin and body protection**
Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Hygiene measures**
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- **Form**: clear, liquid
- **Colour**: light yellow

**Safety data**
- **pH**: 7
- **Melting point/freezing point**: -35 °C (-31 °F) at 1,013 hPa (760 mmHg)
- **Boiling point**: 126 - 128 °C (259 - 262 °F) at 16 hPa (12 mmHg) - lit.
- **Flash point**: 112 °C (234 °F) - closed cup
- **Ignition temperature**: no data available
- **Auto-ignition temperature**: 273 °C (523 °F) at 1,010 - 1,017 hPa (758 - 763 mmHg)
- **Lower explosion limit**: no data available
- **Upper explosion limit**: no data available
- **Vapour pressure**: ca.0.072 hPa (0.054 mmHg) at 25 °C (77 °F)
- **Density**: 0.945 g/cm3 at 25 °C (77 °F)
- **Water solubility**: 0.11 g/l at 20 °C (68 °F) - OECD Test Guideline 105
- **Partition coefficient: n-octanol/water**: log Pow: 4 at 25 °C (77 °F)
- **Viscosity, kinematic**: 11.2 mm2/s at 20 °C (68 °F)
- **Relative vapour density**: no data available
- **Odour**: no data available
- **Odour Threshold**: no data available
- **Evaporation rate**: no data available

### 10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
no data available
Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
LD50 Oral - rat - 7,120 mg/kg

Inhalation LC50
no data available

Dermal LD50
LD50 Dermal - rat - male and female - > 2,000 mg/kg

Other information on acute toxicity
no data available

Skin corrosion/irritation
Skin - rabbit - No skin irritation - 4 h - OECD Test Guideline 404

Serious eye damage/eye irritation
Eyes - rabbit - No eye irritation - 72 h - OECD Test Guideline 405

Respiratory or skin sensitisation
guinea pig - Does not cause skin sensitisation. - OECD Test Guideline 406

Germ cell mutagenicity
Genotoxicity in vitro - Ames test - S. typhimurium - with and without metabolic activation - negative
Genotoxicity in vivo - mouse - male - Intraperitoneal - negative

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity
Reproductive toxicity - Hamster - Oral
Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Teratogenicity

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion May be harmful if swallowed.
Skin May be harmful if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.

Signs and Symptoms of Exposure
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
Repeated dose toxicity - rat - female - Oral - No observed adverse effect level - 83 mg/kg - Lowest observed adverse effect level - 801 mg/kg
RTECS: EN0500000

12. ECOLOGICAL INFORMATION

Toxicity
- Toxicity to fish: LC50 - Pimephales promelas (fathead minnow) - 5.09 mg/l - 96.0 h
- Toxicity to daphnia and other aquatic invertebrates: static test EC50 - Daphnia magna (Water flea) - 4.03 mg/l - 48 h
  Method: OECD Test Guideline 202
- Toxicity to algae: static test EC50 - Desmodesmus subspicatus (green algae) - 22.15 mg/l - 72 h
- Toxicity to bacteria: Respiration inhibition EC50 - Sludge Treatment - 100 - 200 mg/l - 180 min
  Method: OECD Test Guideline 209

Persistence and degradability
- Biodegradability: aerobic
  Result: 70 - 80 % - Readily biodegradable.

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods
15. REGULATORY INFORMATION

OSHA Hazards
No known OSHA hazards

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

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<tr>
<th>(E)-4-(2,6,6-Trimethyl-1-cyclohexen-1-yl)-3-buten-2-one</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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New Jersey Right To Know Components

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California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information
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