SAFETY DATA SHEET

1. Identification

Product identifier  cis-3-HEXENYL CIS-3-HEXENOATE

Other means of identification

- **BRI Product Code**: 121
- **CAS number**: 61444-38-0
- **FEMA number**: 3689
- **Synonyms**: 3-Hexenoic acid, (3Z)-3-hexenyl ester, (3Z)- * C-3-HEXENYL C-3-HEXENOATE *
  Z-3-Hexenyl-Z-3-Hexenoate

Recommended use  flavors and fragrances  For Manufacturing Use Only

Recommended restrictions  Not for use in Tobacco or Nicotine delivery device applications and/or products.

Manufacturer/Importer/Supplier/Distributor information

- **Company name**: Bedoukian Research
- **Address**: 6 Commerce Drive, Danbury, CT 06810, United States
- **Telephone**: 1-203-830-4000
- **Website**: www.bedoukian.com
- **E-mail**: customerservice@bedoukian.com
- **Contact person**: Joseph Bania
- **Emergency phone number**:
  - Chemtrec (North America): 1-800-424-9300
  - Chemtrec (International): 1-703-527-3887

2. Hazard(s) identification

- **Physical hazards**: Not classified.
- **Health hazards**: Not classified.
- **Environmental hazards**: Hazardous to the aquatic environment, acute Category 2 hazard
- **OSHA defined hazards**: Not classified.

Label elements

- **Hazard symbol**: None.
- **Signal word**: None.
- **Hazard statement**: Toxic to aquatic life.

Precautionary statement

- **Prevention**: Avoid release to the environment.
- **Response**: Wash hands after handling.
- **Storage**: Store away from incompatible materials.
- **Disposal**: Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

- None known.

Supplemental information

- None.

3. Composition/information on ingredients

Substances
4. First-aid measures

Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact
Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact
Rinse with water. Get medical attention if irritation develops and persists.

Ingestion
Rinse mouth. Get medical attention if symptoms occur.

Most important symptoms/effects, acute and delayed
Direct contact with eyes may cause temporary irritation.

Indication of immediate medical attention and special treatment needed
Treat symptomatically.

General information
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media
Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions
Move containers from fire area if you can do so without risk.

Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

General fire hazards
No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up
This product is miscible in water. Prevent product from entering drains.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions
Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling
Provide adequate ventilation. Wear appropriate personal protective equipment. Avoid release to the environment. Observe good industrial hygiene practices.
Store in original tightly closed container. Store away from incompatible materials (see Section 10 of the SDS). Recommended Packaging: Glass, Plastic, Aluminum or Phenolic Lined Steel. Store tightly sealed under inert gas in a cool, well-ventilated area.

8. Exposure controls/personal protection

Individual protection measures, such as personal protective equipment

- **Eye/face protection**: Wear safety glasses with side shields (or goggles).
- **Skin protection**: Wear appropriate chemical resistant gloves.
- **Hand protection**: Wear suitable protective clothing.
- **Respiratory protection**: In case of insufficient ventilation, wear suitable respiratory equipment.
- **Thermal hazards**: Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**: Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

**Appearance**
- **Physical state**: Liquid.
- **Color**: Colorless

**Odor**: Fresh, Ethereal, Pear, Fruity, Green

**Odor threshold**: Not available.

**pH**: Not available.

**Melting point/freezing point**: Not available.

**Initial boiling point and boiling range**: 458.6 °F (237 °C) OECD 103 97.2 kPa

**Flash point**: 223 °F (106 °C) Closed Cup Bedoukian obtained value.

**Evaporation rate**: Not available.

**Flammability (solid, gas)**: Not applicable.

**Upper/lower flammability or explosive limits**
- **Flammability limit - lower (%)**: Not available.
- **Flammability limit - upper (%)**: Not available.
- **Explosive limit - lower (%)**: Not available.
- **Explosive limit - upper (%)**: Not available.

**Vapor pressure**: 0.01 mmHg at 20°C; US EPA. 2014. Estimation Programs Interface Suite™ for Microsoft® Windows, v 4.11. US EPA, Washington, DC, USA.

**Vapor density**: 6.8 Relative to air; air = 1

**Relative density**: Not available.

**Solubility(ies)**
- **Solubility (water)**: 6.07 mg/l OECD 105 at 20°C

**Partition coefficient (n-octanol/water)**: 4.01 EU Method A.8 at 30°C

**Auto-ignition temperature**: 525 °F (274 °C) EU Method A.15

**Decomposition temperature**: Not available.

**Viscosity**: Not available.
Other information

Density 0.895 - 0.902 g/cm³
Explosive properties Not explosive.
Flammability class Combustible III B estimated
Molecular formula C₁₂H₂₀O₂
Molecular weight 196.28
Oxidizing properties Not oxidizing.
Specific gravity 0.895 - 0.902 at 25°C

10. Stability and reactivity

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

Chemical stability Material is stable under normal conditions.

Possibility of hazardous reactions No dangerous reaction known under conditions of normal use.

Conditions to avoid Contact with incompatible materials.

Incompatible materials Strong oxidizing agents.

Hazardous decomposition products No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

- Inhalation No adverse effects due to inhalation are expected.
- Skin contact No adverse effects due to skin contact are expected.
- Eye contact Direct contact with eyes may cause temporary irritation.
- Ingestion Expected to be a low ingestion hazard.

Symptoms related to the physical, chemical and toxicological characteristics

- Prolonged skin contact may cause temporary irritation.

Information on toxicological effects

Acute toxicity

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>cis-3-HEXENYL CIS-3-HEXENOATE (CAS 61444-38-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD₅₀</td>
<td>Rat</td>
<td>&gt; 2000 mg/kg OECD 423</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation

- Direct contact with eyes may cause temporary irritation.

Irritation Corrosion - Skin cis-3-HEXENYL CIS-3-HEXENOATE OECD 404
- Result: Not irritating.
- Species: Rabbit
- Organ: Skin
- Notes: ECHA

Serious eye damage/eye irritation

Result: Not irritating.
Species: Rabbit
Organ: Eye
Notes: ECHA

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.
**Skin sensitization**  
**cis-3-HEXENYL CIS-3-HEXENOATE**  
OECD 406  
Result: Not sensitizing.  
Species: Guinea pig  
Organ: Skin  
Notes: ECHA

**Germ cell mutagenicity**  
No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

**Germ cell mutagenicity: Ames test**  
**cis-3-HEXENYL CIS-3-HEXENOATE**  
OECD 471  
Result: Not mutagenic.  
Species: Salmonella typhimurium  
Notes: ECHA

**Carcinogenicity**  
Not classifiable as to carcinogenicity to humans.

**IARC Monographs. Overall Evaluation of Carcinogenicity**  
Not listed.

Not regulated.

**US. National Toxicology Program (NTP) Report on Carcinogens**  
Not listed.

**Reproductive toxicity**  
This product is not expected to cause reproductive or developmental effects.

**Specific target organ toxicity - single exposure**  
Not classified.

**Specific target organ toxicity - repeated exposure**  
Not classified.

**Aspiration hazard**  
Not an aspiration hazard.

### 12. Ecological information

**Ecotoxicity**  
Toxic to aquatic life.

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<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
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</thead>
<tbody>
<tr>
<td>cis-3-HEXENYL CIS-3-HEXENOATE (CAS 61444-38-0)</td>
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<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia</td>
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<tr>
<td>NOEC</td>
<td>Daphnia</td>
<td>2.2 mg/l, 48 h OECD 202</td>
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<tr>
<td><strong>Chronic</strong></td>
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<tr>
<td>Algae</td>
<td>EC50</td>
<td>Algae</td>
</tr>
<tr>
<td>NOEC</td>
<td>Algae</td>
<td>0.33 mg/l, 72 h OECD 201</td>
</tr>
</tbody>
</table>

* Estimates for product may be based on additional component data not shown.

**Persistence and degradability**  
The product is readily biodegradable.

**Biodegradability**  
**Percent degradation (Aerobic biodegradation-ready)**  
cis-3-HEXENYL CIS-3-HEXENOATE  
OECD 301F, 10-day criteria fulfilled (63% within 10-day window; 74% in 28 days)  
Result: Readily biodegradable.  
Species: Activated sludge of a predominantly domestic sewage

**Bioaccumulative potential**  
**Partition coefficient n-octanol / water (log Kow)**  
cis-3-HEXENYL CIS-3-HEXENOATE  
4.01 EU Method A.8, at 30°C  

**Bioconcentration factor (BCF)**  
cis-3-HEXENYL CIS-3-HEXENOATE  
< 500 Predictions from both BCFWIN and CATALOGIC

**Mobility in soil**  
No data available.
Other adverse effects

No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations
Dispose in accordance with all applicable regulations.

Hazardous waste code
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not established.

15. Regulatory information

US federal regulations
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)
Not listed.

SARA 304 Emergency release notification
Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
Not regulated.

Superfund Amendments and Reauthorization Act of 1986 (SARA)
SARA 302 Extremely hazardous substance
Not listed.

SARA 311/312 Hazardous chemical
No

SARA 313 (TRI reporting)
Not regulated.

Other federal regulations
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.

Safe Drinking Water Act (SDWA)
Not regulated.
California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

### International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td></td>
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<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
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<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>No</td>
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<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
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<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
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<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
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<tr>
<td>Taiwan</td>
<td>Taiwan Toxic Chemical Substances (TCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A “No” indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

### 16. Other information, including date of preparation or last revision

- **Issue date**: 17-May-2015
- **Revision date**: 24-June-2019
- **Version #**: 03

**Disclaimer**

Bedoukian Research cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

**Revision information**

This document has undergone significant changes and should be reviewed in its entirety.