# SAFETY DATA SHEET

**Revision Date**: 23-Jan-2018

**Revision Number**: 3

## 1. Identification

<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th>L(-)-Camphor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cat No.</strong> :</td>
<td>AC108190000; AC108190100; AC108190500</td>
</tr>
<tr>
<td><strong>CAS-No</strong></td>
<td>464-48-2</td>
</tr>
<tr>
<td><strong>Synonyms</strong></td>
<td>1,7,7-Trimethylbornorcamphor; 2-Bornanone; 2-Camphanone</td>
</tr>
</tbody>
</table>

**Recommended Use**: Laboratory chemicals.

**Uses advised against**: Not for food, drug, pesticide or biocidal product use

### Details of the supplier of the safety data sheet

**Company**
- Fisher Scientific
  - One Reagent Lane
  - Fair Lawn, NJ 07410
  - Tel: (201) 796-7100

- Acros Organics
  - One Reagent Lane
  - Fair Lawn, NJ 07410

**Emergency Telephone Number**
- For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
- Emergency Number **US**: 001-201-796-7100 / **Europe**: +32 14 57 52 99
- CHEMTREC Tel. No. **US**: 001-800-424-9300 / **Europe**: 001-703-527-3887

## 2. Hazard(s) identification

### Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th><strong>Flammable solids</strong></th>
<th>Category 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Skin Corrosion/irritation</strong></td>
<td>Category 2</td>
</tr>
<tr>
<td><strong>Serious Eye Damage/Eye Irritation</strong></td>
<td>Category 2</td>
</tr>
<tr>
<td><strong>Germ Cell Mutagenicity</strong></td>
<td>Category 1B</td>
</tr>
<tr>
<td><strong>Specific target organ toxicity (single exposure)</strong></td>
<td>Category 3</td>
</tr>
<tr>
<td><strong>Target Organs - Respiratory system.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Combustible dust</strong></td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Label Elements

#### Signal Word
- Danger

#### Hazard Statements
- Flammable solid
- May form combustible dust concentrations in air
- Causes skin irritation
- Causes serious eye irritation
- May cause respiratory irritation
- May cause genetic defects
Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wear eye/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Fire
in case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)-</td>
<td>464-48-2</td>
<td>100</td>
</tr>
</tbody>
</table>

4. First-aid measures

Eye Contact  Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact  Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Obtain medical attention.

Inhalation  Remove from exposure, lie down. Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Obtain medical attention.
Ingestion
Clean mouth with water. Get medical attention.

Most important symptoms and effects
No information available.

Notes to Physician
Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media
Water spray. Carbon dioxide (CO₂). Dry chemical. Use water spray to cool unopened containers. Chemical foam. Cool closed containers exposed to fire with water spray.

Unsuitable Extinguishing Media
No information available

Flash Point
64 °C / 147.2 °F

Method -
No information available

Autoignition Temperature
460 °C / 860 °F

Explosion Limits
Upper 3.5%
Lower 0.6%

Sensitivity to Mechanical Impact
No information available

Sensitivity to Static Discharge
No information available

5. Fire-fighting measures

Specific Hazards Arising from the Chemical
Flammable. Dust can form an explosive mixture in air. Combustible material. Combustible material. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO₂)

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

<table>
<thead>
<tr>
<th></th>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

6. Accidental release measures

Personal Precautions
Remove all sources of ignition. Take precautionary measures against static discharges. See Section 12 for additional ecological information. Do not flush into surface water or sanitary sewer system.

Environmental Precautions

Methods for Containment and Clean Up
Avoid dust formation. Sweep up or vacuum up spillage and collect in suitable container for disposal. Remove all sources of ignition.

7. Handling and storage

Handling
Avoid contact with skin and eyes. Do not breathe dust. Take precautionary measures against static discharges. Keep away from open flames, hot surfaces and sources of ignition.

Storage
Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines
This product does not contain any hazardous materials with occupational exposure
limits established by the region specific regulatory bodies.

**Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

**Personal Protective Equipment**

- **Eye/face Protection**
  Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

- **Skin and body protection**
  Wear appropriate protective gloves and clothing to prevent skin exposure.

- **Respiratory Protection**
  No protective equipment is needed under normal use conditions.

- **Hygiene Measures**
  Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Light yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>aromatic</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>No information available</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>178 - 180 °C / 352.4 - 356 °F</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>204 °C / 399.2 °F @ 760 mmHg</td>
</tr>
<tr>
<td>Flash Point</td>
<td>64 °C / 147.2 °F</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Flammability (solid,gas)</td>
<td>No information available</td>
</tr>
<tr>
<td>Flammability or explosive limits Upper</td>
<td>3.5%</td>
</tr>
<tr>
<td>Flammability or explosive limits Lower</td>
<td>0.6%</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>0.27 mbar @ 20 °C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.992 @ 25°C</td>
</tr>
<tr>
<td>Solubility</td>
<td>No information available</td>
</tr>
<tr>
<td>Partition coefficient; n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>460 °C / 860 °F</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Molecular Formula</td>
<td>C10 H16 O</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>152.24</td>
</tr>
</tbody>
</table>

## 10. Stability and reactivity

- **Reactive Hazard**
  None known, based on information available

- **Stability**
  Stable under normal conditions.

- **Conditions to Avoid**
  Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

- **Incompatible Materials**
  Strong oxidizing agents, Strong reducing agents

- **Hazardous Decomposition Products**
  Carbon monoxide (CO), Carbon dioxide (CO₂)

- **Hazardous Polymerization**
  Hazardous polymerization does not occur.

- **Hazardous Reactions**
  None under normal processing.
11. Toxicological information

Acute Toxicity

Product Information
No acute toxicity information is available for this product

Component Information
No information available

Toxicologically Synergistic Products
No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation
No information available

Sensitization
No information available

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)-</td>
<td>464-46-2</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects
No information available

Reproductive Effects
No information available.

Developmental Effects
No information available.

Teratogenicity
No information available.

STOT - single exposure
Respiratory system

STOT - repeated exposure
None known

Aspiration hazard
No information available

Symptoms / effects, both acute and delayed
No information available

Endocrine Disruptor Information
No information available

Other Adverse Effects
The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Contains a substance which is: Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-, (1S)-</td>
<td>Not listed</td>
<td>LC50: 15 - 19.4 mg/L, 96 h flow-through (Pimephales promelas)</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Persistence and Degradability
Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation
No information available.

Mobility
Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations
Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

### 14. Transport information

<table>
<thead>
<tr>
<th></th>
<th>DOT</th>
<th>TDG</th>
<th>IATA</th>
<th>IMDG/IMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN-No</td>
<td>UN2717</td>
<td>UN2717</td>
<td>2717</td>
<td>2717</td>
</tr>
<tr>
<td>Hazard Class</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
<td>4.1</td>
</tr>
<tr>
<td>Packing Group</td>
<td>III</td>
<td>III</td>
<td>III</td>
<td>III</td>
</tr>
</tbody>
</table>

### 15. Regulatory information

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicyclo[2.2.1]heptan-2-one, 1,7,7-trimethyl-1(S)-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>207-354-7</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).
- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

**U.S. Federal Regulations**

- **TSCA 12(b)** Not applicable
- **SARA 313** Not applicable
- **SARA 311/312 Hazard Categories** See section 2 for more information
- **CWA (Clean Water Act)** Not applicable
- **Clean Air Act** Not applicable
- **OSHA** Occupational Safety and Health Administration Not applicable
CERCLA
Not applicable

California Proposition 65
This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations
Not applicable

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations
Mexico - Grade
No information available

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 23-Jan-2018
Print Date 23-Jan-2018
Revision Summary
This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of SDS