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SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.2
Creation Date: July 15, 2019
Revision Date: August 08, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name (±)-Camphor

1.2 Other means of identification

Product number CCHM700493
Other names -

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
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1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable solids, Category 2
Skin irritation, Category 2
Serious eye damage, Category 1
Acute toxicity - Category 4, Inhalation
Specific target organ toxicity – single exposure, Category 2

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word Danger
Hazard statement(s)
H228 Flammable solid
H315 Causes skin irritation
H318 Causes serious eye damage
H332 Harmful if inhaled
H371 May cause damage to organs

Precautionary statement(s)
Prevention
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P270 Do not eat, drink or smoke when using this product.

Response	P370+P378 In case of fire: Use ... to extinguish. P302+P352 IF ON SKIN: Wash with plenty of water/... P321 Specific treatment (see ... on this label). P332+P317 If skin irritation occurs: Get medical help. P362+P364 Take off contaminated clothing and wash it before reuse. P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P317 Get medical help. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P308+P316 IF exposed or concerned: Get emergency medical help immediately.
Storage	P405 Store locked up.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
(±)-Camphor	Bornan-2-one	76-22-2	200-945-0	100%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Give a slurry of activated charcoal in water to drink. Artificial respiration may be needed. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 133 [Flammable Solids]: Fire may produce irritating and/or toxic gases. Contact may cause burns to skin and eyes. Contact with molten substance may cause severe burns to skin and eyes. Runoff from fire control may cause pollution. (ERG, 2016)
Within 5 to 90 minutes after swallowing, the following may be noted: nausea and vomiting; feeling of warmth; headache; confusion, vertigo, excitement, restlessness, delirium, and hallucinations; increased muscular excitability, tremors, and jerky movements; epileptiform convulsions, followed by depression (convulsions sometimes occur early in the syndrome and may be severe, but they do not have the grave prognosis of strychnine convulsions); coma; central nervous depression may at times be the primary clinical response; death results from respiratory failure or from status epilepticus; slow convalescence (days or weeks), often with persistent gastric distress. (USCG, 1999)
SYMPTOMS: Ingestion of this compound may cause nausea, vomiting, vertigo, mental confusion, delirium, convulsions, coma, respiratory failure or death. It may also cause a burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, severe irritation and possible destruction to the tissues of the mucous membranes, upper respiratory tract, eyes and skin. Other symptoms may include congestion and edematous changes in the gastrointestinal tract, kidneys and brain. Ingestion may result in burning in the mouth and throat, epigastric pain, thirst, feeling of tension, dizziness, irrational behavior, unconsciousness, rigidity, rapid pulse, slow respiration, twitching of the facial muscles and muscular spasms. Other symptoms may include flickering, darkening or veiling of vision, noises in the ears and weakness. Exposure to this compound may also result in a feeling of warmth, depression of the central nervous system, difficult breathing, a characteristic breath odor and anuria. Colic may also be a symptom of exposure. Other symptoms may include eye irritation, sore throat, excitement, fever, bluish lips, pale face, loss of sense of smell and agitation. ACUTE/CHRONIC HAZARDS: When heated to decomposition this compound emits toxic fumes of carbon monoxide and carbon dioxide. It is harmful if swallowed, inhaled or absorbed through the skin. It can be absorbed through mucous membranes. (NTP, 1992)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Treatment of camphor intoxication is primarily supportive with a focus on airway management and seizure control. No antidotes are available. Activated charcoal should be administered for gastrointestinal decontamination, although its efficacy is doubtful. Due to prominent CNS effects, the induction of emesis is contraindicated. If liquid camphor is ingested, a nasogastric tube can be used to aspirate gastric contents before instillation of activated charcoal. Alcohols and oil solutions should be avoided because they have been reported to enhance absorption of camphor. Although not readily available, lipid hemodialysis and resin hemoperfusion have been reported to lower blood camphor concentrations in severely poisoned patients. Benzodiazepines such as lorazepam or diazepam are indicated for symptoms of CNS hyperactivity, such as agitation, tremors, and seizures. Phenobarbital can be used for recurrent or prolonged seizures.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

To fight fire, use foam, carbon dioxide, dry chemical

5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 133 [Flammable Solids]: Flammable/combustible material. May be ignited by friction, heat, sparks or flames. Some may burn rapidly with flare-burning effect. Powders, dusts, shavings, borings, turnings or cuttings may explode or burn with explosive violence. Substance may be transported in a molten form at a temperature that may be above its flash point. May re-ignite after fire is extinguished. (ERG, 2016)
Behavior in Fire: The solid often evaporates without first melting. (USCG, 1999)
This chemical is flammable. (NTP, 1992)

5.3 Special protective actions for fire-fighters

Use water spray, powder, foam, carbon dioxide.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal protection: filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Ventilation. Remove all ignition sources. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting.

6.2 Environmental precautions

Personal protection: filter respirator for organic gases and particulates adapted to the airborne concentration of the substance. Ventilation. Remove all ignition sources. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting.

6.3 Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up: sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulation... Keep in suitable, closed containers for disposal...

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames. Above 66°C use a closed system and ventilation. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent deposition of dust. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Separated from strong oxidants, strong reducing agents, chlorinated solvents and food and feedstuffs. Well closed. Ventilation along the floor.Conditions for safe storage, including any incompatibilities: keep container tightly closed in a dry and well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 2 ppm as TWA; 3 ppm as STEL; A4 (not classifiable as a human carcinogen)

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety spectacles or eye protection in combination with breathing protection.

Skin protection

Protective gloves.

Respiratory protection

Use ventilation (not if powder), local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Solid. Powder.
Colour	Clear white crystals, characteristic odor.
Odour	Fragrant and penetrating odor
Melting point/freezing point	180 °C. Remarks:Other related information is unknown.

Boiling point or initial boiling point and boiling range	204 °C. Remarks:The other related information is unknown.
Flammability	Combustible Solid
Lower and upper explosion limit/flammability limit	Lower flammable limit: 0.6% by volume; Upper flammable limit: 3.5% by volume
Flash point	64°C
Auto-ignition temperature	870.8° F (USCG, 1999)
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	Insoluble (NIOSH, 2016)
Partition coefficient n-octanol/water	log Pow = 2.414. Temperature:25 °C. Remarks:PH value is unknown.
Vapour pressure	0.65 mm Hg. Temperature:25 °C.
Density and/or relative density	0.992. Temperature:25 °C.
Relative vapour density	5.2 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Decomposes on burning. This produces toxic gases and irritating fumes. Reacts violently with strong oxidants, strong reducing agents and chlorinated solvents. This generates fire and explosion hazard.

10.2 Chemical stability

no data available

10.3 Possibility of hazardous reactions

Evolves flammable and explosive vapors when heated.Dust explosion possible if in powder or granular form, mixed with air.Naphthalene, CAMPHOR, glycerol, or turpentine will react violently with chromic anhydride [Haz. Chem. Data 1967 p. 68].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Reacts violently with ...strong reducing agents and chlorinated solvents, causing fire and explosion hazard.

10.6 Hazardous decomposition products

The substance decomposes on burning producing toxic gases and irritating fumes.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 - rat (female) - 4 299.55 mg/kg bw.
- Inhalation: LC50 - rat (male/female) - > 10 000 mg/m³ air.
- Dermal: LD50 - rat (male/female) - > 2 000 mg/kg bw.

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

A4; Not classifiable as a human carcinogen. Camphor, synthetic

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the central nervous system. This may result in convulsions and respiratory depression. Ingestion could cause death.

STOT-repeated exposure

no data available

Aspiration hazard

A harmful contamination of the air will be reached on evaporation of this substance at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Pimephales promelas - 110 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: LC50 - 9.303 mg/L - 48 h.
- Toxicity to algae: EC50 - 6.951 mg/L - 96 h.
- Toxicity to microorganisms: EC50 - activated sludge - > 100 mg/L - 3 h. Remarks:Respiration rate.

12.2 Persistence and degradability

AEROBIC: Camphor, at an influent concentration of 4.08 mg/L, was degraded to below detection limits (not specified) during a 20 hour aeration period in an aerobic activated sludge system(1). Camphor did not concentrate in the activated sludge solids. However, the loss of camphor in this process cannot be definitely attributed to biodegradation since there may have been loss due to volatilization(1). Monoterpine ketones were more resistant to biodegradation in aerated lagoon samples than monoterpine hydrocarbons or alcohols(2). The concentration of camphor actually increased in some of the samples which suggests that camphor was being produced in the lagoon. Camphor was on the list of very difficult to biodegrade compounds in a study of organic chemicals found in effluents(3). Camphor, present at 100 mg/L, reached 94% of its theoretical BOD in 4 weeks using an activated sludge inoculum at 30 mg/L in the Japanese MITI test which classified the compound as readily biodegradable(4).

12.3 Bioaccumulative potential

An estimated BCF of 17 was calculated in fish for camphor(SRC), using a measured log Kow of 2.38(1) and a regression-derived equation(2). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of camphor can be estimated to be 117(SRC). According to a classification scheme(2), this estimated Koc value suggests that camphor is expected to have high mobility in soil.

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN2717 (For reference only, please check.)	IMDG: UN2717 (For reference only, please check.)	IATA: UN2717 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: CAMPHOR, synthetic (For reference only, please check.)	IMDG: CAMPHOR, synthetic (For reference only, please check.)	IATA: CAMPHOR, synthetic (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 4.1 (For reference only, please check.)	IMDG: 4.1 (For reference only, please check.)	IATA: 4.1 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: III (For reference only, please check.)	IMDG: III (For reference only, please check.)	IATA: III (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No	IMDG: No	IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Bornan-2-one	Bornan-2-one	76-22-2	200-945-0
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.
Korea Existing Chemicals List (KECL)			Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2019
Revision Date August 08, 2025

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Camphor is available in two optical isomers (CAS 464-48-2 and 464-49-3) and as a racemic mixture (CAS 21368-68-3).

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

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