

# SAFETY DATA SHEETS

According to the UN GHS revision 9

Version: 1.0  
Creation Date: July 15, 2019  
Revision Date: July 15, 2019

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## SECTION 1: Identification

### 1.1 GHS Product identifier

Product name (+)-bornan-2-one

### 1.2 Other means of identification

Product number -

Other names D-CAMPHOR; (+)-bornan-2-one; d-camphor

### 1.3 Recommended use of the chemical and restrictions on use

Identified uses Industrial and scientific research use.

Uses advised against no data available

### 1.4 Supplier's details

Company Shanghai Yansheng Internet Technology Co., Ltd

Address 513, A3 / F, green space future center, Fengxian District, Shanghai, 201400, China

Telephone +86-4000-6969-66

### 1.5 Emergency phone number

Emergency phone number +86-4000-6969-66

Service hours Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

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## 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)



<b>Signal word</b>	Danger
<b>Hazard statement(s)</b>	H228 Flammable solid H315 Causes skin irritation H318 Causes serious eye damage H332 Harmful if inhaled H371 May cause damage to organs
<b>Precautionary statement(s)</b>	
<b>Prevention</b>	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.
<b>Response</b>	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.
<b>Storage</b>	P405 Store locked up.
<b>Disposal</b>	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

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
(+)-bornan-2-one	(+)-bornan-2-one	464-49-3	207-355-2	100%

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## SECTION 4: First-aid measures

### 4.1 Description of necessary first-aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately. Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

### **Following ingestion**

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

## **4.2 Most important symptoms/effects, acute and delayed**

**SYMPTOMS:** Symptoms of exposure to this compound include irritation of the skin, eyes and mucous membranes. High concentrations may cause extreme destruction of tissue of the mucous membranes and upper respiratory tract, eyes and skin. Other symptoms of exposure include nausea, vomiting and epileptiform convulsions. It may cause colic, disturbed vision, delirium and death due to respiratory failure. It may also cause diarrhea, excitement and irrational behavior. Exposure may lead to headache, dizziness, feeling of warmth, muscle twitching, difficulty breathing, anuria, central nervous system depression and coma. Exposure may also lead to convulsions, burning sensation, coughing, wheezing, laryngitis, shortness of breath, vertigo and mental confusion. Ingestion of this compound may cause burning in the mouth and throat, epigastric pain, thirst, feeling of tension, rigidity, rapid pulse, slow respiration, twitching of the facial muscles, muscular spasms and unconsciousness. Flickering, darkening or veiling of the vision may occur, with noises in the ears and weakness. Several cases of superficial keratitis with temporary loss of corneal epithelium have been reported. **ACUTE/CHRONIC HAZARDS:** This compound is harmful by ingestion, inhalation and skin absorption. It is a severe irritant and high concentrations are extremely destructive to tissues of the mucous membranes and upper respiratory tract, eyes and skin. When heated to decomposition it emits acrid and irritating fumes. (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.

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## **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**

This chemical is combustible. (NTP, 1992)

### **5.3 Special protective actions for fire-fighters**

Wear self-contained breathing apparatus for firefighting if necessary.

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## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### **6.2 Environmental precautions**

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### **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...

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

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

Conditions for safe storage, including any incompatibilities: keep container tightly closed in a dry and well-ventilated place.

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure limit values

<b>Component</b>	(+)-bornan-2-one
<b>CAS No.</b>	464-49-3
	Recommended Exposure Limit: 10 Hour Time-Weighted Average: 2 mg/cu m.

#### 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 tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### Skin protection

Wear fire/flame resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

#### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties and safety characteristics

#### Physical state

PHYSICAL DESCRIPTION: Colorless or white crystals. Sublimes. Flash point 149°F. Burns readily with a bright, smoky flame. Penetrating aromatic odor. Pungent, aromatic taste followed by a sensation of cold. (NTP, 1992)

#### Colour

Colorless or white crystals, granules, or crystalline masses; or

	as colorless to white, translucent, tough masses
<b>Odour</b>	Fragrant and penetrating odor
<b>Melting point/freezing point</b>	215°C(dec.)(lit.)
<b>Boiling point or initial boiling point and boiling range</b>	204°C(lit.)
<b>Flammability</b>	no data available
<b>Lower and upper explosion limit/flammability limit</b>	Lower flammable limit: 0.6% by volume; Upper flammable limit: 3.5% by volume
<b>Flash point</b>	107°C(lit.)
<b>Auto-ignition temperature</b>	871° F (NTP, 1992)
<b>Decomposition temperature</b>	no data available
<b>pH</b>	no data available
<b>Kinematic viscosity</b>	no data available
<b>Solubility</b>	less than 1 mg/mL at 59° F (NTP, 1992)
<b>Partition coefficient n-octanol/water</b>	log Kow = 2.38 /measured/
<b>Vapour pressure</b>	0.225mmHg at 25°C
<b>Density and/or relative density</b>	0.99 g/cm <sup>3</sup>
<b>Relative vapour density</b>	5.24 (NTP, 1992) (Relative to Air)
<b>Particle characteristics</b>	no data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Flammable. Insoluble in water.

### 10.2 Chemical stability

no data available

### 10.3 Possibility of hazardous reactions

Evolves flammable and explosive vapors when heated. D-CAMPHOR is incompatible with strong oxidizing agents, strong reducing agents and chlorinated solvents. (NTP, 1992)

### 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.

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## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Mouse oral 1310 mg/kg
- Inhalation: no data available
- Dermal: no data available

### 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**

no data available

**STOT-repeated exposure**

no data available

**Aspiration hazard**

no data available

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## **SECTION 12: Ecological information**

### **12.1 Toxicity**

- Toxicity to fish: LC50; Species: Pimephales promelas (Fathead minnow); Conditions: static bioassay; Concentration: 145 mg/L for 1 hr; 112 mg/L/24 hr; 111 mg/L/48 hr; 110 mg/L/72 hr; 110 mg/L/96 hr
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

### **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

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## 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.

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## SECTION 14: Transport information

### 14.1 UN Number

ADR/RID: Not dangerous goods. (For reference only, please check.)      IMDG: Not dangerous goods. (For reference only, please check.)      IATA: Not dangerous goods. (For reference only, please check.)

### 14.2 UN Proper Shipping Name

ADR/RID: Not dangerous goods. (For reference only, please check.)      IMDG: Not dangerous goods. (For reference only, please check.)      IATA: Not dangerous goods. (For reference only, please check.)

### 14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods. (For reference only, please check.)      IMDG: Not dangerous goods. (For reference only, please check.)      IATA: Not dangerous goods. (For reference only, please check.)

### 14.4 Packing group, if applicable

ADR/RID: Not dangerous goods. (For reference only, please check.)      IMDG: Not dangerous goods. (For reference only, please check.)      IATA: Not dangerous goods. (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

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## 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	464-49-3	207-355-2
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.

<b>Philippines Inventory of Chemicals and Chemical Substances (PICCS)</b>	Listed.
<b>Vietnam National Chemical Inventory</b>	Listed.
<b>Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)</b>	Listed.
<b>Korea Existing Chemicals List (KECL)</b>	Not Listed.

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## SECTION 16: Other information

### Information on revision

**Creation Date** July 15, 2019

**Revision Date** July 15, 2019

### 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](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/>

**Any questions regarding this SDS, Please send your inquiry to [sds@xixisys.com](mailto:sds@xixisys.com)**

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