

## Chemical Safety Data Sheet MSDS / SDS

## 5-ethylidene-8,9,10-trinorborn-2-ene SDS

Revision Date:2024-04-25 Revision Number:1

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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****Product identifier**

Product name: 5-ethylidene-8,9,10-trinorborn-2-ene

CAS: 16219-75-3

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses: For R&amp;D use only. Not for medicinal, household or other use.

Uses advised against: none

**Company Identification**

Company: Chemicalbook.in

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**SECTION 2: Hazards identification****Classification of the substance or mixture**

Flammable liquids, Category 3

Aspiration hazard, Category 1

Skin irritation, Category 2  
Skin sensitization, Sub-category 1B  
Acute toxicity - Category 4, Inhalation  
Specific target organ toxicity - repeated exposure, Category 2  
Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 2

### GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

### Hazard statement(s)

H226 Flammable liquid and vapour  
H304 May be fatal if swallowed and enters airways  
H315 Causes skin irritation  
H317 May cause an allergic skin reaction  
H332 Harmful if inhaled  
H373 May cause damage to organs through prolonged or repeated exposure  
H411 Toxic to aquatic life with long lasting effects

### Precautionary statement(s)

### Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P240 Ground and bond container and receiving equipment.  
P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment.  
P242 Use non-sparking tools.  
P243 Take action to prevent static discharges.  
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.  
P272 Contaminated work clothing should not be allowed out of the workplace.  
P271 Use only outdoors or in a well-ventilated area.  
P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P273 Avoid release to the environment.

## Response

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].

P370+P378 In case of fire: Use ... to extinguish.

P301+P316 IF SWALLOWED: Get emergency medical help immediately.

P331 Do NOT induce vomiting.

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.

P333+P317 If skin irritation or rash occurs: Get medical help.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P317 Get medical help.

P319 Get medical help if you feel unwell.

P391 Collect spillage.

## Storage

P403+P235 Store in a well-ventilated place. Keep cool.

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.

## Other hazards which do not result in classification

no data available

## SECTION 3: Composition/information on ingredients

### Substance

Chemical name: 5-ethylidene-8,9,10-trinorborn-2-ene

Common names and synonyms: 5-ethylidene-8,9,10-trinorborn-2-ene

CAS number: 16219-75-3

EC number: 240-347-7

Concentration: 100%

#### **SECTION 4: First aid measures**

##### **Description of necessary first-aid measures**

###### **If inhaled**

Fresh air, rest. Refer for medical attention.

###### **Following skin contact**

Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

###### **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. Refer for medical attention .

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

Inhalation of vapors causes headache, confusion, and respiratory distress. Ingestion causes irritation of entire digestive system. Aspiration causes severe pneumonia. Contact with liquid causes irritation of eyes and skin. (USCG, 1999)

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

no data available

#### **SECTION 5: Firefighting measures**

##### **Suitable extinguishing media**

Extinguish with dry chem, alcohol foam, or carbon dioxide. water may be ineffective on fire. cool exposed containers with water.

##### **Specific hazards arising from the chemical**

This chemical is flammable. (NTP, 1992)

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

Use powder, AFFF, foam, carbon dioxide. NO water. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

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

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

Personal protection: self-contained breathing apparatus. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### **Environmental precautions**

Personal protection: self-contained breathing apparatus. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

### **Methods and materials for containment and cleaning up**

Avoid contact with liquid and vapor. keep people away. shut off ignition sources. call fire department. stop discharge if possible. stay upwind. use water spray to "knock down" vapor. isolate and remove discharged material.

## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

NO open flames, NO sparks and NO smoking. Above 38°C use a closed system, ventilation and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding). 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.

### **Conditions for safe storage, including any incompatibilities**

Fireproof. Separated from strong oxidants and food and feedstuffs. Cool. Keep under inert gas. Store only if stabilized. ENB should be stored in a nitrogen atmosphere since it reacts with oxygen.

## **SECTION 8: Exposure controls/personal protection**

### **Control parameters**

### **Occupational Exposure limit values**

TLV: 2 ppm as TWA; 4 ppm as STEL

### **Biological limit values**

no data available

### **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.

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

#### **Eye/face protection**

Wear safety spectacles.

#### **Skin protection**

Protective gloves.

#### **Respiratory protection**

Use ventilation, local exhaust or breathing protection.

#### **Thermal hazards**

no data available

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

Physical state:	Liquid.
Colour:	Colorless.
Odour:	TURPENTINE-LIKE
Melting point/freezing point:	-80 °C. Atm. press.:1 atm.

Boiling point or initial boiling point and boiling range:	147.1 °C. Atm. press.:1 022 mBar. Remarks:Initial boiling point.;147.9 °C. Atm. press.:1 023 mBar. Remarks:Final boiling point.
Flammability:	Class II Combustible Liquid: Fl.P. at or above 100°F and below 140°F.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	28.5 °C. Atm. press.:102.4 kPa.
Auto-ignition temperature:	227 °C. Atm. press.:101.2 kPa. Remarks:There was a 58 second time lag to auto-ignition.
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	kinematic viscosity (in mm <sup>2</sup> /s) = 1.02. Temperature:20°C. Remarks:This is equivalent to a dynamic viscosity of 0.913 mPas.
Solubility:	less than 1 mg/mL at 64° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Pow = 3.82. Temperature:20.
Vapour pressure:	5.6 hPa. Temperature:20 °C. Remarks:Converted from 4.2 mmHg.
Density and/or relative density:	893.3 kg/m <sup>3</sup> . Temperature:20 °C.
Relative vapour density:	4.1 (vs air)
Particle characteristics:	no data available

## SECTION 10: Stability and reactivity

### Reactivity

The substance may polymerize. Decomposes on burning. This produces acrid smoke and irritating fumes. Reacts with strong

oxidants.

#### **Chemical stability**

no data available

#### **Possibility of hazardous reactions**

As a result of flow, agitation, etc., electrostatic charges can be generated. ETHYLIDENE NORBORNENE may react vigorously with strong oxidizing agents. May react exothermically with reducing agents to release hydrogen gas. In the presence of various catalysts (such as acids) or initiators, may undergo exothermic addition polymerization reactions.

#### **Conditions to avoid**

no data available

#### **Incompatible materials**

Oxygen [Note: ENB should be stored in a nitrogen atmosphere since it reacts with oxygen].

#### **Hazardous decomposition products**

When heated to decomposition it emits acrid smoke and irritating fumes.

### **SECTION 11: Toxicological information**

#### **Acute toxicity**

Oral: LD50 - rat (male) - 2 276 mg/kg bw.

Inhalation: LC50 - rat (male) - 2 717 ppm.

Dermal: LD50 - rabbit (male/female) - > 8 mL/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**

no data available

**Reproductive toxicity**

no data available

**STOT-single exposure**

The substance is irritating to the eyes, skin and respiratory tract. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

**STOT-repeated exposure**

The substance may have effects on the liver and kidneys.

**Aspiration hazard**

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

**SECTION 12: Ecological information****Toxicity**

Toxicity to fish: LC50 - Danio rerio (previous name: Brachydanio rerio) - 7.6 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 7.3 mg/L - 48 h.

Toxicity to algae: EC50 - 2.3 mg/L - 96 h.

Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - 150 mg/L - 5 min.

### **Persistence and degradability**

AEROBIC: 5-Ethylidene-2-norbornene, at a concentration of 100 mg/l, reached 0% of its theoretical BOD over 4 weeks using a mixed inoculum of sludge, soil, and sediment in the Japanese MITI test(1).

### **Bioaccumulative potential**

BCFs of 70-160 were obtained in Carp for 5-ethylidene-2-norbornene in an eight-week screening test. According to a classification scheme(2), these BCFs suggest the potential for bioconcentration in aquatic organisms is moderate to high.

### **Mobility in soil**

Using a structure estimation method based on molecular connectivity indices(1), the Koc for 5-ethylidene-2-norbornene is estimated to be 900(SRC). According to a classification scheme(2), this estimated Koc value suggests that 5-ethylidene-2-norbornene is expected to have low mobility in soil.

### **Other adverse effects**

no data available

## **SECTION 13: Disposal considerations**

### **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**

### **UN Number**

ADR/RID: UN1993 (For reference only, please check.)

IMDG: UN1993 (For reference only, please check.)

IATA: UN1993 (For reference only, please check.)

#### **UN Proper Shipping Name**

ADR/RID: FLAMMABLE LIQUID, N.O.S. (For reference only, please check.)

IMDG: FLAMMABLE LIQUID, N.O.S. (For reference only, please check.)

IATA: FLAMMABLE LIQUID, N.O.S. (For reference only, please check.)

#### **Transport hazard class(es)**

ADR/RID: 3 (For reference only, please check.)

IMDG: 3 (For reference only, please check.)

IATA: 3 (For reference only, please check.)

#### **Packing group, if applicable**

ADR/RID: I (For reference only, please check.)

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

#### **Environmental hazards**

ADR/RID: Yes

IMDG: Yes

IATA: Yes

#### **Special precautions for user**

no data available

#### **Transport in bulk according to IMO instruments**

no data available

## **SECTION 15: Regulatory information**

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

**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.

**(PICCS)**

Listed.

**Vietnam National Chemical Inventory**

Listed.

**IECSC)**

Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

**SECTION 16: Other information**

**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/>

### Other Information

The occupational exposure limit value should not be exceeded during any part of the working exposure. An added stabilizer or inhibitor can influence the toxicological properties of this substance; consult an expert.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any