

Revision Date 01.01.2025  
Data of first issue 09.01.2017

## Material Safety Data Sheet

### 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

#### 1.1 Product identifiers

Product name 1, 3, 3-Trimethyl-2-oxabicyclo[2. 2. 2]octane  
Product number E100229  
Brand 3ASenrise  
CAS number 470-82-6

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

Company: Anhui Senrise Technology Co., Ltd.  
Address: No.88 Weisan Road, High-Tech Industrial Development Zone, Anqing, Anhui  
Post code: 246003  
Tel: 400-005-6266  
Fax: 0556-5555368  
Email: service@3asenrise.com

#### 1.3 Emergency telephone

Emergency telephone: 0556-5500208

#### 1.4 Relevant identified uses of the substance or mixture and uses advised against

Identified uses: For R&D use only. Not for pharmaceutical, household or other uses.

### 2 HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance or mixture

Flammable liquids (Category 3), H226  
Skin sensitization (Category 1), H317

#### 2.2 GHS label elements, including precautionary statements

##### Pictogram



**Signal word: Warning**

##### Hazard statement(s)

H226 Flammable liquid and vapour.  
H317 May cause an allergic skin reaction.  
H402 Harmful to aquatic life.

##### Precautionary statement(s)

##### Prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P272 Contaminated work clothing should not be allowed out of the workplace.

P273 Avoid release to the environment.

### **Response**

P303+P361+P353 IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing.  
Rinse SKIN with water/shower.

P333+P313 IF SKIN irritation or rash occurs: Get medical advice/attention.

P370+P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

### **Storage**

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

### **Disposal**

P501 Dispose of contents/ container to an approved waste disposal plant.

## **2.3 Physical and chemical hazards**

H226 Flammable liquid and vapour.

## **2.4 Health hazards**

H317 May cause an allergic skin reaction.

## **2.5 Environmental hazards Code**

H402 Harmful to aquatic life.

## **2.6 Other hazards**

No data available

# **3 COMPOSITION/INFORMATION ON INGREDIENTS**

## **Substance / Mixture: Substance**

### **3.1 Substance**

Name	1,3,3-Trimethyl-2-oxabicyclo[2.2.2]octane
Formula	C <sub>10</sub> H <sub>18</sub> O
Molecular Weight	154.25
CAS	470-82-6
Concentration	99%

## **4 FIRST AID MEASURES**

### **4.1 Description of first aid measures**

#### **General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

#### **If inhaled**

If breathed in, move person into fresh air. If not breathing, give artificial respiration.  
Consult a physician.

#### **In case of skin contact**

Wash off with soap and plenty of water. Consult a physician.

#### **In case of eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

#### **If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with

water. Consult a physician.

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

No data available.

### **5 FIREFIGHTING MEASURES**

#### **5.1 Extinguishing media**

Carbon dioxide (CO<sub>2</sub>) Foam Dry powder

#### **5.2 Special hazards arising from the substance or mixture**

Carbon oxides Combustible. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures. Development of hazardous combustion gases or vapours possible in the event of fire.

#### **5.3 Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

### **6 ACCIDENTAL RELEASE MEASURES**

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

Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

#### **6.2 Environmental precautions**

Do not let product enter drains.

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

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

#### **6.4 Reference to other section**

For disposal see section 13.

### **7 HANDLING AND STORAGE**

#### **7.1 Precautions for safe handling**

##### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

##### **Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

##### **Hygiene measures**

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

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

##### **Storage conditions**

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

Long term storage: RT

### **8 EXPOSURE CONTROLS/PERSONAL PROTECTION**

#### **8.1 Control parameters**

No data available.

#### **8.2 Personal protective equipment**

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

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses.

##### **Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal

technique (without touching glove's outer surface) to avoid skin contact with this product.

### **Body protection**

Flame retardant antistatic protective clothing.

### **Respiratory protection**

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

### **Control of environmental exposure**

Do not let product enter drains. Risk of explosion.

## **9 PHYSICAL AND CHEMICAL PROPERTIES**

### **9.1 Information on basic physical and chemical properties**

a) Appearance	Colorless liquid
b) Odor	No data available
c) pH	No data available
d) Melting point/freezing point	1 – 2 ° C
e) Initial boiling point and boiling range	176 – 177 ° C
f) Upper/lower flammability or explosive limits	No data available
g) Flash point	52 ° C – closed cup
h) Evaporation rate	No data available
i) Vapor pressure	1.22 hPa at 20 ° C
j) Vapor density	No data available
k) Density	0.921 g/mL at 25 ° C
l) Water solubility	2.397 g/l at 25 ° C – soluble
m) Partition coefficient: n-octanol/water	log Pow: 3.4
n) Autoignition temperature	300 ° C
o) Decomposition temperature	No data available
p) Flammability	No data available

## **10 STABILITY AND REACTIVITY**

### **10.1 Chemical stability**

No data available.

### **10.2 Conditions to avoid**

No data available.

### **10.3 Incompatible materials**

No data available

### **10.4 Hazardous decomposition products**

In the event of fire: see section 5.

## **11 TOXICOLOGICAL INFORMATION**

### **11.1 Acute toxicity**

LD50 Oral

No data available

LC50 Inhalation

No data available

LD50 Dermal

No data available

### **11.2 Skin corrosion/irritation**

Skin – reconstructed human epidermis (RhE) Result: No skin irritation

### **11.3 Serious eye damage/eye irritation**

Eyes – Bovine cornea Result: No eye irritation

#### **11.4 Respiratory or skin sensitization**

Local lymph node assay (LLNA) – Mouse Result: positive

#### **11.5 Germ cell mutagenicity**

Test Type: Ames test Test system: S. typhimurium Metabolic activation: with and without metabolic activation Result: negative Test Type: Chromosome aberration test in vitro Test system: Chinese hamster ovary cells Metabolic activation: with and without me

#### **11.6 Carcinogenicity**

No data available

#### **11.7 Reproductive toxicity**

No data available

#### **11.8 Specific target organ toxicity - single exposure**

No data available

#### **11.9 Specific target organ toxicity - repeated exposure**

No data available

#### **11.10 Aspiration hazard**

no data available.

#### **11.11 Additional Information**

Repeated dose toxicity – Rat – male – Oral – 28 d – NOAEL (No observed adverse effect level) – 600 mg/kg To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Ingestion may provoke the following symptoms: Epigastric pain, Nausea, Vomiting, Dizziness, muscle weakness, tachycardia, Cyanosis, delirium, Convulsions, renal damage, Edema The following applies to ethers in general: the uptake of large quantities is followed by narcosis, cardiovascular disorders. Nausea and vomiting after swallowing. Systemic effects: After uptake of large quantities: Possible effects: somnolence CNS disorders drop in blood pressure However, when the product is handled appropriately, hazardous effects are unlikely to occur. Handle in accordance with good industrial hygiene and safety practice.

### **12 ECOLOGICAL INFORMATION**

#### **12.1 Toxicity**

Toxicity to fish:

semi-static test LC50 – Oncorhynchus mykiss (rainbow trout) – 57 mg/l – 96 h

Toxicity to daphnia and other aquatic:

static test EC50 – Daphnia magna (Water flea) – > 100 mg/l – 48 h

Toxicity to algae:

static test EC50 – Pseudokirchneriella subcapitata (green algae) – > 74 mg/l – 72 h

Toxicity to bacteria:

static test EC50 – activated sludge – > 100 mg/l – 3 h

#### **12.2 Persistence and degradability**

Biodegradability aerobic – Exposure time 28 d Result: 82 % – Readily biodegradable.

#### **12.3 Bioaccumulative potential**

No data available

#### **12.4 Mobility in soil**

No data available

#### **12.5 Other adverse effects**

Discharge into the environment must be avoided.

### **13 DISPOSAL CONSIDERATIONS**

#### **13.1 Waste treatment methods**

## Product

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Observe all federal, state and local regulations when disposing of the substance.

## Contaminated packaging

Disposal must be made according to official regulations.

## 14 TRANSPORT INFORMATION

### 14.1 UN number

ADR/RID: 1993 IMDG: 1993 IATA: 1993

### 14.2 UN proper shipping name

ADR/RID: 1, 3, 3-TRIMETHYL-2-OXABICYCLO[2. 2. 2]OCTANE

IMDG: 1, 3, 3-TRIMETHYL-2-OXABICYCLO[2. 2. 2]OCTANE

IATA-DGR: 1, 3, 3-Trimethyl-2-oxabicyclo[2. 2. 2]octane

### 14.3 Transport hazard class(es)

ADR/RID: 3 IMDG: 3 IATA: 3

### 14.4 Packaging group

ADR/RID: III IMDG: III IATA: III

### 14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

### 14.6 Special precautions for user

No data available

## 15. REGULATORY INFORMATION

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Applicable regulations

Regulations on the Control over Safety of Dangerous Chemicals.

This product is included in the list of dangerous chemicals.

Please pay attention to waste disposal and meet the requirements of local regulations.

## 16. OTHER INFORMATION

### Abbreviations and acronyms

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

IMDG: International Maritime Dangerous Goods

IATA: International Air Transport Association

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

CAS: Chemical Abstracts Service (division of the American Chemical Society)

### Further information

The above safety technical information is for reference only, because many physical and chemical properties are not entirely clear. Please consult information carefully before use and use after confirmation.

Anhui Senrise Technology Co., Ltd. shall not be held liable for any damage resulting from handling or from contact with the above product. More terms of use, see invoice information for details.

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