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## Material Safety Data Sheet

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

#### 1.1 Product identifiers

Product name Fumaric acid  
Product number A010422  
Brand 3ASenrise  
CAS number 110-17-8

#### 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

Serious eye damage/eye irritation (Category 2A), H319

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

##### Pictogram



**Signal word: Warning**

##### Hazard statement(s)

H319 Causes serious eye irritation.

##### Precautionary statement(s)

##### Prevention

P264 Wash hands thoroughly after handling.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

##### Response

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337+P313 IF eye irritation persists: Get medical advice/attention.

### **Storage**

No data available

### **Disposal**

No data available

## **2.3 Physical and chemical hazards**

No data available

## **2.4 Health hazards**

H319 Causes serious eye irritation.

## **2.5 Environmental hazards Code**

No data available

## **2.6 Other hazards**

No data available

# **3 COMPOSITION/INFORMATION ON INGREDIENTS**

## **Substance / Mixture: Substance**

### **3.1 Substance**

Name	Fumaric acid
Formula	C <sub>4</sub> H <sub>4</sub> O <sub>4</sub>
Molecular Weight	116.07
CAS	110-17-8
Concentration	98%

# **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**

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

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

Carbon oxides Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating.

## **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                   | White to light yellow solid |
| b) Odor                         | odorless                    |
| c) pH                           | 2.1 at 4.9 g/l at 20 ° C    |
| d) Melting point/freezing point | 287 ° C                     |

e) Initial boiling point and boiling range	290 ° C at 1,013 hPa - (sublimed)
f) Upper/lower flammability or explosive limits	Upper explosion limit: 40 %(V) Lower explosion limit: 3 %(V)
g) Flash point	272 - 274 ° C - open cup
h) Evaporation rate	No data available
i) Vapor pressure	2.2 hPa at 165 ° C
j) Vapor density	No data available
k) Density	1.63 g/cm <sup>3</sup> at 20 ° C
l) Water solubility	7 g/l at 25 ° C - US-EPA- soluble
m) Partition coefficient: n-octanol/water	No data available
n) Autoignition temperature	ca. 399 ° C at 1,013 hPa
o) Decomposition temperature	No data available
p) Flammability	The product is not flammable.

## 10 STABILITY AND REACTIVITY

### 10.1 Chemical stability

No data available.

### 10.2 Conditions to avoid

No data available.

### 10.3 Incompatible materials

Strong oxidizing agents, Amines, Strong bases

### 10.4 Hazardous decomposition products

In the event of fire: see section 5.

## 11 TOXICOLOGICAL INFORMATION

### 11.1 Acute toxicity

LD50 Oral

- Rat - male and female - 9,300 mg/kg

LC50 Inhalation

- Rat - male and female - 4 h - > 1,306 mg/l - dust/mist

LD50 Dermal

- Rabbit - female - 20,000 mg/kg

### 11.2 Skin corrosion/irritation

Skin - Rabbit Result: No skin irritation - 4 h

### 11.3 Serious eye damage/eye irritation

Eyes - Rabbit Result: Eye irritation

### 11.4 Respiratory or skin sensitization

Maximization Test - Guinea pig Result: negative

### 11.5 Germ cell mutagenicity

Test Type: Ames test Test system: Salmonella typhimurium Result: negative Remarks: (National Toxicology Program) Test Type: Mutagenicity (mammal cell test): Test system: Mouse lymphoma test Metabolic activation: with and without metabolic activation Result: negative

### 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 - 2 yr - 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. Gastrointestinal disturbance To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

## **12 ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

Toxicity to fish:

semi-static test LC50 - Danio rerio (zebra fish) - > 100 mg/l - 96 h

Toxicity to daphnia and other aquatic:

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

Toxicity to algae:

static test EC50 - Pseudokirchneriella subcapitata - > 100 mg/l - 72 h static test NOEC - Pseudokirchneriella subcapitata (green algae) - > 100 mg/l - 72 h

Toxicity to bacteria:

static test EC50 - activated sludge - > 300 mg/l - 3 h

### **12.2 Persistence and degradability**

Biodegradability aerobic - Exposure time 28 d Result: 67.5 % - Readily biodegradable.

Theoretical oxygen 827 mg/g demand Remarks: (Lit.) Ratio BOD/ThBOD 34 % Remarks: (Lit.)

### **12.3 Bioaccumulative potential**

No data available

### **12.4 Mobility in soil**

No data available

### **12.5 Other adverse effects**

No data available

## **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: - IMDG: - IATA: -

### **14.2 UN proper shipping name**

ADR/RID: Not applicable

IMDG: Not applicable

IATA-DGR: Not applicable

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

ADR/RID: - IMDG: - IATA: -

#### **14.4 Packaging group**

ADR/RID: - IMDG: - IATA: -

#### **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

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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