Product Name: Xanthine oxidase (XTO-212)

First issue: May 8, 2012
Revision: Apr. 1, 2021

SDS No. 938F

1 Chemical Product and Company Identification

Identification of the product

Xanthine oxidase

Product Code: XTO-212

Supplier Name: TOYOBO CO., LTD.

Address: Department Biotechnology Overseas Sales and Marketing Department

Phone: +81-6-6348-3843

Fax: +81-6-6348-3833

Recommended use and restrictions on use

diagnostic product

2 Hazard Identification

Important hazards

GHS classification

Physical hazards -

Health hazards -

Acute toxicity: Oral -

Acute toxicity: Dermal -

Acute toxicity: Inhalation (Gas, Vapour) -

Acute toxicity: Inhalation (Dust, Mist) -

Skin corrosion/irritation -

Serious eye damage/Eye irritation -

Sensitization: Respiratory -

Sensitization: Skin -

Germ cell mutagenicity -

Carcinogenicity -

Toxic to reproduction Category 1

Specific target organ toxicity

(Single exposure)

Specific target organ toxicity

(Repeated exposure)

Aspiration hazard -

Environmental hazards

Acute hazards to the aquatic environment -

Long-term hazards to the aquatic environment -

Hazard to the ozone layer -

GHS Label Elements

Symbol/Pictograms

Signal word: Danger

Hazard statements

This product might be harmful if swallowed, because it contains boric acid.

May damage fertility or the unborn child.

May cause damage to the nervous system, gastrointestinal tract.

May cause damage to kidneys through prolonged or repeated exposure.

Category 2 (kidneys)

Category 2 (nervous system, gastrointestinal tract)
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## Precautionary statements

**Prevention**

Wash hands thoroughly after handling.

**Response**

- **Storage** Store locked up.
- **Disposal**

### Composition/Information on Ingredients

**Substance/Mixture** Mixture  
**Chemical Nature** Xanthine oxidase

**Chemical specificity** Freeze and drying powder including enzyme

**Concentration or concentration range** ca. 31 %(W/W)

**Main components**

- CAS ÿ
  - Xanthine oxidase 9002-17-19
  - Boric acid 10043-35-3
  - Sodium tetraborate 1303-96-4
  - BSA 9048-46-8
  - Monosodium Glutamate 142-47-2
  - Glycine 56-40-6

**Common Chemical name**

- **Chemical formula**
  - Cas # 10043-35-3
  - **Chemical formula**
    - Boric acid
    - **Chemical formula**
      - Sodium tetraborate

**Boron content of this product** ca. 1.5 %(W/W)

## First Aid Measures

### Inhalation

- Cough, Sore throat

### Skin Contact

- Redness

### Eye Contact

- Redness, Pain

### Ingestion

- Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Water spray, dry chemical powder, or carbon dioxide etc.
- Firefighter should work from the windward side.
- Rinse mouth. Swill plentiful amount of water or milk for immediate vomiting. Consult a physician.

### Ingredients Contributing to the Hazard

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

IF exposed or concerned: Get medical advice/attention.

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

Do not breathe dust/fume.

Remove to fresh air. Consult a physician when unpleasantness occurs.

## Fire Fighting Measures

**Specific extinguishing methods**

- Water spray, dry chemical powder, or carbon dioxide etc.

**Precautions for fire-fighters**

- Do not eat, drink or smoke when using this product.
- Dispose of contents/container in accordance with local/regional/national/international/regulation.
- Do not use equipment that may cause a spark.

## Personal Protective Equipment

**Respiratory Protection**

- Use a self-contained breathing apparatus.
- Use a proper breathing apparatus.

**Eye Protection**

- Use appropriate protective eyewear, face protection as necessary.

**Skin Protection**

- Use appropriate protective clothing, gloves.

**First Aid Measures**

- Get medical advice/attentions if you feel unwell.

**Disposal**

- Dispose of contents/container in accordance with local/regional/national/international/regulation.
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Safety Data Sheet

Accidental Release Measures

Environmental Precautions

Handling and Storage

Handling

Technical Measures

Precautions

Storage

Technical Measures

Incompatible substances and mixtures

Storage Conditions

Packaging Materials

Exposure Controls/Personal Protection

Personal Protective Equipment

Respiratory Protection

Protecting mask

Hand Protection

Protecting gloves

Eye Protection

Safety goggles

Skin and Body Protection

Long sleeve working wear

Physical and Chemical Properties

Physical State, form and color

Powder / Red brown

Odour

No odour

pH

ca. pH 7.5 (1% W/V)

Flash Point

No information available.

Explosiveness

No information available.

Density

No information available.

Solubility

Freely soluble in water.

Stability and Reactivity

Hazardous Decomposition Products

No information available.

Use the initial container of the product.

Wear protective gear to avoid eye/skin contact and inhalation.

Possible hazard reactions at specific condition

Materials to avoid

Stable at temperatures below -20°C. When left for long at room temperature, proteins might be degraded, which does not cause any hazardous reaction.

Conditions to avoid

Prolonged storage under higher temperature than room temperature and high humidity.

Methods and materials for containment and cleaning up

Take up under vacuum using dust collecting filter, wash residual spill with copious amounts of water. Use cloth, paper or anything similar to soak up the solution leaking out of the container.

(Waste water should be treated with activated sludge or adsorbed with activated carbon etc.)

Methods and materials for personal decontamination

Keep sealed container in freezer.

Occupational exposure limit, biological limit

Do not drop the container to prevent the content popping out.

(Boric acid) TLV: TWA 2mg/m³, STEL 6mg/m³

High concentrated waste fluid should not be directly discharged into rivers.

Engineering controls

Provide shower and eye washing apparatus nearby.
11 Toxicological Information

Acute Toxicity (Oral) Rat LD₅₀ 2660mg/kg

Skin corrosion/irritation Moderate irritation (guinea pig, 24hr, 72hr)

Serious eye damage/irritation Rubefaction /Pain

Sensitization No data available

Germ cell mutagenicity

Carcinogenicity ACGIH (2005): Category A4

Toxic to reproduction

Specific target organ toxicity

Acute Toxicity (Oral)

Acute Toxicity (Dermal) LD₅₀ > 10000mg/kg (HSDB) (Category 4)

Skin corrosion/irritation May cause dermatitis (Category 2)

Serious eye damage/irritation May cause strong eye irritation (Category 2A)

Toxic to reproduction

Specific target organ toxicity

(Repeted exposure)

Aspiration hazard Classification not possible

12 Ecological Information

Disposal Considerations

Residues

A pollution container and packing

This product is biodegradable and does not remain on the environment for long.

Wash with copious amounts of water and waste conforming to local regulations depending on the type of the material.

LD₅₀ 4450mg/kg (Category 5) (EHC204) 3493mg/kg, 4500mg/kg, 4980mg/kg, 5660mg/kg, 6080mg/kg (ECETOC TR63) 6000mg/kg

Affect spermatogenesis (Category 2). May damage fertility or the unborn child.

This product causes damage to the nervous system, respiratory organ, kidneys. (Category 1)

This product causes damage to the nervous system, respiratory organ, kidneys and testis, through prolonged or repeated exposure. (Category 2)

(1) Boric acid

Human: oliguresis, anuria, and nephropathy including renal tubular necrosis.

Absence of data on multi-generation mutagenicity tests and germ cell mutagenicity tests in vivo, and negative data on somatic cell mutagenicity tests in vivo (micronucleus tests)

Adverse effects on reproduction of parental animals and development of pups at doses producing no parental toxicity.

(2) Sodium tetraborate

Human: Gastrointestinal tract effects such as nausea, vomiting, abdominal pain and diarrhea, and central nerve effects such as lethargy, headaches, fever, increased irritability and muscle convulsion.

Irritation of the upper respiratory tract.

Animal: cyanosis, tetany, spasm and shock-like symptoms at dosing levels within the guidance value ranges for Category 1.

(1) Boric acid

Acute hazards to the aquatic environment Boric acid: Fish (Rainbow Trout) LC₅₀=78.1mg (Boron)/L (96hr) (Boric acid equivalent 447mg/L)

Persistence /Degradability

Human: oliguresis, anuria, and nephropathy including renal tubular necrosis.

Absence of data on multi-generation mutagenicity tests and germ cell mutagenicity tests in vivo, and negative data on somatic cell mutagenicity tests in vivo (micronucleus tests)

Adverse effects on reproduction of parental animals and development of pups at doses producing no parental toxicity.

(2) Sodium tetraborate

Human: Gastrointestinal tract effects such as nausea, vomiting, abdominal pain and diarrhea, and central nerve effects such as lethargy, headaches, fever, increased irritability and muscle convulsion.

Irritation of the upper respiratory tract.

Animal: cyanosis, tetany, spasm and shock-like symptoms at dosing levels within the guidance value ranges for Category 1.
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Safety Data Sheet

Transport Information

International regulations
IMO information: Not applicable
IATA information: Not applicable

Domestic regulations
Rail and road transportation information: Not applicable
Marine transportation information: Not applicable
Aviation transportation information: Not applicable

Regulatory Information

Common Chemical name

Chemical formula

CAS# 10043-35-3

Common Chemical name

Chemical formula

CAS# 1303-96-4

Boron content of this product ca. 1.5% (W/W)

Other Information

Notice

Sodium tetraborate

Specific precautions, transport measures and conditions

Registration, Evaluation, Authorization and Restriction of Chemicals (EU)

The following ingredients are included in the SVHC (Candidate list of authorization).

Avoid direct sunshine and check the container and loading to prevent leakage or turnover, fall and damage. Transport in accordance with regulations. Do not load with foods and feed. Keep at temperatures below -20°.