



Safety Data Sheet

1 Chemical Product and Company Identification

Identification of the product	Xanthine oxidase
Product Code	XTO-212
Supplier	
Name	TOYOBO CO.,LTD.
Address	2-8, Dojimahama 2-chome Kita-ku, Osaka 530-8230, Japan
Department	Biotechnology Overseas Sales and Marketing Department
Phone	+81-6-6348-3843
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Recommended use and restrictions on use	diagnostic product

2 Hazard Identification

Important hazards	This product might be harmful if swallowed, because it contains boric acid.
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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)	Category 2(nervous system, gastrointestinal tract)
Specific target organ toxicity (Repeated exposure)	Category 2(kidneys)
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

May damage fertility or the unborn child.

May cause damage to nervous system, gastrointestinal tract.

May cause damage to kidneys through prolonged or repeated exposure.



Product Name : Xanthine oxidase (XTO-212)

First issue : May. 8.2012

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SDS No. 938F

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Precautionary statements

Prevention Obtain special instructions before use.

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

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

Do not breathe dust/fume.

Do not eat, drink or smoke when using this product.

Wash hands thoroughly after handling.

Response Get medical advice/attentions if you feel unwell.

IF exposed or concerned: Get medical advice/attention.

Storage Store locked up.

Disposal Dispose of contents/container in accordance with local/regional/national/international/regulation.

3 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 #

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

Ingredients Contributing to the Hazard

Common Chemical name

Boric acid

Chemical formula

 H_3BO_3

Cas #

10043-35-3

Common Chemical name

Sodium tetraborate

Chemical formula

 $Na_2B_4O_7 \cdot 10H_2O$

CAS#

1303-96-4

Boron content of this product

ca. 1.5 %(W/W)

4 First Aid Measures

Inhalation

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

Skin Contact

Wash off with plenty of water. Consult a physician when inflammation on the skin occurs.

Eye Contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion

Rinse mouth. Swill plentiful amount of water or milk for immediate vomiting. Consult a physician.

Most important symptoms/effects, acute and delayed.

Inhalation: Cough, Sore throat

Skin: Redness

Eyes: Redness, Pain

Ingestion: Abdominal pain. Convulsions. Diarrhoea.

5 Fire Fighting Measures

Specific extinguishing methods

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

Precautions for fire-fighters

Firefighter should work from the windward side.



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6 Accidental Release Measures

Personal Precautions, protective equipment and emergency procedure.

Environmental Precautions

Methods and materials for containment and cleaning up.

Wear protective gear to avoid eye/skin contact and inhalation. Do not work at leeward.

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

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.)

7 Handling and Storage

Handling

Technical Measures

Precautions

Storage

Technical Measures

Incompatible substances and mixtures

Storage Conditions

Packaging Materials

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

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

Keep sealed container in freezer.

None specified.

Store under -20 to avoid deactivating.

Use the initial container of the product.

8 Exposure Controls/Personal Protection

Engineering controls

Occupational exposure limit, biological limit

Personal Protective Equipment

Respiratory Protection

Hand Protection

Eye Protection

Skin and Body Protection

Provide shower and eye washing apparatus nearby.
(Boric acid) TLV: TWA 2mg/m³, STEL 6mg/m³

Protecting mask

Protecting gloves

Safety goggles

Long sleeve working wear

9 Physical and Chemical Properties

Physical State, form and color

Odour

pH

Flash Point

Explosiveness

Density

Solubility

Powder / Red brown

No odour

ca. pH 7.5 (1% W/V)

No information available.

No information available.

No information available.

Freely soluble in water.

10 Stability and Reactivity

Stability

Possible hazard reactions at specific condition

Conditions to avoid

Materials to avoid

Hazardous Decomposition Products

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

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

Oxidizing agent

No information available.



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11 Toxicological Information

(1) Boric acid

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

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)

Carcinogenicity

ACGIH (2005): Category A4

Toxic to reproduction

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

Specific target organ toxicity
(Single exposure)

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.

Specific target organ toxicity
(Repeated exposure)

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

(2) Sodium tetraborate

Acute Toxicity (Oral)

LD₅₀ 4450mg/kg (Category 5)

(EHC204) 3493mg/kg, 4500mg/kg, 4980mg/kg, 5660mg/kg, 6080mg/kg
(ECETOC TR63) 6000mg/kg

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

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

Specific target organ toxicity
(Single exposure)

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

Specific target organ toxicity
(Repeated exposure)

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

Aspiration hazard

Classification not possible

12 Ecological Information

Acute hazards to the aquatic environment

Boric acid: Fish (Rainbow Trout)

LC50=78.1mg(Boron)/L(96hr)

(Boric acid equivalent 447mg/L)

Persistence /Degradability

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

13 Disposal Considerations

Residues

Dispose of in accordance with all applicable local and national laws and regulations.

A pollution container and packing

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



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14 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

Specific precautions transport measures and conditions

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 .

15 Regulatory Information

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

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

Common Chemical name

Boric acid

Chemical formula

H_3BO_3

CAS#

10043-35-3

Common Chemical name

Sodium tetraborate

Chemical formula

$Na_2B_4O_7 \cdot 10H_2O$

CAS#

1303-96-4

Boron content of this product

ca. 1.5 % (W/W)

16 Other Information

Notice

The information shall not be taken as being all inclusive and is to be used only a guide.All materials and mixtures may be present unknown hazards and should be used with caution.The SDS is subject to revision as new information becomes available.The information in this SDS,to the best of our knowledge, is accurate and correct. However,TOYOBO makes no warranty and assumes no liability whatsoever in connection with any use of this information.