TOYOBO

Safety Data Sheet

1 Chemical Product and Company Identification

Identification of the product	**Uricase**
Product Code	UAO-211
Supplier	
Name	TOYOBO CO.,LTD.
Address	Osaka Umeda Twin Towers South, 1-13-1 Umeda Kita-ku, Osaka 530-0001, Japan
Department	Biotechnology Overseas Sales and Marketing Department
Phone	+81-6-6348-3846
Fax	+81-6-6348-3833
Recommended use and restrictions on use	diagnostic product

2 Hazard Identification

Important hazards	Harmful if Boric acid or Sodium tetraborate are swallowed.
Adverse effects on human health	Lethal dose (Boric acid) : Adult 10g , Child 5g

GHS classification

Physical hazards	-
Health hazards	
Acute toxicity : Oral	Category 5
Acute toxicity : Dermal	-
Acute toxicity : Inhalation (Gas,Vapour)	-
Acute toxicity : Inhalation (Dust,Mist)	-
Skin corrosion/irritation	Category 2
Serious eye damage/Eye irritation	Category 2
Sensitization : Respiratory	-
Sensitization : Skin	-
Germ cell mutagenicity	-
Carcinogenicity	-
Toxic to reproduction	Category 1
Specific target organ toxicity (Single exposure)	Category 1(nervous system, gastrointestinal tract, respiratory organ, kidneys)
Specific target organ toxicity (Repeated exposure)	Category 1(nervous system, gastrointestinal tract, respiratory organ, kidneys) Category 2(testis)
Aspiration hazard	-
Environmental hazards	
Acute hazards to the aquatic environment	-
Long-term hazards to the aquatic environment	-
Hazard to the ozone layer	-

-:Classification not possible

GHS Label Elements

Symbol/Pictograms

Signal word	Danger

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Hazard statements		May be harmful if swallowed.
		May cause skin irritation.
		May cause serious eye irritation.
		May damage fertility or the unborn child.
		Cause damage to nervous system, gastrointestinal tract, respiratory organ and kidneys.
		Cause damage to nervous system, gastrointestinal tract, respiratory organ, kidneys through prolonged or repeated exposure.
		May cause damage to testis through prolonged or repeated exposure.
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 ON SKIN: Wash with plenty of water/soap. Take off contaminated clothing and wash it before use.
		If skin irritation occurs: Get medical advice/attention.
		If in eye: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical advise/attention.
		IF exposed or concerned: Get medical attention/advice.
	Storage	Store locked up.
		Store in a well-ventilated place. Keep container tightly closed.
	Disposal	Dispose of contents/container in accordance with local/regional/national/international/regulation.
Important sysmtoms (Boric acid)		Symptoms of vomit,diarrhea, collapse,erythema may appear after 2-3 hours later and die after 3-5 days later from ingestion.

3 Composition/Information on Ingredients

Substance/Mixture	Mixture
Chemical Nature	Uricase
Chemical specificity	Freeze and drying powder including enzyme
Concentration or concentration range	ca. 81 %(W/W)
Main components	CAS #
Uricase	9002-12-4
Boric acid	10043-35-3
Sodium tetraborate	1303-96-4
Polyethylene Glycol-p-octylphenyl Ether (Triton X-100)	9002-93-1

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Ingredients Contributing to the Hazard

Common Chemical name	Boric acid
Chemical formula	H_3BO_3
CAS #	10043-35-3
Common Chemical name	Sodium tetraborate decahydrate
Chemical formula	$Na_2B_4O_7 \cdot 10H_2O$
CAS#	1303-96-4
Boron content of this product	ca. 6 %(W/W)
Common Chemical name	Polyethylene Glycol-p-octylphenyl Ether (Triton X-100)
Concentration or concentration range	ca. 1.0% (W/W)
Chemical formula	Not specified
CAS#	9002-93-1

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, pant, pharygeal pain, nosebleed. Skin: dry skin. Eye: redness, pain Ingestion: stomachache, derangement, diarrhea, headache, nausea, vomit, lassitude, cramp.

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.

6 Accidental Release Measures

Personal Precautions, protective equipment and emergency procedure.	Wear protective gear to avoid eye/skin contact and inhalation. Do not work at leeward.
Environmental Precautions	High concentrated waste fluid should not be directly discharged into rivers.
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.)

7 Handling and Storage

Handling

Technical Measures	Wear protective gear to avoid eye/skin contact and inhalation.
Precautions	Do not drop the container to prevent the content popping out.

Storage

Technical Measures	Keep sealed container in freezer.
Incompatible substances and mixtures	None specified.
Storage Conditions	Store under -20℃ to avoid deactivating.
Packaging Materials	Use the initial container of the product.

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8 Exposure Controls/Personal Protection

Engineering controls	Provide shower and eye washing apparatus nearby.
Occupational exposure limit,biological limit	(Boric acid) TLV-TWA 5mg/m^3
Personal Protective Equipment	
Respiratory Protection	Protecting mask
Hand Protection	Protecting gloves
Eye Protection	Safety goggles
Skin and Body Protection	Long sleeve working wear

9 Physical and Chemical Properties

Physical State, form and color	Powder / White
Odour	No odour
pH	ca. pH 8.5 (1% W/V)
Flash Point	No information available.
Explosiveness	No information available.
Density	No information available.
Solubility	Freely soluble in water.

10 Stability and Reactivity

Stability	Stable at temperatures below -20℃.When left for long at room temperature,proteins might be degraded, which does not cause any hazardous reaction.
Possible hazard reactions at specific condition	
Conditions to avoid	Prolonged storage under higher temperature than room temperature and high humidity.
Materials to avoid	May react with strong oxidizing compound.
Hazardous Decomposition Products	No information available.

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	Rebefaction /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.

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(2) Sodium tetraborate

Acute Toxicity (Oral)	LD_{50} 4450mg/kg (Category 5) (EHC204) 3493mg/kg, 4500mg/kg, 4980mg/kg, 5660mg/kg, 6080mg/kg (ECETOC TR63), 6000 mg/kg
Acute Toxicity (Dermal)	LD_{50} > 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	Not classification

12 Ecological Information

	Polyethylene Glycol-p-octylphenyl Ether (Triton X-100)
Acute hazards to the aquatic environment	LC50/96hr = 3mg/L (bluegill)
Persistence /Degradability	This product is biodegradable and does not remain on the environment for long. 22% by BOD (National Institute of Technology and Evaluation, Japan)

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.

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)	A following component of this product is put on a list of Substances of Very High Concern (SVHC).
Common Chemical name	Boric acid
Concentration or concentration range	ca 14.8% (W/W)
Chemical formula	H_3BO_3
CAS#	10043-35-3
Common Chemical name	Sodium tetraborate
Concentration or concentration range	ca 2.7% (W/W)
Chemical formula	$Na_2B_4O_7 \cdot 10H_2O$
CAS#	1303-96-4
Common Chemical name	Polyethylene Glycol-p-octylphenyl Ether (Triton X-100)
Concentration or concentration range	ca. 1.0% (W/W)

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Chemical formula	Not specified
CAS#	9002-93-1

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.