1 Chemical Product and Company Identification

Identification of the product

**Peroxidase**

Product Code

PEO-301

Supplier

TOYOBO CO., LTD.

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Department

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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.

GHS classification

Physical hazards

- 

Health hazards

Acute toxicity : Oral Category 5
Acute toxicity : Dermal -
Acute toxicity : Inhalation (Gas, Vapour) Not applicable
Acute toxicity : Inhalation (Dust, Mist) -
Skin corrosion/irritation Category 2
Serious eye damage/Eye irritation Category 2A
Sensitization : Respiratory -
Sensitization : Skin -
Germ cell mutagenicity -
Carcinogenicity -
Toxic to reproduction Category 1B
Specific target organ toxicity Category 1(nervous system, gastrointestinal tract)
(Single exposure) Category 3(respiratory tract irritation)

Specific target organ toxicity (Repeated exposure) Category 1(kidneys)

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

Hazard statements

May be harmful if swallowed.
May cause skin irritation.
Causing serious eye irritation.
May damage fertility or the unborn child.
Cause damage to nervous system, gastrointestinal tract.
May cause respiratory irritation.
Cause damage to kidneys through prolonged or repeated exposure.
Safety Data Sheet

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.
Use only outdoors or in a well-ventilated area.
Do not breathe dust/fume.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.

Response
If inhaled: Remove person to fresh air and keep comfortable
for breathing.
Get medical advice/attentions if you feel unwell.
If in eye: Wash with plenty of water/soap. Take off
contaminated clothing and wash it before use.
If on skin: Wash with plenty of soap and water.
Take off contaminated clothing and wash before reuse.
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.

3 Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Substance/Mixture</th>
<th>Mixture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Nature</td>
<td>Peroxidase</td>
</tr>
<tr>
<td>Chemical specificity</td>
<td>Freeze and drying powder including enzyme</td>
</tr>
<tr>
<td>Concentration or concentration range</td>
<td>50%(W/W)</td>
</tr>
<tr>
<td>Cas #</td>
<td>9003-99-0</td>
</tr>
</tbody>
</table>

Ingredients Contributing to the Hazard

<table>
<thead>
<tr>
<th>Common Chemical name</th>
<th>Boric acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentration or concentration range</td>
<td>50%(W/W)</td>
</tr>
<tr>
<td>Chemical formula</td>
<td>H$_3$BO$_3$</td>
</tr>
<tr>
<td>Cas #</td>
<td>10043-35-3</td>
</tr>
</tbody>
</table>

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°C to avoid deactivating.
Packaging Materials
Use the initial container of the product.

8 Exposure Controls / Personal Protection
Engineering controls
Provide shower and eye washing apparatus nearby.
Occupational exposure limit, biological limit
(Boric acid) TLV: TWA 2mg/m³, STEL 6mg/m³
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 / Reddish-Brown
Odour
No odour
pH
ca. pH 5.5 (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°C. 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
Oxidizing agent
Hazardous Decomposition Products
No information available.
11 Toxicological Information

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.

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.

14 Transport Information

International regulations Not applicable
IATA information Not applicable
Domestic regulations
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°C.

15 Regulatory Information

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

Common Chemical name Boric acid
Concentration or concentration range ca 50% (W/W)
Chemical formula H3BO3
CAS# 10043-35-3

A following component of this product is included in SVHC (Candidate list of authorization).
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, TOYOCO makes no warranty and assumes no liability whatsoever in connection with any use of this information.