 SAFETY DATA SHEET

THAI PEROXIDE CO., LTD

BIRLOX-1

1 % Peracetic Acid

1. Identification of the substance/Preparation and of the company/Undertaking

Trade name : BIRLOX-1

Applications : Disinfectant for floor, wall, tools and equipments in food, beer, dairy, beverage, juice and ice cream industry

Manufacturer : THAI PEROXIDE CO., LTD 70 Moo 4, Sudbuntad Road, Tarndiew, kaengkhoi, Saraburi 18110 Tel: 036 240210 Fax: 036 240211

Emergency call : 036 240344 (24 hour)

2. Hazard Identification

Oxidizing causes severe burn, May cause fire. Harmful by Inhalation, in contact with skin and if swallowed

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>Min %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peracetic acid</td>
<td>CAS#79-21-0</td>
<td>1.0</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>CAS#7722-84-1</td>
<td>10%</td>
</tr>
<tr>
<td>Acetic acid</td>
<td>CAS#64-19-7</td>
<td>10%</td>
</tr>
<tr>
<td>Water</td>
<td>CAS#7732-18-5</td>
<td>79%</td>
</tr>
</tbody>
</table>

Chemical name : Peracetic acid

Synonyms : Peroxyacetic acid, Acetyl Hydro peroxide

CAS Number : 79-21-0

Chemical Formula : C₂H₄O₃ / CH₃COOOH

Molecular weight : 76

4. First aid measures

Inhalation : Remove from exposure, lie down. Keep warm. Oxygen or artificial respiration if needed.

Obtain medical attention

Skin contact : Wash off immediately with plenty of water removing all contaminated clothes and shoes.

If skin irritation persists, call a physician.

Eye contact : Rinse immediately with plenty of water for at least 15 minute and seek medical advice.

Ingestion : Rinse mouth with water. Drink plenty water. Do not induce vomiting. Call a physician immediately.
5. Fire fighting measure:
Suitable extinguishing media : Water, spray. Do not use dry chemical powder type.
Specific hazard : Contact with combustible material. May cause fire. Heating >110°C may cause an explosion.
Protective equipment for firefighters: Wear a safe contained breathing apparatus, suit protecting against chemicals.

6. Accidental Release Measures:
Personal precautions : Avoid contact with skin, eyes and clothing. Never return spills in original containers for reuse. Ensure adequate ventilation. Use personal protective equipment. Remove all sources of igniting. Keep people away from and upwind of spill/leak.
Environmental precautions: Prevent product from entering drains, into the environment.
Methods for cleaning up : Dam up. Flush very dilute solution into sewer with plenty of water. Contact the proper local authorities. Never return spills in original container of reuse.

7. Handling & Storage
Safe handling advice : Never return unused material to storage receptacle. Avoid exposure. Provide appropriate exhaust ventilation. Wear suitable protective clothes. Open drum/container carefully. Content may be under pressure.
Technical measure /Precautions : Keep away from sources of ignition. No smoking. Keep away from combustible material. Protect from Contamination. Do not heat over +30°C.
Storage : Keep in a cool, well-ventilated plate. Keep away from heat, direct sunlight and sources of ignition. Store in original container equipped with a vent. Don’t keep more than 6 months.
Incompatible products : Metal chloride, bases, reducing agents, organic materials, contamination.

8. Exposure controls/Personal protection
Engineering controls: Provide mechanical local exhaust ventilation to prevent release of mist into the work area. If release use respiratory protection.
Exposure limits:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH (TLV)</th>
<th>OSHA (PELs)</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Peroxide</td>
<td>1 ppm (TWA) = 1.4 mg / m³</td>
<td>1 ppm (TWA) = 1.4 mg / m³</td>
<td></td>
</tr>
<tr>
<td>Acetic Acid</td>
<td>10 ppm (TWA) = 25 mg / m³</td>
<td>10 ppm (TWA) = 25 mg / m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 ppm (STEL) = 37 mg / m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peracetic Acid</td>
<td>-</td>
<td>-</td>
<td>0.15 ppm (TWA) = 0.46 mg / m³</td>
</tr>
</tbody>
</table>

ACGIH (TLV) = ACGIS & TLV are registered trademarks of The American Conference of Governmental Industrial Hygienists
OSHA (PELs) = Standard of The Occupational Safety and Health Administration

Personal Protective Equipment

Hygiene measures: Avoid exposure

Respiratory protection: In case of insufficient ventilation wear suitable respiratory equipment (filter type B/P3)

Hand protection: Butyl/viton groves. Do not wear leather gloves; do not wear cotton gloves (risk of fire)

Eye protection: Tightly fitting safety goggles and face-shield. Eye wash bottle with pure water.

Skin and body protection: Full protective chemical resistant clothing. Do not wear leather shoes. Safety shower

9. Physical & Chemical Properties

Form, Color, Odour: liquid, colorless, pungent
pH: < 1
Boiling point/range: 109 °C
Melting point/range: -49 °C
Flash point: 80 °C
Decomposition temperature: 40 °C SADT (tank container or tank vehicle max 20 ton)
>= 65 °C SADT (IBC max 1.5 m³)
SADT = Self Accelerating Decomposition Temperature

Oxidizing properties: Strong oxidizing
Vapour pressure: 22 mm Hg @ 25 °C
Vapour Density: No data available
Evaporation Rate: > 1
Specific gravity: 1.13 @ 20 °C

Solubility
- Water solubility: completely soluble (100% @ 25 °C)
- Fat solubility not applicable
Partition coefficient (n-Octanol / water)

<table>
<thead>
<tr>
<th>Substance</th>
<th>Log P&lt;sub&gt;ow&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid</td>
<td>-0.17</td>
</tr>
<tr>
<td>Peracetic acid</td>
<td>-0.924</td>
</tr>
</tbody>
</table>

10. Stability and Reactivity

Conditions to avoid: High temperatures. Protect from light. Keep away from heat, contamination.

Materials to avoid: Combustible material, flammable materials, reducing agents, organic material, metal chlorides, bases, contamination, rust, dirt.

Hazardous decomposition products: Heating release irritative and acrid gases.

Further information: Stabilized

11. Toxicological information

Acute toxicity

- Peracetic acid:
  - LD<sub>50</sub>/oral/rat = >1,663 mg/kg
  - LD<sub>50</sub>/dermal/rabbit = >200 mg/kg
  - LC<sub>50</sub>/inhalation/1 hour/rat = 590 mg/m³

Ingestion causes burns of the upper digestive tracts and gastrointestinal burns. Inhalation of aerosols may cause irritation to mucous membranes, inflammation, and edema of the lungs.

Primary irritation: Causes severe burns. Sensitisation: no data available

Long term toxicity: no data available

12. Ecological Information

Persistence and degradability: Depending on circumstance, degradable

Bioaccumulation: Does not accumulate

Mobility: no data available

Ecotoxicity effects

- Acetic acid:
  - LD<sub>50</sub>/96 hrs./fathead minnows = 88 mg/l
  - LD<sub>50</sub>/96 hrs./Blugill sunfish = 75 mg/l
  - LD<sub>50</sub>/24 hrs./daphnia = 47 mg/l

- Peracetic acid:
  - LD<sub>50</sub>/96 hrs./rainbow trout = 10-18 mg/l (12%)

- Hydrogen Peroxide:
  - LD<sub>50</sub>/96 hrs./Golden orfe = 35 mg/l
  - LD<sub>50</sub>/168 hrs./fathead minnows = 22-33 mg/l
  - LD<sub>50</sub>/96 hrs./rainbow trout = 38.5 mg/l
EC 50 / daphnia = 2.4-7.7 mg/l
LC 50 / algae > 1.7 mg/l

13. Disposal considerations
Contaminated packaging : In accordance with local and national regulations. Rinse empty container with water before disposal. Do not reuse empty container for other purposes.
Waste from residue /unused product : In accordance with local and national regulations, see also accidental release measures. Wear personal protective equipment. Diluted aqueous solution can be disposed as waste water, when in compliance with local regulations. Do not dispose of undiluted solutions into sewer.

14. Transportation information
Precaution : Drum should be stacked properly in transit, make sure to keep drums in upright position.
UN number : UN 3149
Hazard class : 5.1 (organic peroxide), 8 (corrosive)
Packing group : II
Type of packages : 30 and 240 kg. in Polyethylene drum with a venting hole.

15. Regulatory Information
Labeling according to directive EC. : The product is classified and labeled in accordance with EC directives
Symbols : O oxidizing ; C corrosive
Compound : Peracetic acid ; Acetic acid ; Hydrogen Peroxide
R-Phrases : R7 May causes fire ; R34 causes severe burns
S-Phrases : S3 / 7 Keep container tightly close in cool place.
S14 Keep away from combustible materials.
S36 / 37 / 39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In cases accident or if you feel unwell, seek medical advice immediately
(Show label where possible)
16. Other information

Further information: The information provided in this safety data sheet is correct to the best our knowledge at the data of its publication. The information given is designed only as guidance for safe handling use processing storage, transportation disposal and release and is not to be considered a warranty or quality specification, since the conditions of the operations mentioned are beyond our control. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. Thai Peroxide Co., Ltd. DISCLAIMS any liability for loss or damage resulting from the use these data, information or suggestions. With the symbol indicated data has been changed from the previous version.