



Sodium perborate Monohydrate

1. Chemical Product and enterprise information

Product Name.....Sodium perborate monohydrate
Synonyms.....PBS,Sodium Peroxyborate,Sodium Peroxoborate,PBS-1,PBSM
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MSDS No.....HYSPM-061001-09
Effective Date.....October1, 2006

2. Composition/Information on Ingredients

Name	Sodium perborate monohydrate
Chemical Formula	NaBO ₃ .H ₂ O
CAS No.	10332-33-9
percentage	Min.95

3. Hazards Identification

Emergency Overview:

- Toxicity effects principally related to its irritating properties.
- Limited hazard to the environment (sensitive plants).
- Supports combustion of other substances (oxidizing product).

3.1 Route of Entry: Inhalation: Yes Skin: Yes Ingestion: Yes

3.2 Potential Effects of exposure: Irritating to mucous membranes, eyes and skin.

Inhalation:

- Nose and throat irritation.





- At high concentrations, cough.

Eyes:

- Severe eye irritation, watering, redness.
- Risk of temporary eye lesions.

Skin contact:

- May cause irritation.
- In case of repeated contact: risk of dermatitis.

Skin contact: Boric acid, a conversion product of sodium perborate in biological systems, is poorly absorbed through intact skin, but is absorbed through abraded, denuded or burned skin leading to systemic effects similar to ingestion.

Ingestion:

- Severe irritation of the mouth, throat, esophagus and stomach.
- Bloating of stomach, belching.

Target Organs: Large doses of boric acid have been shown to be toxic to most organs including central nervous system, reproductive system (testes and developing fetus), liver and kidneys.

Carcinogenicity: See section 11.3.

4. First-Aid Measures

General Recommendations: Do not dry soiled clothing near an open flame or incandescent heat source.

4.1 Inhalation:

- Remove the subject from dusty environment.
- Consult a physician in case of respiratory symptoms.

Eyes:

- Flush eyes as soon as possible with running water for 15 minutes, while keeping the eyelids open.





- Consult an ophthalmologist in all cases.

Skin:

- Remove contaminated shoes, socks and clothing; wash the affected skin with running water.
- Clean clothing.
- Consult a physician in case of persistent pain or redness.

Ingestion: Consult a physician immediately in all cases.

If the subject is completely conscious:

- Rinse and administer fresh water.
- Do not induce vomiting.

If the subject is unconscious:

- NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.
- Loosen collar and tight clothing, lay the victim on his/her left side.
- Keep warm (blanket).

4.2 Medical Treatment/Notes to Physician: See Section 4.1 above.

5. Fire-Fighting Measures

5.1 Flash point: Not applicable.

5.2 Auto ignition Temperature: Not applicable.

5.3 Flammability Limits: Non flammable.

5.4 Unusual Fire and Explosion Hazards:

- Oxidizer.
- Contact with flammables may cause fire or explosion.

5.5 Extinguishing Methods

Common:

- Large quantities of water, water spray.
- In case of fire in close proximity, all means of extinguishing are acceptable





(subject to sections below).

Inappropriate extinguishing means: No restriction.

5.6 Fire Fighting Procedures

Specific hazards:

- Oxygen released on exothermic decomposition may support combustion in case of surrounding fire.
- Pressure burst may occur due to decomposition in confined spaces/containers.

Protective measures in case of intervention:

- Personnel should wear full bunker gear and positive pressure self contained breathing apparatus.
- When intervention in close proximity, wear acid resistant over suit.
- Apply cooling water to sides of transport or storage vessels that are exposed to flames until fire is out.
- Do not approach hot vessels containing product.

Other precautions: If safe to do so, remove the exposed containers.

6. Accidental Release Measures

6.1 Precautions:

- Observe protective measures given in sections 5 and 8.
- Avoid materials and products which are incompatible with the product (see section 10).
- Avoid direct contact of the product with water.

6.2 Cleanup methods:

- Collect the product with suitable means (shovel or sweep) avoiding dust formation.
- All receiving equipment should be clean, dry, vented, labeled and made of materials compatible with the product.
- Do not return spilled or contaminated material to inventory.
- In order to avoid the risk of contamination, the recovered product must not be returned to





the original container.

- Clean area with large quantities of water.
- For disposal methods, refer to section 13.

6.3 Precautions for protection of the environment: Immediately notify the appropriate authorities in case of reportable spill.

7. Handling and Storage

7.1 Handling:

- Clean and dry process and other piping and equipment before using this product.
- Never return unused product to storage container.
- Keep away from incompatible products.
- Containers and equipment used to handle the product should be used exclusively for that product.
- Avoid contact with water or humidity.

For more information consult the supplier.

7.2 Storage:

- Store in a dry area.
- Protect from direct sunlight.
- Store away from heat sources.
- Keep away from incompatible products (see section 10).
- Store in vented containers.
- Store in temperatures less than 40°C (104°F).
- Keep in container fitted with safety valve or vent.
- Container must be used exclusively for the product.

7.3 Specific Uses: See Section 1.2.

7.4 Other precautions:

- Warn personnel of the dangers of the product.
- Follow the protective measures given in section 8.





7.5 Packaging:

- Stainless Steel.
- PE.
- Paper and PE.
- Glass.
- Passivated aluminum.

8. Exposure Controls/Personal Protection

8.1 Exposure Limit Values:

8.2 Exposure Controls:

8.2.1 Occupational Exposure Controls:

8.2.1.1 Ventilation: Provide ventilation in work areas to keep exposure below applicable limits.

See Section 8.1.

8.2.1.2 Respiratory protection: For many conditions, no respiratory protection may be needed; however in dusty or unknown atmospheres or when exposures exceed limit values use NIOSH approved dust respirator.

8.2.1.3 Hand protection: Protective gloves made of PVC, neoprene or rubber.

8.2.1.4 Eye protection: Wear dustproof goggles.

8.2.1.5 Skin protection: When prolonged or frequently repeated contact could occur, use protective full body clothing such as PVC or rubber, impervious to this material.

8.3 Other precautions:

- An eyewash and safety shower should be nearby and ready for use.
- Consult your industrial hygienist or safety manager for the selection of personal protective equipment suitable for the working conditions.

9. Physical and Chemical Properties

9.1 Appearance: crystalline powder.

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Color: white.

Odor: odorless.

9.2 Important Health, Safety and Environmental information:

pH: approx. 10 (1.5% solution).

Change of state:

Melting point: Not applicable Γ decomposes.

Boiling point: Not applicable.

Decomposition Temperature: $\geq 55^{\circ}\text{C}$ (133°F) (50 kg)Self Γ accelerated decomposition temperature (SADT) with oxygen release starting at 50°C (122°F).

Flash Point: Non Γ flammable.

Flammability (solid, gas): Non Γ flammable.

Explosive Properties: See section 4.

Oxidizing Properties: Weak oxidizer, See section 4.

Vapor Pressure: Not applicable.

Relative Density:

Specific gravity: No data.

(H₂O=1).

Bulk Density: 0.5 Γ 0.65g/cm³.

Solubility:

Water: 15 g/l @ 20°C (68°F).

Fat: Not applicable.

Partition coefficient: Not applicable.

P (n Γ octanol/water).

Viscosity: Not applicable.

Vapor Density (air=1): No data.

Evaporation Rate: No data.

9.3 Other Information:

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Granulometry: 95% > 0.15 mm.

(Particle size) 95% < 1 mm.

10. Stability and Reactivity

Stability: Stable under certain conditions of use with slow gas release.

10.1 Conditions to avoid:

- Heat/Sources of heat.
- Moisture.

10.2 Materials and substances to avoid:

- Water.
- Acids.
- Bases.
- Salts of metals.
- Reducing agents.
- Organic materials.
- Flammable substances.

10.3 Hazardous decomposition products: Oxygen; Decomposition releases steam and heat.

10.4 Hazardous Polymerization: Will not occur.

10.5 Other information: None.

11. Toxicological Information

11.1 Acute toxicity:

Inhalation: no data.

Oral: LD50, rat, 770 ~ 2100 mg/kg.

Dermal: LD50, rabbit, >2000 mg/kg.

Irritation:

- Rabbit, Irritant (eyes).





- Rabbit, Slight irritant (skin).
- Rabbit, Slight irritant (eyes), after direct rinsing.

Sensitization: Guinea Pig, Non Γ sensitizing (skin).

Comments:

- Toxic effect linked with irritating properties.
- Irritating effect for skin and eyes.

11.2 Chronic toxicity:

- Oral route, Target organ: gastrointestinal system, > 1000 mg/kg, irritating effect.
- Humans, Target organ: respiratory system, > 21 mg/m³, irritating effect.
- In vitro mutagenic effect.
- No teratogenic effect.

11.3 Carcinogenic Designation: None.

12. Ecological Information

12.1 Acute ecotoxicity:

- Fish, Bracydanio rerio, LC50, 96 hours, 51 mg/L.
- Fish, Bracydanio rerio; NOEC, 25 mg/L.
- Crustaceans, Daphnia magna; 48 hours, EC50, 11 mg/L.
- Crustaceans, Daphnia magna; NOEC, 8 mg/L.
- Algae, Scenedesmus subspicatus, 96 hours, EC50, 12 mg/L.

12.2 Chronic ecotoxicity: Data in boron content. Sodium perborate monohydrate contains 10.83% boron.

Terrestrial plants

- Sensitive plants Γ LOEC: 0.3 Γ 1 mg/l.
- Intermediate plants Γ LOEC: 1 Γ 2 mg/l.
- Tolerant plants Γ LOEC: 2 Γ 4 mg/l.





Sensitive plants: citrus, stone fruit, nut trees.

12.3 Mobility:

- Air Not applicable.
- Water Considerable solubility and mobility.
- Soil/sediments Non significant adsorption.

12.4 Degradation

Abiotic:

- Air Not applicable.
- Water significant hydrolysis.

Degradation products: boric acid, borate, hydrogen peroxide (biodegradable).

- Soil hydrolysis.

Biotic: Aerobic, Ready biodegradability / closed bottle (48 hours): 85%, rapid biodegradation.

12.5 Potential for bioaccumulation: Result: non bioaccumulable.

12.6 Other adverse effects /Comments: Toxic for aquatic organisms. Nevertheless, hazard for

the environment is limited due to product properties:

No bioaccumulation.

Abiotic and biotic degradability into boron derivatives.

Weak persistence.

Boron is toxic for plants from 0.3 mg/l (sensitive plants).

13. Disposal Considerations



13.1 Waste treatment: Dispose of in approved waste facility operated by authorized contractor in compliance with federal, state and local regulations.

13.2 Packaging treatment:

- Consult current federal, state and local regulations regarding the proper disposal of



emptied containers.

- To avoid waste generation, as far as possible, use dedicated containers.
- Empty containers are a source of hazard until they have been effectively cleaned. They must be handled and stored accordingly.
- Reuse containers in conformity with regulations.
- Containers that cannot be cleaned must be treated as waste.

13.3 RCRA Hazardous Waste: Listed as D001 (Ignitable).

14. Transport Information

Proper Shipping Name: sodium perborate

UN: 1479

Packing group: PG 2

TDG Classification: 5.1

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

15. Rule of Law Information

No information

16. Other Information

The data in this Material Safety Data Sheet is believed to be correct. However, since conditions of use are outside our control it should not taken as a warranty of representation for which Henan Hongye Chemical Co., Ltd. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.

