



# Material Safety Data Sheet

## Sodium Perborate Monohydrate

### 1. Chemical Product and Supplier Identification

<b>Product Name:</b>	Sodium Perborate Monohydrate		
<b>Chemical Name:</b>	Perboric acid, sodium salt, monohydrated		
<b>Synonyms:</b>	Sodium peroxyborate, sodium peroxoborate, PBS1, PBSM		
<b>Manufacturer:</b>	Solvay Interlox, Inc. 3333 Richmond Avenue Houston, Texas 77098	<b>Office:</b>	713/525-6500 (7:30 am - 5:00 pm CST M-F)
		<b>Emergency:</b>	281/479-2826 (24 hours every day)
<b>CANUTEC:</b>	613/996-6666 (24 hours every day)	<b>CHEMTREC*:</b>	800/424-9300 (24 hours every day)
<b>MSDS Number:</b>	ZIMPBS-001-06	<b>Effective Date:</b>	Feb. 1, 2002

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## 2. Composition/Information on Ingredients

Components	Formula	CAS No.	Percent
Sodium perborate monohydrate	$\text{NaBO}_3 \cdot \text{H}_2\text{O}$	10332-33-9	>95
Sodium metaborate	$\text{NaBO}_2$	7775-19-1	1 - 3

## 3. Hazards Identification

- Toxicity effects principally related to its irritating properties.
- Supports combustion of other substances (oxidizing product).

### Effects

#### Main Effects

- Irritating to mucous membrane, eyes and skin.

#### Routes of Entry

**Inhalation:** Nose and throat irritation at high concentrations, cough.

**Eye contact:** Severe eye irritation, watering and redness. Risk of temporary eye lesions.

**Skin contact:** May cause irritation. In case of repeated contact, risk of dermatitis.

**Skin absorption:** 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:** Irritation of the throat and mouth by ingestion of large quantities.  
Nausea, vomiting and diarrhea.  
Boron poisoning causes depression of the circulation, persistent vomiting and diarrhea, followed by profound shock, coma and death.

**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.

See TOXICOLOGICAL INFORMATION (Section 11)

## 4. First-Aid Measures

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

**Inhalation:** Remove the subject from dusty environment and have him blow his nose.  
Consult with a physician in case of respiratory symptoms.

**Eye contact:** Flush eyes with running water for 15 minutes, while keeping the eyelids wide open. Consult with an ophthalmologist in all cases.

**Skin contact:** Wash the affected skin with running water. Clean clothing. Consult with a physician in case of persistent pain or redness.

**Ingestion:** If the victim is completely conscious, rinse mouth and administer fresh water.  
DO NOT induce vomiting.  
If the subject is unconscious, loosen collar and tight clothing, lay victim on his/her left side, give nothing by mouth. Keep warm with blanket.  
DO NOT induce vomiting.  
Consult a physician in all cases.

## 5. Fire-Fighting Measures

**Flash point:** Not applicable

**Flammability:** Not applicable

**Auto-flammability:** Not applicable

**Danger of explosion:** Non-explosive

**Common extinguishing methods:**

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

**Inappropriate extinguishing methods:** No restriction.

**Special precautions:**

- Evacuate all non-essential personnel.
- Intervention only by capable personnel who are trained and aware of the hazards of the product.
- If safe to do so, remove unaffected product to a safe area.

**Specific hazards:**

- Oxidizing substance.
- Oxygen released on exothermic decomposition may support combustion in case of surrounding fire.
- Pressure burst may occur due to decomposition in confined spaces/containers.
- Contact with flammables may cause fire or explosion.

**Fire fighting instructions:**

- Personnel should wear full bunker gear and positive-pressure, self-contained breathing apparatus.
- 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.

## 6. Accidental Release Measures

- Precautions:**
- Observe the protection 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.
  - Immediately notify the appropriate authorities in case of a reportable discharge.

- Cleanup methods:**
- Collect the product with a suitable means avoiding dust formation.
  - All the receiving equipment should be clean, vented, dry, labeled and made of material that is compatible with the product.
  - Because of the contamination risk, the collected material should be isolated in a safe place.
  - Clean the area with large quantities of water after removal of the product.
  - For disposal methods, refer to Section 13.

## 7. Handling and Storage

- Handling:**
- Clean and dry process piping and equipment before any operations.
  - Never return unused product to storage container.
  - Keep away from incompatible products.
  - Containers and equipment used to handle this product should be used exclusively for this material.
  - Avoid any contact with water or humidity.

- Storage:**
- Store in a dry area, protected from heat sources and direct sunlight.
  - Ensure storage containers are capable of pressure relief (e.g. safety valve or vent).
  - Storage temperature: <104°F (<40°C).
  - Keep away from incompatible products (see Section 10).

- Other precautions:**
- Warn personnel about the dangers of the product.
  - Follow the protective measures given in Section 8.

- Packaging:**
- Stainless steel
  - PE
  - Paper + PE coating
  - Glass

## 8. Exposure Controls/Personal Protection

**Engineering controls:** Provide ventilation in work areas when necessary to minimize irritation and to comply with the following applicable limits:

**Authorized Limit Values:** ACGIH® TLV® Particulates Not Otherwise Classified (PNOC)  
Inhalable (2000) 10 mg/m<sup>3</sup> TWA  
Respirable (2000) 3 mg/m<sup>3</sup> TWA

OSHA PEL Particulates Not Otherwise Regulated (PNOR)  
Total dust 15 mg/m<sup>3</sup> TWA  
Respirable fraction 5 mg/m<sup>3</sup> TWA

Solvay Acceptable Exposure Limit (SAEL) 2001  
Sodium perborate monohydrate - 5 mg/m<sup>3</sup> TWA

ACGIH® and TLV® are registered trademarks of the American Conference of Governmental Industrial Hygienists.

**Eyeface protection:** Dust proof chemical goggles.

**Hand protection:** Protective gloves - chemical resistant.  
Recommended materials: PVC, neoprene or rubber.

**Skin protection:** Full body clothing when necessary.

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

**Other precautions:**

- Safety shower and eyewash stations.
- Consult a health and safety expert for the selection of personal protective equipment suitable for the working conditions.

## 9. Physical and Chemical Properties

**Appearance:** White, crystalline powder

**Odor:** Odorless

**pH:** Approximately 10 (1.5% solution)

**Molecular weight:** 99.8

**Melting point:** Not applicable - decomposes

**Vapor pressure:** Not applicable

**Vapor density:** Not applicable

<b>Boiling point:</b>	Not applicable
<b>Bulk density:</b>	0.55 - 0.65 g/mL
<b>Solubility in water:</b>	15 g/L @ 68°F (20°C)
<b>Partition coefficient P (n-octanol/water):</b>	Not applicable
<b>Decomposition temperature:</b>	Self-accelerating decomposition with oxygen release starting at 122°F (50°C).
<b>Granulometry (Particle Size):</b>	95% > 0.15mm 95% < 1mm

## 10. Stability and Reactivity

<b>Chemical stability:</b>	Stable under certain conditions (see below).
<b>Conditions to avoid:</b>	<ul style="list-style-type: none"><li>• Heat / sources of heat</li><li>• Moisture</li></ul>
<b>Materials to avoid:</b>	<ul style="list-style-type: none"><li>• Water</li><li>• Acids</li><li>• Bases</li><li>• Salts of heavy metals</li><li>• Reducing agents</li><li>• Organic materials</li><li>• Flammable substances</li></ul>
<b>Hazardous decomposition products:</b>	Oxygen, steam and heat.
<b>Hazardous polymerization:</b>	Does not occur.

## 11. Toxicological Information

- Acute toxicity:**
- Oral route, LD<sub>50</sub>, rat, 770 - 2100 mg/kg
  - Dermal route, LD<sub>50</sub>, rabbit, >2000 mg/kg
  - Inhalation, LC<sub>50</sub>, no data
- Irritation:**
- Rabbit (skin), irritant
  - Rabbit (eyes), irritant
  - Rabbit, slight irritant (eyes), after direct rinsing.
- Sensitization:**
- Guinea Pig, Non-sensitizing (skin).
- Chronic toxicity:**
- Oral route – target organ: gastro-intestinal system, >1000 mg/kg, irritating effect.
  - Man - target organ: respiratory system, >21 mg/m<sup>3</sup>, irritating effect.
  - In vitro, mutagenic effect.
  - No teratogenic effect.
- Comment:** Toxic effect linked with irritant properties.

## 12. Ecological Information

- Acute ecotoxicity: (1 g NaBO<sub>3</sub>/L, pH = 9.1)**
- Fish, Brachydanio rerio, 96 hours  
LC<sub>50</sub>: 51 mg/L  
NOEC: 25 mg/L
  - Crustaceans, Daphnia magna, 48 hours  
EC<sub>50</sub>: 11 mg/L  
NOEC: 8 mg/L
  - Algae, Scenedesmus subspicatus, 96 hours  
EC<sub>50</sub>: 12 mg/L
- Chronic ecotoxicity:** Data in boron content. Sodium perborate monohydrate contains 10.83 % boron.
- Terrestrial plants**
- Sensitive plants - LOEC: 0.3 - 1 mg/L  
Intermediate plants - LOEC: 1 - 2 mg/L  
Tolerant plants - LOEC: 2 - 4 mg/L
- Sensitive plants:** citrus, stone fruit, nut trees.



**Mobility:**

- Air – Not applicable
- Water - Considerable solubility and mobility
- Soil/sediments, percolation - Non-significant adsorption

**Abiotic degradation:**

- Air – Not applicable
- Water - Significant hydrolysis.  
Degradation products: boric acid, borate and hydrogen peroxide.  
(biodegradable)
- Soil – Hydrolysis

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

**Potential for bioaccumulation:** Non-bioaccumulable

**Comments:**

- Harmful for aquatic organisms.
- Nevertheless, hazard for the aquatic environment is limited due to the product properties of:
  - 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

**Waste Disposal Method:** Consult current federal, state and local regulations regarding the proper disposal of this material and its 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.
- The empty and clean containers are to be reused in conformity with regulations.
- Containers that cannot be cleaned must be treated as waste.

## 14. Transport Information

**D.O.T. Proper Shipping Name:** Oxidizing solid, n.o.s., (sodium perborate monohydrate)

**UN Number:** UN1479

**Hazard Class:** 5.1

**Label(s):** 5.1 (Oxidizer)

**Packing Group:** III

## 15. Regulatory Information

**TSCA Inventory List:** Yes (CASRN 7632-04-4)

### CERCLA Hazardous Substance (40 CFR Part 302)

Listed substance: No  
Unlisted substance: Yes  
Reportable Quantity (RQ): 100 pounds  
Characteristic(s): Ignitability  
RCRA Waste Number: D001

### SARA, Title III, Sections 302/303 (40 CFR Part 355 -Emergency Planning and Notification)

Extremely hazardous substance: No

### SARA, Title III, Sections 311/312

#### (40 CFR Part 370 - Hazardous Chemical Reporting: Community Right-To-Know)

Hazard category: Fire hazard  
Immediate health hazard  
Threshold planning quantity: 10,000 pounds

### SARA, Title III, Section 313

#### (40 CFR Part 372 - Toxic Chemical Release Reporting: Community Right-To-Know)

Extremely hazardous substance: No

**WHMIS Classification:** C Oxidizing Material  
D2B Poisonous and Infectious Material  
Material Causing Other Toxic Effects - Eye and skin irritant

**Canadian Domestic Substances List:** Listed, DSL C.A.S.# 7632-04-4

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required.

## 16. Other Information

### HMIS® Rating:

Health - 2      Flammability - 0      Reactivity - 1      PPE - Required  
HMIS® is a registered trademark of the National Paint and Coating Association.

### NFPA® Rating:

Health - 2      Flammability - 0      Reactivity - 1      Special hazards - OX  
NFPA® is a registered trademark of the National Fire Protection Association.

Reason for Issue:    Biannual Review.

Supersedes:          ZIMPBS-001-05 (March 1, 2000)

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