

PersulfOx

Material Safety Data Sheet (MSDS)

Last Revised: February 8, 2013

Section 1 – Supplier Information and Material Identification

Supplier:



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Chemical Synonyms: A mixture of Sodium Persulfate [$\text{Na}_2\text{S}_2\text{O}_8$] and Sodium Silicate [Na_2SiO_3].

Chemical Family: Inorganic Chemicals

Trade Name: PersulfOx™

Product Use: Used to remediate contaminated soil and groundwater (environmental remediation applications)

Section 2 – Chemical Information/Other Designations

<u>CAS No.</u>	<u>Chemical</u>	<u>Percentage</u>
7775-27-1	Sodium Persulfate	90%
1344-09-8	Sodium Silicate	10%

Section 3 – Physical Data

Form:	Solid, free-flowing powder
Color:	White
Odor:	Odorless
Melting Point:	NA
Boiling Point:	NA
Flammability/Flash Point:	Non-combustible
Vapor Pressure:	NA
Bulk Density:	NA
Viscosity:	NA
pH (10% solution):	≈ 7.0 – 11.5 @ 25 °C
Decomposition Temperature:	Decomposition will occur upon heating.

Section 4 – Reactivity Data

Stability:	Stable under normal conditions. Stability decreases in the presence of heat, moisture and/or contamination.
Conditions to Avoid/Incompatibility:	Acids, alkalis, halides (fluorides, chlorides, bromides and iodides), Combustible materials, most metals and heavy metals, oxidizable materials, other oxidizers, reducing agents, cleaners, and organic or carbon containing compounds, moisture, heat, flame. Contact with incompatible materials can result in a material decomposition or other uncontrolled reactions.
Hazardous Decomposition Products:	Oxygen that supports combustion and oxides of sulfur.
Polymerization	Will not occur

Section 5 – Regulations

UNITED STATES**SARA TITLE III (SUPERFUND ADMENDMENTS AND REAUTHORIZATION ACT)**

**Section 302 Extremely Hazardous
Substances (40 CFR 335,
Appendix A):**

N/A

**Section 311 Hazard Categories (40
CFR 370):**

Fire Hazard, Immediate (Acute) Health Hazard

**Section 312 Threshold Planning
Quantity (40 CFR 370):**

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.: None

**Section 313 Reportable
Ingredients (40 CFR 372):**

Not Listed

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND
LIABILITY ACT)**

**CERCLA Designation &
Reportable Quantities (RQ) (40
CFR 302.4):**

Unlisted, RQ = 100 lbs., Ignitability

Section 6 – Protective Measures, Storage and Handling

Technical Protective Measures**Storage:**

Oxidizer. Store in a cool, clean, and well ventilated area away from all sources of ignition and out of the direct sunlight. Store in a dry location away from heat and in temperatures less than 40 °C.

Keep away from incompatible materials and keep lids tightly closed. Do not store in improperly labeled containers.

Protect from moisture. Do not store near combustible materials. Keep containers well sealed.

Store separately from reducing materials. Avoid contamination which may lead to decomposition.

Handling:

Avoid contact with eyes, skin and clothing. Use with adequate ventilation. Wear respiratory protection if ventilation is inadequate or not available. Use eye and skin protection. Use clean plastic or stainless steel scoops only.

Do not swallow. Avoid breathing vapors, mists or dust. Do not eat, drink or smoke in the work area. Wash hands thoroughly after handling.

Label containers and keep them tightly closed when not in use.

Personal Protective Equipment (PPE)**Engineering Controls:**

General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mists. Maintain adequate ventilation at all times. Do not use in confined areas. Keep levels below recommended exposure limits. To determine actual exposure limits, monitoring should be performed on a routine basis. General use of persulfates will generate thermal and pressure regimes which need to be mitigated during application as a precautionary measure.

Respiratory Protection:

Use NIOSH(P100) approved respirator when airborne dust is expected.

Exposure Limit

0.1 mg/m³ (TWA) - ACGIH

Hand Protection:

Wear chemical resistant gloves (neoprene, rubber, or PVC). Thoroughly wash the outside of gloves with soap and water prior to removal.

Section 6 – Protective Measures, Storage and Handling (cont)

Eye Protection:	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.
Skin Protection:	Try to avoid skin contact with this product. Chemical resistant gloves (neoprene, PVC or rubber) and protective clothing should be worn during use.
Protection Against Fire & Explosion:	Product is non-explosive. In case of fire, evacuate all non-essential personnel, wear protective clothing and a self-contained breathing apparatus, stay upwind of fire, and use water to spray cool fire-exposed containers. Presence of water accelerates decomposition.

Section 7 – Hazards Identification

	Potential Health Effects
Inhalation:	May be harmful and irritating.
Eye Contact:	Non-irritating (rabbit)
Skin Contact:	Non-irritating (rabbit)
Ingestion:	May be harmful if swallowed (vomiting and diarrhea).
Target Organs:	Eyes, skin, respiratory passages

Section 8 – Measures in Case of Accidents and Fire

After Spillage/Leakage: Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose as a hazardous waste. All disposals should be carried out according to regulatory agencies procedures.

Extinguishing Media: Water; Do not use carbon dioxide or other gas filled fire extinguishers; they will have no effect on decomposing persulfates. Wear full protective clothing and self contained breathing apparatus.

First Aid

Eye Contact: Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a specialist.

Inhalation: Remove affected person to fresh air. Seek medical attention if the effects persist.

Ingestion: Rinse mouth with water, give two-four cups of water to dilute the chemical and seek medical attention immediately. Never give anything by mouth to an unconscious person. **Do Not** induce vomiting.

Skin Contact: Wash affected areas with soap and a mild detergent and large amounts of water. Seek medical attention if irritation occurs or persists.

Notes to Medical Doctor: This product has low oral toxicity and is not irritating to the eyes and skin. Flooding of exposed areas with water is suggested, but gastric lavage or emesis induction for ingestions must consider possible aggravation of esophageal injury and the expected absence of system effects. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

Section 9 – Accidental Release Measures

Precautions:**Cleanup Methods:**

Spilled material should be collected and put in approved DOT container and isolated for disposal. Isolated material should be monitored for signs of decomposition (fuming/smoking). If spilled material is wet, dissolve with large quantity of water and dispose as a hazardous waste. All disposals should be carried out according to local regulatory agencies procedures.

Section 10 – Information on Toxicology

Toxicity Data

Oral LD₅₀ (rat): 895 mg/kg

Dermal LD₅₀ (rabbit): > 10 g/kg

Inhalation LD₅₀ (rat): 5.1 mg/kg

Section 11 – Information on Ecology

Ecotoxicological Information

Bluegill sunfish, 96-hour LC_{50} = 771 mg/L

Rainbow trout, 96-hour LC_{50} = 163 mg/L

Daphnia, 48-hour LC_{50} = 133 mg/L

Grass shrimp, 96-hour LC_{50} = 519 mg/L

Biotic Degradation: N/A.

Section 12 – Disposal Considerations

Waste Disposal Method: Dispose of in an approved waste facility operated by an authorized contactor in compliance with local, state and federal regulations.

Section 13 – Shipping/Transport Information

D.O.T. Shipping Name: Oxidizing Solid, n.o.s. (a mixture of Sodium persulfate, sodium metasilicate and silicon dioxide)

UN Number: UN 1479

Hazard Class: 5.1 (Oxidizer)

Labels: 5.1 (Oxidizer)

Packaging Group: III

Section 14 – Other Information

HMIS® Rating	Health – 1 (Slight)	Physical Hazard – 1 (Slight)
	Flammability – 0 (None)	Lab PPE – goggles, gloves, apron, dust respirator

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NFPA	Health – 1 (Slight)	Reactivity – 1 (Slight)
	Flammability – 0 (None)	Special - Oxidizer

Section 15 – Further Information

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.