

# SAFETY DATA SHEET POTASSIUM PERSULFATE

SDS # : 7727-21-1-US  
Revision date: 2021-02-17  
Format: NA  
Version 1.04



## 1. PRODUCT AND COMPANY IDENTIFICATION

### Product Identifier

**Product Name** POTASSIUM PERSULFATE  
**CAS-No** 7727-21-1  
**Synonyms** Potassium Peroxydisulfate; Dipotassium Peroxydisulfate; Peroxydisulfuric acid, dipotassium salt; Peroxydisulfuric acid, potassium salt.

### Recommended use of the chemical and restrictions on use

**Recommended Use:** Polymerization initiator; Etchant and cleaner for printed circuit boards; Hair bleaching formulations; Secondary oil recovery; Oxidizing agent for a variety of organic reactions  
**Restrictions on Use** No uses to be advised against were identified.

### Manufacturer/Supplier

PeroxyChem LLC  
2005 Market Street  
Suite 3200  
Philadelphia, PA 19103  
Phone: +1 267/ 422-2400 (General Information)  
E-Mail: sdsinfo-pxc@evonik.com

### Emergency telephone numbers

For leak, fire, spill or accident emergencies, call:  
1 800 / 424 9300 (CHEMTREC - U.S.A.)  
1 703 / 527 3887 (CHEMTREC - Collect - All Other Countries)  
+1 303/ 389-1409 (Medical - U.S. - Call Collect)

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## 2. HAZARDS IDENTIFICATION

### Classification

#### **OSHA Regulatory Status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2B
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 3
Oxidizing Solids	Category 3

### GHS Label elements, including precautionary statements

#### EMERGENCY OVERVIEW

#### **Danger**

#### **Hazard Statements**

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H335 - May cause respiratory irritation  
H320 - Causes eye irritation  
H315 - Causes skin irritation  
H317 - May cause an allergic skin reaction  
H302 - Harmful if swallowed  
H272 - May intensify fire; oxidizer



#### **Precautionary Statements - Prevention**

P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray  
P285 - In case of inadequate ventilation wear respiratory protection  
P271 - Use only outdoors or in a well-ventilated area  
P280 - Wear protective gloves/ protective clothing  
P264 - Wash face, hands and any exposed skin thoroughly after handling  
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
P220 - Keep/Store away from clothing/combustible materials  
P221 - Take any precaution to avoid mixing with combustibles

#### **Precautionary Statements - Response**

P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P337 + P313 - If eye irritation persists: Get medical advice/ attention  
P302 + P352 - IF ON SKIN: Wash with plenty of water.  
P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention  
P362 - Take off contaminated clothing and wash before reuse  
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing  
P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor  
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell  
P330 - Rinse mouth

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P370 + P378 - In case of fire: Use water for extinction

## Precautionary Statements - Storage

P403 + P233 - Store in a well-ventilated place. Keep container tightly closed

## Hazards not otherwise classified (HNOC)

No hazards not otherwise classified were identified.

## Other Information

Risk of decomposition by heat or by contact with incompatible materials

## Unknown acute toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula K<sub>2</sub>O<sub>8</sub>S<sub>2</sub>

Chemical name	CAS-No	Weight %
Potassium Persulfate	7727-21-1	> 98
Potassium Sulfate	7778-80-5	< 2

### 4. FIRST AID MEASURES

<b>General Advice</b>	Remove from exposure, lie down. Show this material safety data sheet to the doctor in attendance.
<b>Eye Contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids intermittently. Consult a physician. In case of contact, immediately flush eyes with plenty of water. If symptoms persist, call a physician.
<b>Skin Contact</b>	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention if irritation develops and persists.
<b>Inhalation</b>	Remove from exposure, lie down. If breathing is irregular or stopped, administer artificial respiration. Call a physician immediately.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately. Rinse mouth. Drink 1 or 2 glasses of water.
<b>Most important symptoms and effects, both acute and delayed</b>	Itching; Redness; Coughing and/ or wheezing.
<b>Indication of immediate medical attention and special treatment needed, if necessary</b>	Treat symptomatically

### 5. FIRE-FIGHTING MEASURES

<b>Suitable Extinguishing Media</b>	Water. Cool containers with flooding quantities of water until well after fire is out.
<b>Unsuitable extinguishing media</b>	Do not use carbon dioxide or other gas filled fire extinguishers; they will have little effect on decomposing persulfate.
<b>Specific Hazards Arising from the Chemical</b>	Decomposes under fire conditions to release oxygen that intensifies the fire.

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## Explosion data

**Sensitivity to Mechanical Impact** Not sensitive.  
**Sensitivity to Static Discharge** Not sensitive.

**Protective equipment and precautions for firefighters** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions** Keep off any unprotected persons. Avoid contact with the skin and the eyes. Avoid breathing dust. Wear personal protective equipment.

**Other** Never add other substances or combustible waste to product residues.

**Environmental Precautions** Knock down dust with water spray. Avoid penetration into waterways, sewers, soil or groundwater. Local authorities should be advised if significant spillages cannot be contained.

**Methods for Containment** Vacuum, shovel or pump waste into a drum and label contents for disposal. Avoid dust formation. Store in closed container.

**Methods for cleaning up** Clean up spill area and treat as special waste. Dispose of waste as indicated in Section 13.

## 7. HANDLING AND STORAGE

**Handling** Wear personal protective equipment. Avoid breathing dust. Handle product only in closed system or provide appropriate exhaust ventilation at machinery. Avoid contact with skin and eyes. Remove and wash contaminated clothing before re-use.

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Do not store near combustible materials. Avoid contamination of opened product. Keep away from food, drink and animal feedingstuffs. Avoid formation and deposition of dust.

**Incompatible products** Acids, Bases, Halides, Oxidizing agents, Strong reducing agents, Combustible materials.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

### Exposure Guidelines

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Potassium Persulfate 7727-21-1	TWA: 0.1 mg/m <sup>3</sup>	-	-	-
Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
Potassium Persulfate 7727-21-1	TWA: 0.1 mg/m <sup>3</sup>	-	TWA: 0.1 mg/m <sup>3</sup>	TWA: 0.1 mg/m <sup>3</sup>

### Appropriate engineering controls

**Engineering measures** Ensure adequate ventilation, especially in confined areas.

### Individual protection measures, such as personal protective equipment

**Eye/Face Protection** Eye protection recommended. Chemical goggles consistent with EN 166 or equivalent.

**Skin and Body Protection** Wear long-sleeved shirt, long pants, socks, and shoes.

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<b>Hand Protection</b>	Protective gloves: Neoprene gloves, Polyvinylchloride, Natural Rubber.
<b>Respiratory Protection</b>	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn: particulate filtering facepiece respirators.
<b>Hygiene measures</b>	Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Wash hands before breaks and after shifts. Keep work clothes separate, remove contaminated clothing - launder after open handling of product.
<b>General information</b>	Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

<b>Appearance</b>	Crystalline solid
<b>Physical State</b>	Solid
<b>Color</b>	White
<b>Odor</b>	odorless
<b>Odor threshold</b>	Not applicable
<b>pH</b>	6.4 (1% solution)
<b>Melting point/freezing point</b>	> 100 °C (Decomposes)
<b>Boiling Point/Range</b>	Decomposes on heating
<b>Flash point</b>	Not applicable
<b>Evaporation Rate</b>	No information available
<b>Flammability (solid, gas)</b>	Not flammable
<b>Flammability Limit in Air</b>	Not applicable
<b>Upper flammability limit:</b>	No information available
<b>Lower flammability limit:</b>	No information available
<b>Vapor pressure</b>	6.07E-30 mm Hg at 25°C
<b>Vapor density</b>	No information available
<b>Density</b>	2.48 g/cm <sup>3</sup> (crystal density)
<b>Specific gravity</b>	No information available
<b>Water solubility</b>	5.6 % @ 25 °C
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient</b>	No information available (inorganic)
<b>Autoignition temperature</b>	No evidence of combustion up to 600°C
<b>Decomposition temperature</b>	> 100 °C (assume)
<b>Viscosity, kinematic</b>	No information available (Solid)
<b>Viscosity, dynamic</b>	No information available
<b>Explosive properties</b>	Not explosive
<b>Oxidizing properties</b>	oxidizer
<b><u>Other Information</u></b>	
<b>Molecular weight</b>	270.31
<b>Bulk density</b>	1.30 g/cm <sup>3</sup> (loose)

**10. STABILITY AND REACTIVITY**

**Reactivity** Strong oxidizer. Oxidizer. Contact with other material may cause fire.

**Chemical Stability** Decomposition can occur on exposure to heat or moisture.

**Possibility of Hazardous Reactions** Use of persulfates in chemical reactions requires appropriate precautions and design considerations for pressure and thermal relief.

Decomposing persulfates will evolve large volumes of gas and/or vapor, can accelerate exponentially with heat generation, and create significant and hazardous pressures if contained and not properly controlled or mitigated.

Use with alcohols in the presence of water has been demonstrated to generate conditions that require rigorous adherence to process safety methods and standards to prevent escalation to an uncontrolled reaction.

**Hazardous polymerization** Hazardous polymerization does not occur.

**Conditions to avoid** Heat. (decomposes at 275 °C); Moisture.

**Incompatible materials** Acids, Bases, Halides, Oxidizing agents, Strong reducing agents, Combustible materials.

**Hazardous Decomposition Products** Oxygen which supports combustion; Sulfur oxides.

**11. TOXICOLOGICAL INFORMATION**

Product Information

**Unknown acute toxicity** 0% of the mixture consists of ingredient(s) of unknown toxicity

**LD50 Oral** 1130 mg/kg (rat) (Potassium Persulfate)  
**LD50 Dermal** > 10000 mg/kg (rat) (Potassium Persulfate)  
**LC50 Inhalation** > 42.9 mg/L (rat) (Potassium Persulfate)

**Serious eye damage/eye irritation** Irritating to eyes.  
**Skin corrosion/irritation** Minimally irritating.

**Sensitization** Sensitizing to skin and respiratory system.

Component Information

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation	NOAEL Oral Value
Potassium Persulfate (7727-21-1)	1130 mg/kg (rat)	>10,000 kg/kg (rat)	> 42.9 mg/L (rat)	
Potassium Sulfate (7778-80-5)	= 6600 mg/kg ( Rat )			

Information on toxicological effects

**Symptoms** Symptoms of allergic reaction may include rash, itching, swelling and trouble breathing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

**Carcinogenicity** Did not show carcinogenic effects in animal experiments.

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**Mutagenicity** In vivo tests did not show mutagenic effects.

**Reproductive toxicity** This product is not recognized as reprotox by Research Agencies.

**STOT - single exposure** May cause respiratory irritation.  
**STOT - repeated exposure** Not classified.  
**Subchronic toxicity** Oral (NOAEL) = 131.5 mg/kg bw (Potassium Persulfate)  
Inhalation (NOAEC) = 10.3 mg/m<sup>3</sup> (Ammonium Persulfate)  
Dermal: No data available

**Target organ effects** Eyes, Skin, Respiratory System.

**Aspiration hazard** No information available.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

**Ecotoxicity effects** Not expected to have significant environmental effects, based on data for similar substances.

Potassium Persulfate (7727-21-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Potassium persulfate	96 h LC50	Onchorhyncus mykiss	76.3	mg/L
Potassium persulfate	48 h EC50	Water flea	120	mg/L
Potassium persulfate	72 h EC50	Marine algae (Phaeodactylum tricornutum)	136	mg/L
Potassium persulfate	96 h LC50	Turbot (Scophthalmus maximus)	107.6	mg/L
Potassium persulfate	18 h EC10	Pseudonomas putida	36	mg/L
Potassium persulfate	5 d	Abra Alba	11	mg/L
Potassium persulfate	96 h LC50	Grass shrimp	391	mg/L
Potassium persulfate	24 h EC50	Daphnia magna	635.7	mg/L

**Persistence and degradability** Biodegradability does not pertain to inorganic substances.

**Bioaccumulation** Does not bioaccumulate.

**Mobility** Dissociates into ions.

**Other Adverse Effects** None known.

## 13. DISPOSAL CONSIDERATIONS

**Waste disposal methods** This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

**US EPA Waste Number** D001.

**Contaminated Packaging** Dispose of in accordance with local regulations.

## 14. TRANSPORT INFORMATION

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## DOT

UN/ID no	1492
Proper Shipping Name	Potassium persulfate
Hazard class	5.1
Packing Group	III

## TDG

UN/ID no	1492
Proper Shipping Name	Potassium persulfate
Hazard class	5.1
Packing Group	III

## ICAO/IATA

UN/ID no	1492
Proper Shipping Name	Potassium persulfate
Hazard class	5.1
Packing Group	III

## IMDG/IMO

UN/ID no	1492
Proper Shipping Name	Potassium persulfate
Hazard class	5.1
Packing Group	III

## ADR/RID

UN/ID no	1492
Proper Shipping Name	Potassium persulfate
Hazard class	5.1
Packing Group	III

## ADN

Proper Shipping Name	Potassium persulfate
Hazard class	5.1
Packing Group	III

## 15. REGULATORY INFORMATION

### U.S. Federal Regulations

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

#### SARA 311/312 Hazard Categories

This product has the following hazards that are reportable under The Emergency Planning and Community Right-to-Know rule (EPCRA Tier II):

- Oxidizer
- Acute toxicity
- Serious eye damage/eye irritation
- Skin corrosion/irritation
- Respiratory/skin sensitization
- Specific Target Organ Toxicity (STOT) - Single Exposure

#### Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

#### CERCLA/EPCRA



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This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

**CWC (Chemical Weapons Convention) - Annex on Chemicals** Not applicable

## US State Regulations

### **U.S. State Right-to-Know Regulations**

This product contains the following substances regulated under state Right-to-Know laws:

Chemical name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Potassium Persulfate	X	X	X		X

### **California Proposition 65**

This product does not contain any Proposition 65 chemicals

## CANADA

### **Environmental Emergencies**

This product contains no substances listed under Canada's Environmental Emergency regulations.

### **Canadian National Pollutant Release Inventory**

This product contains no substances reportable under Canada's National Pollutant Release Inventory regulations.

## International Inventories

Chemical name	TSCA (United States)	DSL (Canada)	EINECS/EL INCS (Europe)	ENCS (Japan)	China (IECSC)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)	NZIoC (New Zealand)
Potassium Persulfate 7727-21-1	X	X	231-781-8	X	X	X	X	X	X
Potassium Sulfate 7778-80-5	X	X	231-915-5	X	X	X	X	X	X

All ingredients are directly listed on the active TSCA Inventory

## Mexico

**Mexico - Grade** Slight risk, Grade 1

## 16. OTHER INFORMATION

<b>NFPA</b>	<b>Health Hazards</b> 1	<b>Flammability</b> 0	<b>Stability</b> 1	<b>Special Hazards</b> OX
<b>HMIS</b>	<b>Health Hazards</b> 1	<b>Flammability</b> 0	<b>Physical hazard</b> 1	<b>Special precautions</b> J

### **NFPA/HMIS Ratings Legend**

Severe = 4; Serious = 3; Moderate = 2; Slight = 1; Minimal = 0

OX = Oxidizer

Protection=J (Safety goggles, gloves, apron, combination dust and vapor respirator)

**Revision date:** 2021-02-17  
**Revision note** SDS sections updated: 1.  
**Issuing Date:** 2021-02-09

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Prepared By:

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**End of Safety Data Sheet**