

## SAFETY DATA SHEET Hydrogen Peroxide 50%

**Product Identifier**

**Product Name** Hydrogen Peroxide 50%

**Other means of identification**

**CAS-No** 7722-84-1

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

### 1. PRODUCT AND COMPANY IDENTIFICATION

**Recommended Use:** Potable water treatment: Certified to conform to the requirements of the "NSF / ANSI Standard 60 - Drinking Water Treatment Chemicals - Health Effects"

**Restrictions on Use:** Use as recommended by the label.

### 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
Acute toxicity - Inhalation (Vapors)	Category 4
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Oxidizing Liquids	Category 2

**GHS Label elements, including precautionary statements**

#### EMERGENCY OVERVIEW

**Danger**

**Hazard Statements**

H314 - Causes severe skin burns and eye damage  
 H302 - Harmful if swallowed  
 H332 - Harmful if inhaled  
 H335 - May cause respiratory irritation  
 H272 - May intensify fire; oxidizer



**Precautionary Statements - Prevention**

P271 - Use only outdoors or in a well-ventilated area  
 P260 - Do not breathe mist, vapours or spray.  
 P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection  
 P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
 P220 - Keep/Store away from clothing/flammable materials/combustibles  
 P221 - Take any precaution to avoid mixing with combustibles/flammables

**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  
 P310 - Immediately call a POISON CENTER or doctor

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P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

P363 - Wash contaminated clothing before reuse

P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing

P312 - Call a POISON CENTER or doctor if you feel unwell

P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting

P310 - Immediately call a POISON CENTER or doctor

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

### **Hazards not otherwise classified (HNOC)**

No hazards not otherwise classified were identified.

### **Other Information**

Keep container in a cool place out of direct sunlight. Store only in vented containers. Do not store on wooden pallets. Do not return unused material to its original container. Avoid contamination - Contamination could cause decomposition and generation of oxygen which may result in high pressure and possible container rupture. Empty drums should be triple rinsed with water before discarding.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula	HO - OH		
	Chemical name	CAS-No	Weight %
	Hydrogen peroxide	7722-84-1	50
	Water	7732-18-5	50

Occupational exposure limits, if available, are listed in section 8

## 4. FIRST AID MEASURES

<b>Eye Contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Seek immediate medical attention/advice.
<b>Skin Contact</b>	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for further treatment advice.
<b>Inhalation</b>	Move to fresh air. If person is not breathing, contact emergency medical services, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.
<b>Ingestion</b>	Rinse mouth. Do not induce vomiting. If conscious, give 2 glasses of water. Get immediate medical attention. Never give anything by mouth to an unconscious person.
<b>Most important symptoms and effects, both acute and delayed</b>	Hydrogen Peroxide irritates respiratory system and, if inhaled, may cause inflammation and pulmonary edema. The effects may not be immediate. Overexposure symptoms are coughing, giddiness and sore throat. In case of accidental ingestion, necrosis may result from mucous membrane burns (mouth, esophagus and stomach). Oxygen rapid release may cause stomach swelling and hemorrhaging, which may product major, or even fatal, injury to organs if a large amount has been ingested. In case of skin contact, may cause burns, erythema, blisters or even necrosis.
<b>Indication of immediate medical attention and special treatment needed, if necessary</b>	Hydrogen peroxide at these concentrations is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, and the unlikelihood of systemic effects, attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is a remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

## 5. FIRE-FIGHTING MEASURES

<b>Suitable Extinguishing Media</b>	Water. Do not use any other substance.
<b>Specific Hazards Arising from the Chemical</b>	In closed unventilated containers, risk of rupture due to the increased pressure from decomposition. Contact with combustible material may cause fire

## **Hydrogen Peroxide 50**

### **Hazardous Combustion Products**

On decomposition product releases oxygen which may intensify fire.

### **Explosion data**

#### **Sensitivity to Mechanical Impact**

Not sensitive.

#### **Sensitivity to Static Discharge**

Not sensitive.

### **Protective equipment and precautions for firefighters**

Use water spray to cool fire exposed surfaces and protect personnel. Move containers from fire area if you can do it without risk. As in any fire, wear self-contained breathing apparatus and full protective gear.

## **6. ACCIDENTAL RELEASE MEASURES**

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### Personal Precautions

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Isolate and post spill area. Keep people away from and upwind of spill/leak. Eliminate all sources of ignition and remove combustible materials.

### Other

Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in fire.

### Environmental Precautions Methods for Containment

See Section 12 for additional Ecological Information.

Dike to collect large liquid spills. Stop leak and contain spill if this can be done safely. Small spillage: Dilute with large quantities of water.

### Methods for cleaning up

Flush area with flooding quantities of water. Hydrogen peroxide may be decomposed by adding sodium metabisulfite or sodium sulfite after diluting to about 5%.

## 7. HANDLING AND STORAGE

### Handling

Use only in well-ventilated areas. Keep/Store away from clothing/ combustible materials. Wear personal protective equipment. Never return unused hydrogen peroxide to original container. Contamination may cause decomposition and generation of oxygen gas which could result in high pressures and possible container rupture. Empty drums should be triple rinsed with water before discarding. Utensils used for handling hydrogen peroxide should only be made of glass, stainless steel, aluminum or plastic. Pipes and equipment should be passivated before first use. Hydrogen peroxide should be stored only in vented containers and transferred only in a prescribed manner.

### Storage

Keep containers in cool areas out of direct sunlight and away from combustibles. Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into work environment. Containers must be vented. Keep/store only in original container. Store rooms or warehouses should be made of non-combustible materials with impermeable floors. In case of release, spillage should flow to safe area. Containers should be visually inspected on a regular basis to detect any abnormalities (swollen drums, increases in temperature, etc.).

### Incompatible products

Combustible materials. Copper alloys, galvanized iron. Strong reducing agents. Heavy metals. Iron. Copper alloys. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

#### Exposure Guidelines

Ingredients with workplace control parameters.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH	Mexico
Hydrogen peroxide 7722-84-1	TWA: 1 ppm	TWA: 1 ppm TWA: 1.4 mg/m <sup>3</sup>	IDLH: 75 ppm TWA: 1 ppm TWA: 1.4 mg/m <sup>3</sup>	Mexico: TWA 1 ppm Mexico: TWA 1.5 mg/m <sup>3</sup> Mexico: STEL 2 ppm Mexico: STEL 3 mg/m <sup>3</sup>
Chemical name	British Columbia	Quebec	Ontario TWAEV	Alberta
Hydrogen peroxide 7722-84-1	TWA: 1 ppm	TWA: 1 ppm TWA: 1.4 mg/m <sup>3</sup>	TWA: 1 ppm	TWA: 1 ppm TWA: 1.4 mg/m <sup>3</sup>

### Appropriate engineering controls

#### Engineering measures

Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation.

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

#### Eye/Face Protection

Use chemical splash-type monogoggles and a full-face shield made of polycarbonate, acetate, polycarbonate/acetate, PETG or thermoplastic.

#### Skin and Body Protection

For body protection wear impervious clothing such as an approved splash protective suit made of SBR rubber, PVC (PVC Outershell w/Polyester Substrate), Gore-Tex (Polyester trilaminate w/Gore-Tex), or a specialized HAZMAT Splash or Protective Suite (Level A, B, or C). For foot protection, wear approved boots made of NBR, PVC, Polyurethane, or

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	neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboot made of nylon or nylon blends. DO NOT USE cotton, wool or leather as these materials react rapidly with higher concentrations of hydrogen peroxide. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles, can cause the material to ignite and result in a fire.
<b>Hand Protection</b>	For hand protection, wear approved gloves made of nitrile, PVC, or neoprene. DO NOT use cotton, wool or leather for these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Thoroughly rinse the outside of gloves with water prior to removal. Inspect regularly for leaks.
<b>Respiratory Protection</b>	If concentrations in excess of 10 ppm are expected, use NIOSH/DHHS approved self-contained breathing apparatus (SCBA) or other approved air-supplied respirator (ASR) equipment (e.g., a full-face airline respirator (ALR)). DO NOT use any form of air-purifying respirator (APR) or filtering facepiece (dust mask), especially those containing oxidizable sorbants such as activated carbon.
<b>Hygiene measures</b>	Avoid breathing vapors, mist or gas. Clean water should be available for washing in case of eye or skin contamination. .
<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>	Clear, colorless liquid
<b>Physical State</b>	Liquid
<b>Color</b>	Colorless
<b>Odor</b>	odorless
<b>Odor threshold</b>	Not applicable
<b>pH</b>	<= 3.0
<b>Melting point/freezing point</b>	-52 °C
<b>Boiling Point/Range</b>	114 °C
<b>Flash point</b>	Not flammable
<b>Evaporation Rate</b>	> 1 (n-butyl acetate=1)
<b>Flammability (solid, gas)</b>	Not flammable
<b>Flammability Limit in Air</b>	Not applicable
Upper flammability limit:	
Lower flammability limit:	
<b>Vapor pressure</b>	18 mm Hg @ 30 °C
<b>Vapor density</b>	No information available
<b>Density</b>	1.2 @ 20 °C
<b>Specific gravity</b>	1.2
<b>Water solubility</b>	completely soluble
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient</b>	log Kow = -1.5 @ 20 °C
<b>Autoignition temperature</b>	Not combustible
<b>Decomposition temperature</b>	100 °C (adiabatic)
<b>Viscosity, kinematic</b>	1.17 cP @ 20 °C
<b>Viscosity, dynamic</b>	No information available
<b>Explosive properties</b>	No information available
<b>Oxidizing properties</b>	Strong oxidizer
<b>Molecular weight</b>	34
<b>Bulk density</b>	Not applicable

## 10. STABILITY AND REACTIVITY

<b>Reactivity</b>	Reactive and oxidizing agent.
<b>Chemical Stability</b>	Stable under normal conditions. Decomposes on heating. Stable under recommended storage conditions.
<b>Possibility of Hazardous Reactions</b>	Contact with organic substances may cause fire or explosion. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.
<b>Hazardous polymerization</b>	Hazardous polymerization does not occur.
<b>Conditions to avoid</b>	Excessive heat; Contamination; Exposure to UV-rays; pH variations.

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### Incompatible materials

Combustible materials. Copper alloys, galvanized iron. Strong reducing agents. Heavy metals. Iron. Copper alloys. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

**Hazardous Decomposition Products** Oxygen which supports combustion. Liable to produce overpressure in container.

## 11. TOXICOLOGICAL INFORMATION

### Product Information

#### LD50 Oral

50% solution: LD50 > 225 mg/kg bw (rat)

35 % solution: LD50 1193 mg/kg bw (rat)

70 % solution: LD50 1026 mg/kg bw (rat)

#### LD50 Dermal

35% solution: LD50 > 2000 mg/kg bw (rabbit)

70 % solution: LD50 9200 mg/kg bw (rabbit)

#### LC50 Inhalation

50% solution: LC50 > 170 mg/m<sup>3</sup> (rat) (4-hr)

Hydrogen Peroxide vapors: LC0 9400 mg/m<sup>3</sup> (mouse) (5 - 15 minutes)

Hydrogen Peroxide vapors: LC50 > 2160 mg/m<sup>3</sup> (mouse)

#### Serious eye damage/eye irritation

Corrosive. Risk of serious damage to eyes.

#### Skin corrosion/irritation

Corrosive to skin. Causes severe burns.

#### Sensitization

Did not cause sensitization on laboratory animals.

### Information on toxicological effects

#### Symptoms

Vapors, mists, or aerosols of hydrogen peroxide can cause upper airway irritation, inflammation of the nose, hoarseness, shortness of breath, and a sensation of burning or tightness in the chest. Prolonged exposure to concentrated vapor or to dilute solutions can cause irritation and temporary bleaching of skin and hair. Exposure to vapor, mist, or aerosol can cause stinging pain and tearing of eyes.

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

#### Carcinogenicity

This product contains hydrogen peroxide. The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence for carcinogenicity of hydrogen peroxide in humans, but limited evidence in experimental animals (Group 3 - not classifiable as to its carcinogenicity to humans). The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a 'Confirmed Animal Carcinogen with Unknown Relevance to Humans' (A3).

Chemical name	ACGIH	IARC	NTP	OSHA
Hydrogen peroxide 7722-84-1	A3	3		

#### Mutagenicity

This product is not recognized as mutagenic by Research Agencies  
In vivo tests did not show mutagenic effects

#### Reproductive toxicity

This product is not recognized as reprotox by Research Agencies. No toxicity to reproduction in animal studies.

#### STOT - single exposure

May cause respiratory irritation.

#### STOT - repeated exposure

Not classified.

#### Target organ effects

Eyes, Respiratory System, Skin.

#### Aspiration hazard

Aspiration risk: may cause lung damage if swallowed.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ecotoxicity effects

Hydrogen peroxide is naturally produced by sunlight (between 0.1 and 4 ppb in air and 0.001 to 0.1 mg/L in water). Not expected to have significant environmental effects.

Hydrogen peroxide (7722-84-1)				
Active Ingredient(s)	Duration	Species	Value	Units
Hydrogen peroxide	96 h LC50	Fish Pimephales promelas	16.4	mg/L
Hydrogen peroxide	72 h LC50	Fish Leuciscus idus	35	mg/L
Hydrogen peroxide	48 h EC50	Daphnia pulex	2.4	mg/L
Hydrogen peroxide	24 h EC50	Daphnia magna	7.7	mg/L

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Hydrogen peroxide	72 h EC50	Algae Skeletonema costatum	1.38	mg/L
Hydrogen peroxide	21 d NOEC	Daphnia magna	0.63	mg/L

<b>Persistence and degradability</b>	Hydrogen peroxide in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. Hydrogen peroxide half-life in freshwater ranged from 8 hours to 20 days, in air from 10 - 20 hours, and in soils from minutes to hours depending upon microbiological activity and metal contamination.
<b>Bioaccumulation</b>	Material may have some potential to bioaccumulate but will likely degrade in most environments before accumulation can occur.
<b>Mobility</b>	Will likely be mobile in the environment due to its water solubility but will likely degrade over time.
<b>Other Adverse Effects</b>	Decomposes into oxygen and water. No adverse effects.

### 13. DISPOSAL CONSIDERATIONS

<b>Waste disposal methods</b>	Dispose of in accordance with local regulations. Can be disposed as waste water, when in compliance with local regulations.
<b>US EPA Waste Number</b>	D001 D003
<b>Contaminated Packaging</b>	Dispose of in accordance with local regulations. Drums - Empty as thoroughly as possible. Triple rinse drums before disposal. Avoid contamination; impurities accelerate decomposition. Never return product to original container.

### 14. TRANSPORT INFORMATION

#### DOT

<b>UN/ID no</b>	UN 2014
<b>Proper Shipping Name</b>	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
<b>Hazard class</b>	5.1
<b>Subsidiary class</b>	8
<b>Packing Group</b>	II

#### TDG

<b>UN/ID no</b>	UN 2014
<b>Proper Shipping Name</b>	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
<b>Hazard class</b>	5.1
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<b>Packing Group</b>	II

#### ICAO/IATA

Hydrogen peroxide (>40%) is forbidden on Passenger and Cargo Aircraft. Air regulation permit shipment of Hydrogen Peroxide (<=40%) in non-vented containers for Air Cargo Only aircraft, as well as for Passenger and Cargo aircraft. HOWEVER, all Hydrogen Peroxide containers are vented and therefore, air shipments of H2O2 are not permitted. IATA air regulations state that venting of packages containing oxidizing substances is not permitted for air transport.

#### IMDG/IMO

<b>UN/ID no</b>	UN 2014
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<b>Hazard class</b>	5.1
<b>Subsidiary Hazard Class</b>	8
<b>Packing Group</b>	II

#### **OTHER INFORMATION**

Protect from physical damage. Keep drums in upright position. Drums should not be stacked in transit. Do not store drums on wooden pallets.

### 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**

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Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

### 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

Chemical name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	SARA RQ
Hydrogen peroxide 7722-84-1		1000 lb	

Hydrogen Peroxide RQ is for concentrations of > 52% only

### International Inventories

Component	TSCA (United States)	DSL (Canada)	EINECS/EL INCS (Europe)	ENCS (Japan)	China (IECS C)	KECL (Korea)	PICCS (Philippines)	AICS (Australia)	NZIoC (New Zealand)
Hydrogen peroxide 7722-84-1 (50)	X	X	X	X	X	X	X	X	X

### Mexico - Grade

Serious risk, Grade 3

### CANADA

#### WHMIS Hazard Class

C - Oxidizing materials  
D1B - Toxic materials  
E - Corrosive material  
F - Dangerously reactive material



## 16. OTHER INFORMATION

NFPA	Health Hazards 3	Flammability 0	Stability 1	Special Hazards OX
HMIS	Health Hazards 3	Flammability 0	Physical hazard 1	Personal Protection H

### NFPA/HMIS Ratings Legend

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

Special Hazards: OX = Oxidizer

Protection = H (Safety goggles, gloves, apron, the use of supplied air or SCBA respirator is required in lieu of a vapor cartridge respirator)

### Uniform Fire Code

Oxidizer: Class 2--Liquid

### Revision date:

2015-05-08

### Revision note

Initial Release