

Hydrogen Peroxide (31%)

Date of Preparation: August 2003

Revision: 2

Section 1 - Chemical Product and Company Identification**Product/Chemical Name:** Hydrogen Peroxide (31%)**Chemical Formula:** H₂O₂**Other Designations:** Hydrogen dioxide solution, peroxide, hydroperoxide, hydrogen peroxide solution.**General Use:** Electroplating; oxidation and reduction; and refining and cleaning metals.**Manufacturer:** Kanto Corporation, 13424 N. Woodrush Way, Portland, OR 97203**Non-Emergency Contact:** Customer Service, Phone (503) 283-0405, FAX (503) 240-0409**For All Transportation Emergencies Call CHEMTREC 1-800-424-9300****Section 2 - Composition / Information on Ingredients**

Ingredient Name	CAS Number	% wt
Hydrogen Peroxide	7722-84-1	31
De-Ionized Water	7732-18-5	69

Occupational Exposure Limits

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH
	TWA	STEL	TWA	STEL	TWA	STEL	IDLH
Hydrogen Peroxide	1 ppm 1.4 mg/m ³	none estab.	1 ppm 1.4 mg/m ³	none estab.	1 ppm 1.4 mg/m ³	none estab.	75 ppm

Section 3 - Hazards Identification**☆☆☆☆☆ Emergency Overview ☆☆☆☆☆**

Corrosive. Strong oxidizer. Colorless liquid with a slight acid odor at high concentrations. Causes severe burns to skin and eyes, irritation of respiratory tract, and burning of the mouth and digestive system when ingested. Avoid contact with heat, metals, and combustible material.

HMIS	
H	2
F	0
R	1
PPE†	
	†Sec. 8

Potential Health Effects**Primary Entry Routes:** inhalation, skin and eye contact, ingestion**Target Organs:** eyes, skin, and respiratory system**Acute Effects**

Inhalation: Irritation of the nose, throat and respiratory tract followed by headache, nausea, shortness of breath, and coughing. High concentrations or extended exposure can cause vomiting, nausea, muscle weakness and breathing difficulties.

Eye: Burning, watering, redness, ulceration of the cornea and blindness due to severe deep burns.

Skin: Causes severe burns and tissue damage, with the possibility of blisters, and white spots on the skin.

Ingestion: Burning of the mouth, throat, esophagus and digestive tract distention. Can cause convulsions and coma leading to cerebral edema and death. Ingestion can cause oxygen bubbles in the blood resulting in shock.

Chronic Exposure: Lung damage and bleaching of the hair.

Carcinogenicity: IARC Group 3 carcinogen.

Section 4 - First Aid Measures

Eye Contact: Immediately flush eyes with running water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek medical attention immediately, preferably an eye specialist. Skilled personnel should only undertake removal of contact lenses after an eye injury.

Skin Contact: Immediately flush affected areas with large quantities of water for at least 15 minutes while removing contaminated clothing and shoes. Seek immediate medical attention. Wash clothing thoroughly before reuse.

Ingestion: If victim is conscious, give large quantities of water. Seek immediate medical attention. Never give anything by mouth to an unconscious or convulsing person.

Inhalation: Remove exposed person to uncontaminated atmosphere and support breathing. If not breathing, give artificial respiration. Seek immediate medical attention.

Note to Physicians: If swallowed, large amounts of oxygen may be released quickly. The distention of the stomach or esophagus may be injurious so that the insertion of a gastric tube may be advisable. Effects may be delayed; keep victim under observation.

Section 5 - Fire-Fighting Measures

Flash Point: Nonflammable

LEL: N/A

UEL: N/A

Extinguishing Media: Use water spray or fog only. Flooding quantities of water only in the early stages of a fire. Do not use halogenated fire extinguishing agents.



General Fire Hazards/Hazardous Combustion Products: Non-combustible liquid. Will not burn but increases intensity of fire due to release of oxygen and hydrogen gases. Contact with readily oxidizable organic material may cause ignition and fire. Heating may cause expansion or decomposition leading to violent rupture of containers.

Unusual Fire or Explosion Hazards: Can become explosive in confined spaces. Hydrogen peroxide accelerates the burning of combustibles. Can cause fire or explosion when heated or upon contact with metal.

Fire Incompatibility: Avoid contact with organic materials or compounds, particularly finely divided combustible materials as ignition may result. Violent catalytic decomposition will occur in contact with certain metals such as iron, copper, chromium, brass, bronze, lead, silver, manganese, or their salts.

Fire-Fighting Instructions: Contact the fire department. May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Use fire-fighting procedures suitable for surrounding area. Cool fire exposed containers with water spray from a protected location. Do not approach containers suspected to be hot. If safe to do so, remove containers from path of fire. Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Fire may produce toxic thermal decomposition products; wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

Small Spills: Wear protective clothing and respiratory protection. Remove all ignition sources. Work with non-sparking tools and equipment. Carefully dilute spill with large quantities of water. Do not absorb with combustible absorbents. Small quantities may be discharged to sewer with a large excess of water.

Large Spills: May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Extinguish all ignition sources. Work with non-sparking tools and equipment. Prevent spillage from entering drains or waterways. Absorb product with sand, earth or vermiculite. Collect residues and place in labeled plastic containers with vented lids. Wash spill area with large quantities of water. After clean up of operations, decontaminate and launder all protective clothing and equipment before storing and reusing.

Regulatory Requirements: Follow applicable federal, state, and local regulations and guidelines.

Section 7 - Handling and Storage

Handling Precautions: Avoid all personal contact and wear protective clothing when risk of exposure occurs. Handle and open container with care as pressure may have developed inside. Observe manufacturer's storing and handling recommendations. Avoid smoking, bare lights, heat or ignition sources and contact with incompatible materials. Steel, brass, bronze and copper equipment should not be used due to reactivity.

Recommended Storage Methods: This container is vented to relieve possible bursting due to excessive internal pressure. Store in original vented container. Avoid contamination from any source including metals, dust and organic material. Such contamination may cause rapid decomposition, generation of large quantities of oxygen gas and high pressures. Store in a cool dry, well-ventilated area out of direct sunlight.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.

Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit-testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.
Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.
Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Liquid	Water Solubility: Miscible
Appearance and Odor: Clear, colorless; slightly pungent, irritating odor.	Boiling Point: 225°F (107°C)
Vapor Pressure: 25 @ 30 °C (86F)	Freezing/Melting Point: -15°F (-26°C)
Vapor Density (Air=1): 1.17	Evaporation Rate (BuAc=1): >1
Formula Weight: 34.0	pH: ~ 3.3
	Specific Gravity (H₂O=1, at 4 °C): 1.11
	% Volatile: 70%

Section 10 - Stability and Reactivity

Stability: Avoid any contamination of materials, as hydrogen peroxide is very reactive and potentially hazardous. Hydrogen peroxide is decomposed by alkalis and even dust or rust. Presence of heat source, contamination, or direct sunlight may cause accelerate decomposition. Solutions of hydrogen peroxide decompose slowly releasing oxygen. Containers may be pressurized and should be vented.

Chemical Incompatibilities: Keep separate from combustible materials, particularly finely divided combustible materials and reducing agents. Keep away from alkalis, brass copper and copper alloys, galvanized iron and iron salts, ammonia and its carbonates, alcohols, iodides, limewater, sulfites, powdered metals, permanganates, organic compounds and any other easily oxidizable materials.

Conditions to Avoid: Increasing temperatures which cause more rapid evolution of oxygen gas; direct sunlight which causes partial decomposition.

Hazardous Decomposition Products: Thermal oxidative decomposition of hydrogen peroxide can produce hydrogen and oxygen gas, which can support combustion.

Section 11- Toxicological Information*

Acute Effects:

Mouse, intravenous, LD₅₀: >50 mg/kg
 Rabbit, oral, LD₅₀: 820 mg/kg
 Human, Male, LDLo: 1429 mg/kg
 Rat, skin, LD₅₀: 3 gm/kg

Chronic Exposure: Lung damage, bleaching of hair.

Carcinogenicity: IARC Group 3, gastrointestinal tumors

Mutagenicity: DNA damage and inhibition, sister chromatid exchange, mutation in somatic cells.

*See NIOSH, RTECS (MX 0899000), for additional toxicity data.

Section 12 - Ecological Information

Ecotoxicity: Aquatic toxicity: > 40 ppm/fingerling trout/salt water.

Environmental Fate: Hydrogen peroxide rapidly breaks down into hydrogen and oxygen in the environment.

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Dilute with a large quantity of water and allow to decompose before discharging into wastewater treatment system. Consult manufacturer for recycling options.

Disposal Regulatory Requirements: Follow applicable Federal, state, and local regulations.

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Hydrogen peroxide, aqueous solution with 31 percent hydrogen peroxide

Hazard Class: 5.1

ID No.: 2014

Packing Group: II

Label: 5.1, 8

Special Provisions (172.102):

A2, A3, A6, B53, IB2, IP5, T7, TP2, TP6, TP24, TP37

Packaging Authorizations

Exceptions: None

Non-bulk Packaging: 173.202

Bulk Packaging: 173.243

Quantity Limitations

Passenger, Aircraft, or Railcar: 1 L

Cargo Aircraft Only: 5 L

Vessel Stowage Requirements

Vessel Stowage: D

Other: 25, 66, 75, 106

Emergency Response Guide #140

Section 15 - Regulatory Information**EPA Regulations:**

RCRA Hazardous Waste Number (40 CFR 261.22): D002

CERCLA Hazardous Substance (40 CFR 302.4) unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ): Not listed

SARA Toxic Chemical (40 CFR 372.65): Not listed

SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed

TSCA: Listed

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Listed - 1ppm and 1mg/m³

Section 16 - Other Information

Revision Notes: Revision of Sections 3, 11, 14, and 15

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