

Chemical Safety Technical Data Sheet

Product Name:Hydrogen Peroxide

Revision Date:August 2025

First published:June 2019 30 Sun

Developed in accordance with GB/T 16483 and GB/T 17519

SDS Number: ZLJL-168

Edition : D

Part 1: Identification of Chemicals and Enterprises

Chinese name of the chemical:hydrogen peroxide; double oxygen water

English name of the chemical:hydrogen peroxide

Molecular formula:H₂O₂ **Relative molecular mass:**34.01

Structure: HO—OH

Recommended and restricted uses of the chemical:for bleaching, pharmaceutical applications, and as an analytical reagent.

Part II Overview of Hazards

Emergency Overview:Can intensify combustion: Oxidizer. Harmful when ingested or inhaled; causes severe skin burns and eye injuries.**GHS Hazard Classification:**

Oxidizing liquids:Category 2

Acute toxicity – Oral:Category 4

Acute toxicity – Inhalation:
Category 4 **Skin corrosion/irritation:**Category 1A **Severe eye injury/eye irritation:**Cat-
egory 1

Specific target organ toxicity – single exposure:Category 3 (respiratory irritation)

Hazard to aquatic environment – Acute hazard:Category 3

Tag Elements:

figurative graph :



Warning phrase:Hazard

Hazard Description:May intensify combustion: Oxidizing agent. Harmful when ingested or inhaled; causes severe skin burns and eye injuries; may irritate the respiratory tract; harmful to aquatic organisms.**Prevention Measures:**

【 preventive measure 】

- Keep away from heat sources. Store separately from clothing and other flammable materials. Take all preventive measures to avoid mixing with flammable substances. Wear fire-resistant or flame-retardant clothing.
- Avoid contact with eyes and skin; thoroughly rinse after use.
- No eating, drinking, or smoking is permitted in the workplace.
- Avoid exposure to vapors or mist. Operate only outdoors or in well-ventilated areas.
- Wear protective gloves, protective clothing, protective goggles, and a face shield. Discharge into the environment is prohibited.

[Accident Response]

- In the event of a large-scale fire involving extensive combustion: Evacuate the area immediately. Due to the risk of explosion, extinguish the fire from a distance. During firefighting operations, select an appropriate fire extinguishing agent based on the cause of the fire.
- Inhalation: Move the patient to an area with fresh air, have them rest in a position that facilitates breathing. If discomfort occurs, contact the poison control center or seek medical attention.

·Skin (or hair) contact: If the substance splashes onto clothing, immediately rinse the contaminated clothing and skin thoroughly with plenty of water, then remove the garment. Alternatively, promptly remove all contaminated clothing, wash the skin with water, and take a shower. Contaminated clothing must be washed before reuse.

·Eye contact: Rinse carefully with water for several minutes. If contact lenses are worn and can be easily removed, remove them and continue rinsing.

·Administration: Rinse the mouth; do not induce vomiting. If discomfort occurs, immediately contact the poison control center or seek medical attention.

【 safe storage 】

·Lock and store securely.

[Disposal of Waste]

·This product, its contents, and the container shall be disposed of in accordance with national and local regulations.

Physical and chemical hazards:Promotes combustion. May cause explosions when mixed with flammable materials. poses explosion risks when heated in confined spaces.

Health Hazards:Inhalation of its vapor or mist causes severe irritation to the respiratory tract; excessive exposure may lead to pneumonia or pulmonary edema. Direct contact with the liquid can result in irreversible damage or even blindness. Skin contact may cause burns. Oral ingestion may induce abdominal pain, chest pain, dyspnea, vomiting, transient motor and sensory disturbances, and elevated body temperature. In rare cases, visual impairment, epileptic seizures, or mild paralysis may occur. Prolonged exposure may lead to contact dermatitis.

Environmental hazards:Harmful to aquatic organisms.

Part III: Composition/Composition Information

√matter		Mixture
Component	Concentration	CAS No.
Perhydrol	3.0%-50.0%	7722-84-1

Part IV Emergency Management Measures

Inhalation:Immediately remove the individual from the area to fresh air. Keep the airway clear. If breathing is difficult, administer oxygen. In case of respiratory or cardiac arrest, perform cardiopulmonary resuscitation (CPR) immediately. Seek medical attention.

Skin contact:Immediately remove contaminated clothing and rinse thoroughly with plenty of running water for at least 15 minutes. Seek medical attention.

Eye contact:Immediately open the eyelids and rinse thoroughly with running water or saline solution for 5–10 minutes. Seek medical attention.

Ingestion:Rinse the mouth with water; do not induce vomiting. Administer milk or egg white. Seek medical attention.

Advice for rescuers:Use personal protective equipment as needed.

Special note for physicians:Provide symptomatic treatment.

Part V Fire Safety Measures

Fire extinguishing agent:This product is non-flammable. Select an appropriate fire extinguishing agent based on the cause of ignition.

Special Hazard:While non-flammable in itself, hydrogen peroxide can react with flammable substances, releasing large amounts of heat and oxygen that may cause fires or explosions. It is most stable at a pH range of 3.5–4.5 and decomposes readily in alkaline solutions; decomposition also occurs under intense light, particularly short-wave radiation. Rapid decomposition begins when heated above 100°C. Hydrogen peroxide forms explosive mixtures with various organic compounds such as sugars, starches, alcohols, and petroleum products, which can explode upon impact, heating, or electric discharge. Contact with many inorganic compounds or impurities causes rapid decomposition, generating significant heat, oxygen, and water vapor. Most heavy metals (e.g., iron, copper, silver, lead, mercury, zinc, cobalt, nickel, chromium, manganese) along with their oxides and salts act as active catalysts; dust, cigarette ash, carbon powder, and rust can also accelerate decomposition. Hydrogen peroxide concentrations exceeding 74% may cause gas-phase explosions in sealed containers with suitable ignition sources or temperatures.

Fire Extinguishing Precautions and Protective Measures:Firefighters must wear gas masks and extinguish the fire from a safe distance downwind. Move the container to an open area whenever possible. Spray water to keep the container cool until the fire is fully extinguished. Evacuate immediately if the container suddenly emits abnormal sounds or exhibits unusual behavior. Do not cover the container with sand or soil.

Part VI: Emergency Response to Leaks

Protective measures, protective equipment, and emergency response procedures for personnel:Establish a containment zone based on the affected areas influenced by liquid flow and vapor dispersion; unauthorized individuals should evacuate from downwind or upwind directions to a safe area. Emergency responders are advised to wear positive-pressure self-contained breathing apparatus, corrosion-resistant and chemical-resistant protective clothing, and chloroprene gloves. Keep away from flammable materials (e.g., wood, paper, oils). Efforts should be made to contain the leakage source whenever possible.

Environmental protection measures:Prevent leaks from entering water bodies, sewers, basements, or confined spaces.

Methods for containment and removal of leaked chemicals, as well as the disposal materials used:

Minor leakage: Absorb with sand, vermiculite, or other inert materials. Alternatively, flush with ample water; the wash solution should be diluted before discharge into the wastewater system.

Massive leakage: Construct a levee or excavate a pit for containment. Apply spray water to cool and dilute the vapor, protect personnel at the scene, and dilute the leaked substance into a non-flammable state. Transfer the material using pumps to tankers or specialized collection containers.

Part VII: Handling, Storage and Disposal

Operating Precautions:Perform operations in a sealed environment with adequate ventilation. Operators must undergo specialized training and strictly adhere to operating procedures. It is recommended that operators wear self-suction filtering gas masks (full-face type), polyethylene protective clothing, and chloroprene gloves. Keep away from sources of ignition and heat; smoking is strictly prohibited in the workplace. Avoid contact with flammable or combustible materials. Prevent vapor leakage into the workplace air. Avoid contact with reducing agents and active metal powders. Handle with care during transportation to prevent damage to packaging and containers. Equip with appropriate types and quantities of fire extinguishers and leak response equipment. Empty containers may still contain hazardous residues.

Storage Precautions:Store in a dedicated warehouse that is cool, dry, and well-ventilated. Keep away from sources of ignition and heat. Maintain warehouse temperature below 30°C and relative humidity below 80%. Ensure containers remain sealed. Store separately from flammable materials, reducing agents, active metal powders, etc.; avoid mixing. The storage area should be equipped with leak response equipment and appropriate containment materials.

Part VIII Contact Control/Personal Protection

Occupational exposure limits:China PC-TWA: 1.5 mg/m³.
United States (ACGIH) TLV-TWA: 1 ppm.

Biological contact limit:No standard established.

Monitoring Methods:Determination of toxic substances in air: Titanium tetrachloride spectrophotometry. Biological monitoring testing methods: No established standards.

Process Control:The production process is enclosed with comprehensive ventilation. Safe shower and eye-wash facilities are provided.

Personal Protective Equipment:

Respiratory protection:When exposure to its vapor is possible, a filtered respirator (full-face mask) should be worn.

Eye protection:Already provided under respiratory system protection.

Skin and body protection:Wear a protective, gas-resistant suit.

Hand protection:Wear rubber gloves.

Part IX: Physical and Chemical Properties – Appearance and Characteristics:A colorless, transparent liquid with a faint, distinctive odor.

pH value: No data available	Melting point (°C): -0.4
Boiling point (°C): 150.2	Relative density (water = 1): 1.46 (anhydrous)
Relative vapor density (air = 1): 1	Saturation vapor pressure (kPa): 0.67 (30°C)
Combustion heat (kJ/mol): No data	Critical temperature (°C): No data
Critical pressure (MPa): 20.99	Octanol/water partition coefficient: -1.36
Flash point (°C): Not applicable	Self-ignition temperature (°C): Not applicable
Lower explosive limit (%): Not applicable	Explosion Limit (%): Not applicable
Decomposition temperature (°C): No data	Viscosity (mPa·s): No data
Solubility: Soluble in water, ethanol, and ether; insoluble in benzene and petroleum ether.	

Part 10: Stability and Reactivity

Stability:Unstable.

Hazard Response:Contact with strong reducing agents, flammable or combustible materials, or other incompatible substances poses a risk of fire and explosion.

Conditions to avoid exposure:strong light, heat, impact.

Contraindications:flammable or combustible substances, strong reducing agents, copper, iron, iron salts, zinc, and active metal powders.

Dangerous decomposition products:oxygen, water.

Part XI Toxicological Information

Acute toxicity:LD₅₀:376 mg/kg at a concentration of 90% (oral administration in rats).

Skin irritation or corrosion:non-avaible 。

Eye irritation or corrosion:In rabbits via the eye: 90%,1 mg; severe irritation.

Respiratory or skin allergy:non-avaible 。

Mutagenicity of germ cells:Microbial mutagenicity: Salmonella typhimurium, 6 μg per plate; Sister chromatid exchange: Hamster lung cells, 353 μmol/L; DNA damage: Human fibroblasts, 28 μmol/L; human lymphocytes, 100 μmol/L; Non-programmed DNA synthesis: Human fibroblasts, 1 mmol/L.

Carcinogenicity:IARC's carcinogenicity assessment: Group 3 – current evidence does not allow classification of human carcinogenicity; insufficient evidence for carcinogenicity in humans and animals.

Reproductive toxicity:No data available.

Specific target organ system toxicity – single exposure:No data available.

Specific target organ system toxicity – repeated exposure:No data available.

Inhalation hazards:No data available.

Part XII: Ecological Information

Ecotoxicity:LC₅₀:37.4 mg/L (96 h) (catfish); 16.4 mg/L (96 h) (black-headed loach); 42 mg/L (48 h) (carassius carp).
EC₅₀:2.4 mg/L (96 h) (water flea).

Durability and Degradability:
Biodegradability: No data available.
Non-biodegradability: No data available.

Potential bioaccumulation:No data available.

Mobility in soil:No data available.

Part 13: Waste Disposal

Waste chemicals:After dilution with water, decomposition occurs releasing oxygen; once fully decomposed, the waste liquid is discharged into the wastewater system.

Contaminated packaging:Return the container to the manufacturer or dispose of it in accordance with national and local regulations.

Disposal precautions:Refer to relevant national and local regulations before disposal.

Part 14: Transportation Information

United Nations dangerous goods number (UN number):2014 (20% ≤ content <60%)

United Nations Transport Name:Hydrogen peroxide aqueous solution (20% ≤ content <60%)

United Nations hazard classification:5.1, 8

Packaging category:Class II packaging (content of 20% ≤ content <60%)



packing mark :

Marine pollutants:No

Transportation Precautions:Hydrogen peroxide must be supplemented with sufficient stabilizers. Hydrogen peroxide with a concentration ≥40% requires approval from the relevant authorities during transportation. Its transport must be conducted using fully steel-made containers in accordance with regulations. Reagent packaging (concentration <40%) may be transported as less-than-container load (LCL). Designed containers such as barrels, tanks, and boxes must undergo packaging testing and obtain official approval; hydrogen peroxide with a concentration ≤3% may be transported as ordinary cargo. During transport, it should be loaded separately, ensuring containers remain leak-proof, stable, and undamaged throughout transit. Mixed transportation with acids, flammable materials, organic substances, reducing agents, self-igniting materials, or moisture-sensitive flammable items is strictly prohibited. Vehicle speed should not exceed recommended limits, and forced overtaking is forbidden. Road transport must follow designated routes. Transport vehicles must be equipped with leakage emergency response equipment. Before and after loading/unloading, vehicles must be thoroughly cleaned to prevent contamination by organic or flammable substances.

Part 15: Regulatory Information

The following laws, regulations, rules, and standards contain corresponding provisions for the management of this chemical substance.

Law of the People's Republic of China on the Prevention and Treatment of Occupational Diseases:Classification and catalog of occupational diseases: Not listed.

Regulations on the Safety Management of Hazardous Chemicals:List of hazardous chemicals: Included. List of explosive-prone hazardous chemicals: Included. List of key hazardous chemicals under supervision:Not included. GB18218-2018 "Identification of Major Hazard Sources for Hazardous Chemicals" (Table 1):Not included.

Regulations on Labor Protection in Workplaces Where Toxic Substances Are Used:List of highly toxic substances: Not included.

Regulations on the Management of Chemicals Susceptible to Drug Manufacturing:Classification and list of types of chemicals susceptible to drug manufacturing: Not included.

International Conventions:Stockholm Convention: Not included; Rotterdam Convention: Not included; Montreal Protocol: Not included.

Part 16: Other Information

Writing and Revision Information:

Changes in this version:Compared to the previous version, new sections on molecular formulas, relative molecular masses, and structural formulas have been added; corresponding content has been incorporated in accordance with the "Comprehensive Book of Safety Technology for Hazardous Chemicals"; and the order of certain sections has been adjusted.

Revision notes:Updated every 5 years or when new relevant national laws and regulations are enacted.

References:Safety Culture Network

Disclaimer: The information in this SDS applies solely to the specified product. Unless otherwise stated, it does not apply to mixtures of this product with other substances. This SDS provides safety information only for properly trained users of the product. Users must independently assess the suitability of this SDS under specific usage conditions. The authors of this SDS shall not be liable for any injuries resulting from its use in exceptional circumstances.