


Safety Data Sheet

1. Product and Company Identification

Chemical name.	Hydrogen Peroxide
Manufacturer's name	SANTOKU CHEMICAL INDUSTRIES CO., LTD
Address	1-12-22, Tsukiji, Chuo-ku, Tokyo, JAPAN TEL: +81-3-6264-3301 FAX: +81-3-6264-3302
Emergency contact	Miyagi Plant 54, Techno-Hills, Taiwa-cho, Kurokawa-gun, Miyagi, JAPAN TEL: +81-22-346-5060 FAX: +81-22-347-8136 Hiroshima Plant 2-7-3, Takayadai, Higashi-Hiroshima-shi, Hiroshima, JAPAN TEL: +81-82-491-2077 FAX: +81-82-439-0410
Section in charge	Logistics & Procurement Department
Recommended use of chemicals and restrictions on use	For electrical industries : cleaning solution or oxidizing agent for semiconductor manufacturing For general industries : Oxidizing agent, molder, base agent for environmental protection Bleaching : paper, pulp, natural fiber and so on

2. Hazard Identification

GHS Classification

Physical and Chemical Hazard	Oxidizing liquid	Category 2
Health Hazard	Acute toxicity (oral)	Category 4
	Acute toxicity (dermal)	Category 4
	Acute toxicity (inhalation : vapors)	Category 4
	Acute toxicity (inhalation : dust/mist)	Category 4
	Skin corrosion/irritation	Category 1B
	Serious eye damage/eye irritation	Category 1
	Carcinogenicity	Category 2
	Specific target organ toxicity (single exposure)	Category 1 (respirator organs)
	Specific target organ toxicity (repeated exposure)	Category 1 (respiratory organs)
Environmental Hazard	Aquatic environment acute hazard	Category 2
Pictogram or Symbol		

Signal Word	Danger
Hazard Statement	May intensify fire; oxidizer Harmful if swallowed, in contact with skin or if inhaled. Causes severe skin burns and eye damage. Suspected of causing cancer. Causes damage to organs (respirator organs) Causes damage to organs (respiratory organs) through prolonged or repeated exposure. Very toxic to aquatic life.

Precautionary statements

Prevention	Obtain special instructions (SDS) before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Do not breathe mist/ vapors.
------------	--

Response	<p>Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>IF SWALLOWED: Rinse mouth. Do not induce vomiting. Immediately call a POISON CENTER/doctor. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Call a POISON CENTER or doctor. Get medical advice/attention. Immediately call a POISON CENTER or doctor. Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Collect spillage.</p>
Storage	<p>Seal the container with the original cap and keep safe out of the direct sunlight. Store locked up.</p>
Disposal	<p>Dispose of contents/container in accordance with regulation.</p>

3. Composition/information on ingredients

Distinction of substance or mixture	Substance (aqueous solution)
Chemical name	Hydrogen peroxide
Chemical formula	H ₂ O ₂
Chemical characteristic (chemical formula or structural formula)	HO-OH
CAS No.	7722-84-1
Concentration	31wt% of hydrogen peroxide, 69wt% of water (CAS No. 7732-18-5)
ENCS No.	(1)-419
UN No.	2014 Class 5.1 Packing grade-II

4. First-aid measures

Inhalation	<p>Remove the victim to fresh air, and make him blow his nose and gargle. If necessary, get medical treatment.</p>
Skin contact	<p>Wash the affected areas under running water.</p>
Eye contact	<p>Wash affected eyes with water for a few minutes carefully. If contact lens used and it is easy to remove, remove it. Continue to wash affected eyes. Seek medical attention immediately.</p>
Ingestion	<p>Let him/her gargle. Do not force to vomit. Seek medical attention immediately.</p>
Anticipated acute symptoms and delayed symptoms	
- Inhalation	: sore throat, cough, vertigo, headache, nausea, breathlessness.
- Skin contact	: corrosive, vitiligo, redness, skin burn, pain.
- Eye contact	: redness, pain, filmy eyes, serious burn.
- Ingestion	: sore throat, stomachache, abdominal fullness, nausea, vomits.
Personal protection in first aid and measures	<p>Rescuers should wear proper protective equipment like rubber gloves, goggles.</p>

5. Fire-fighting measures

Fire extinguishant	This product itself is non-combustible, but enhances combustion of other substances. Small fire : Water Major fire : A plenty of water
Inappropriate extinguishant	Powder extinguisher, bubble extinguisher
Specific danger and hazard	It may accelerate burning when caught in fire. The container may be explosion by heat.
Specific extinguish methods	Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.
Protection for fire fighting persons	Fire-fighters should wear proper protective equipment.

6. Accidental release measures

Warning points to human body, protective equipment and emergency actions	Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Keep away personnel except for authorized ones from spillage area by stretching ropes.
Environmental precautions	Pay attention not to affect to environment by discharging to rivers. Do not discharge to environment.
Methods and Equipment for Containment and Cleaning up	Absorb spill with inert material (e.g. diatomaceous earth, sand) and flush spillage area with copious amounts of water.
Preventive measures for secondary accident	Separate combustible materials (wood, paper, oil and etc.) from spilled chemicals.

7. Handling and Storage

Handling

Technical measures Precautions for safe handling	Wear proper protective equipment to avoid contact with skin or inhalation of vapor. Do not contact with metal powder, alkaline substances, or easy oxidized organic compounds.
---	---

Storage

Conditions for safe storage	Use the dedicated cap with a vent hole and avoid full closure. The gas-vent cap is used to evacuate the inside gas. Do not put it sideways to avoid leaking after leaving it too long or under pressurization. Check damages of containers and leakage from it. Avoid direct sunlight, It is desirable to store it in a cool and dark place. Install vent pipe for tank storage. Lock the doors at storage place and control personnel entrance.
Material used in packaging /containers	Polyethylene, fluorine resin.
Storage Conditions to avoid	Do not return hydrogen peroxide into the containers. Do not use containers which are used for other chemicals.

8. Exposure Controls / Personnel Protection

Allowable concentration	Japan Association of Industrial Health (2013): Not applicable ACGIH (2013) : TLV-TWA 1 ppm
Appropriate engineering controls	Provide safety shower and eye shower at work place and storage area. Ventilate to keep concentration in the air within allowable limit.
Protective Equipment	
Respiratory protection	If necessary, wear a chemical cartridge respirator with acidic gases.
Hand protection	Impervious protective gloves
Eye protection	Safety goggles
Skin and body protection	Use appropriate face protective equipment. Impervious protective (Protective clothing, Protective boots, Apron)

9. Physical and chemical properties

Physical property (Form, Color)	Clear colorless liquid
Odor	Weak characteristic odor (ozone-like smell)
pH and its concentration	30 wt% aqueous solution : 3.8
Melting point	-26 degrees Celsius at 30 wt%
Boiling point	106 degrees Celsius at 30 wt%
Flash point	Non-combustible
Explosibility range	Non-combustible
Vapor pressure	30wt% : Total pressure of 3.1×10^3 Pa at 30 degree of centigrade
Density	30wt% : 1.11 g/cm ³ at 4 degrees Celsius
Solubility	Freely soluble to water, soluble to alcohol and ester.

10. Stability and reactivity

Stability Reactivity	Stable unless mixed with foreign materials, alkalis, heavy metals, organic substances likely to be oxidized, etc. When heated, it releases oxygen and decomposes.
Possibility of hazardous reactions	Various inorganic compounds are oxidized, and there is also an oxidation action on organic compounds. Intensely decomposes with heat generation when mixed with foreign materials. Contact with ammonia may cause explode.
Conditions to avoid	Light, heat. Examples of inappropriate materials for hydrogen peroxide: Iron, copper, copper alloy, silver, platinum, titanium, polyamide (nylon), polybutadiene, epoxy resin, natural rubber and asbestos-molding material.
Incompatible materials	Ammonia, metals, oxidizing agent, combustible materials, reducing materials
Hazardous and harmful decomposition products	Generates oxygen gas which is susceptible to burn.

11. Toxicological information

Acute toxicity (oral)	Harmful if swallowed rat LD50=805mg/kg (70% H ₂ O ₂)
Acute toxicity (dermal)	Harmful in contact with skin rabbit LD50=690mg/kg (90% H ₂ O ₂)
Acute toxicity (inhalation)	Harmful if inhaled Vapor : rat LC50=4108ppm/4h (35% H ₂ O ₂) Mist : mouse LC50=0.46-1.00mg/L/4h (90% H ₂ O ₂)
Skin corrosion/irritation	Causes severe skin burns The conclusion with necrosis which penetrates to all layers of the skin or corrosivity is indicated in 3-minute, 1-hour, or 4-hour application on rabbits. Thus, it was classified into category 1B.
Serious eye damage/irritation	Causes serious eye damage The product is a skin corrosive substance. There is a publication that it shows severe irritation in animals and it is corrosive. Based on the above information, it was classified into category 1.
Carcinogenicity	Suspected of causing cancer ACGIH classifies it as the group A3(confirmed animal carcinogen with unknown relevance to humans).
Specific target organ toxicity (single exposure)	Causes damage to organs (respirator organs) The irritations to the nose, the throat, and the tracheal are reported in humans and animals(rat, mouse). In animals(rat, mouse), there are the descriptions that it causes the congestion, pneumonedema, emphysema of lung and tracheal and necrosis of tract epithelium within the dosage (0.34-0.43 mg/L) of the guidance level of category 1. Based on these results, it was classified into category 1 (respiratory organs).

Specific target organ toxicity (repeated exposure)	Causes damage to organs (respiratory organs) through prolonged or repeated exposure In the inhalation test of vapor in dogs and rats, fibrous tissues appear here and there in pneumoconiosis with the dosage (0.005-0.01 mg/L) of guidance value range of category 1, and there was the statement that mixture of atelectatic lung area and emphysema area (dogs), and necrosis and inflammation in nasal epithelium and cell infiltration in larynx (rats) are seen and it has irritation in nose, throat in humans and there is a risk of developing pulmonary edema in the worst case. Thus, it was classified into category 1 (respiratory organs).
Aspiration hazard	Classification not possible

12. Ecological information

Ecotoxicity	
Aquatic environmental hazards (acute)	Toxic to aquatic life Nitzschia sp. EC50=2.42mg/L/72h (35% H ₂ O ₂)
Aquatic environmental hazards (chronic)	No classification
Persistence and degradability	Readily biodegradable
Biological accumulation	Low residualibility Generally it is said that hydrogen peroxide is readily decomposed by a catabolic enzyme, catalase.
Hazardous to the ozone layer	No classification
Other adverse effects	Flow of hydrogen peroxide into activated sludge facilities results in extinction of microorganisms (activated sludge) or in weakening their action. Accordingly, it may lower treatment efficiency of facilities or make them inefficient. When it flows into public water areas, it will affect pH and COD of the regulated standard items, depending on the amount.

13. Disposal Considerations

Disposal method for residual waste	Dispose of the residual waste according to the related laws and regulations and related local rules. Request waste treatment to the permitted company or local public agency if any.
Disposal method	
Small volume	Dilute fully with a large volume of water.
Large volume	1. Lead to a safe place such as a pit. 2. Dilute with water until concentration of hydrogen peroxide reaches about 3-5%. 3. Add a reducing agent such as sodium sulfite, metals, catalase or the like to slowly decompose hydrogen peroxide. 4. Dispose the waste in comply with local laws and regulations.
Disposal method for polluted container and package	Containers and bottles to be used should be re-used with clean conditions or disposed properly in accordance with national and local laws and regulations. When disposed the empty containers, empty the contents completely.

14. Transport Information

International Regulations	
Marine transportation (IMDG)	
UN No.	2014
Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Packing Group	II
Transport hazard class	5.1 (8)
Air transportation (IATA)	
UN No.	2014
Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Packing Group	II

Transport hazard class	5.1 (8)
Land transportation	
UN No.	2014
Packing Group	II
Transport hazard class	5.1 (Oxidizing substances)
Marine pollutant	Applicable
Emergency Response Guidebook – Number	ERG No. 140
Special precautions with Transportation	Load a transport container keeping its mouth upward, taking care not to drop it, let it fall down or incur damage. After loading the transport container, inspect the state of the cargo and whether there is a leak from the container. Transport such that the transport container is not subjected to friction or shaking.

15. Regulatory Information

Compliance with national and local regulations is the responsibility of the user.

16. Other Information

Data sources National Institute of Technology and Evaluation ; NITE
NITE Chemical Risk Information Platform (NITE-CHRIP)
NITE-Gmiccs : NITE GHS Mixture Classification and Labels Creation System
Japan Advanced Information center of safety and Health

17. Notice On Description

The contents described are prepared based on obtainable documents, information, data, etc.; however, no guarantee is established for contents, physical properties, dangerous and harmful properties. In addition, the matters to be noted are subjects for usual handling. Accordingly, in case of special handling of this product, take safety measures prior to use.