

Chemical Safety Data Sheet MSDS / SDS

Hydrogen peroxide SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product identifier**

Product name: Hydrogen peroxide

CAS: 7722-84-1

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification**Classification of the substance or mixture**

Oxidizing liquids, Category 1

Acute toxicity - Category 4, Oral

Skin corrosion, Sub-category 1A
Acute toxicity - Category 4, Inhalation

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H271 May cause fire or explosion; strong oxidizer
H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H332 Harmful if inhaled

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220 Keep away from clothing and other combustible materials.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P283 Wear fire resistant or flame retardant clothing.
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.

Response

P306+P360 IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
P371+P380+P375 In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
P370+P378 In case of fire: Use ... to extinguish.
P301+P317 IF SWALLOWED: Get medical help.
P330 Rinse mouth.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P363 Wash contaminated clothing before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P316 Get emergency medical help immediately.

P321 Specific treatment (see ... on this label).

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P317 Get medical help.

Storage

P420 Store separately.

P405 Store locked up.

Disposal

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name: Hydrogen peroxide

Common names and synonyms: Hydrogen peroxide

CAS number: 7722-84-1

EC number: 231-765-0

Concentration: 100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Half-upright position. Refer for medical attention.

Following skin contact

First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Do NOT induce vomiting. Refer for medical attention .

Most important symptoms/effects, acute and delayed

Excerpt from ERG Guide 143 [Oxidizers (Unstable)]: TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death. Fire may produce irritating and/or toxic gases. Toxic fumes or dust may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

Excerpt from ERG Guide 140 [Oxidizers]: Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

Excerpt from ERG Guide 140 [Oxidizers]: Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

Strong irritant to skin, eyes, and mucous membranes. (EPA, 1998)

Indication of immediate medical attention and special treatment needed, if necessary

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for pulmonary edema and treat if necessary . Monitor for shock and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 ml/kg up to 200 ml of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool . Do not attempt to neutralize because of exothermic reaction. Cover skin burns with dry, sterile dressings after decontamination . Oxidizers

SECTION 5: Firefighting measures

Suitable extinguishing media

Fires caused by the compound are best controlled by large amounts of water. Chemical extinguishers should be used as they hasten decomposition of the peroxide. Fire fighters should wear goggles and self contained breathing apparatus.

Specific hazards arising from the chemical

Excerpt from ERG Guide 143 [Oxidizers (Unstable)]: May explode from friction, heat or contamination. These substances will accelerate burning when involved in a fire. May ignite combustibles (wood, paper, oil, clothing, etc.). Some will react explosively with hydrocarbons (fuels). Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2016)

Excerpt from ERG Guide 140 [Oxidizers]: These substances will accelerate burning when involved in a fire. Some may decompose explosively when heated or involved in a fire. May explode from heat or contamination. Some will react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, oil, clothing, etc.). Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2016)

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Spontaneous ignition may occur when contact with combustible materials is made. Oxygen released in decomposition will promote combustion. Fires can be of the flaring type but are not explosive unless confined. Vapor concentration greater than 40 percent by weight can be decomposed explosively at 1 atmosphere pressure. Severe explosion hazard when it is exposed to heat, mechanical impact, detonation of a blasting cap, or caused to decompose catalytically. Decomposition can build up large pressures of oxygen and water which may then burst explosively. Avoid oxidizable materials including iron, copper, brass, bronze, chromium, zinc, lead, manganese, silver, catalytic metals. Avoid mechanical impact, uncovering the container, contact with combustible materials, light, temperatures above 95F, hot wires, catalytic impurities. (EPA, 1998)

Special protective actions for fire-fighters

In case of fire in the surroundings, use appropriate extinguishing media. In case of fire: keep drums, etc., cool by spraying with water.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Consult an expert! Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Absorb liquid in sand or inert absorbent. Do NOT absorb in saw-dust or other combustible absorbents. Carefully collect remainder. Store and dispose of according to local regulations.

Environmental precautions

Personal protection: chemical protection suit including self-contained breathing apparatus. Ventilation. Do NOT let this chemical enter the environment. Wash away spilled liquid with plenty of water. Do NOT absorb in saw-dust or other combustible absorbents.

Methods and materials for containment and cleaning up

Dilute and drain into the sewer with abundant water.

SECTION 7: Handling and storage

Precautions for safe handling

NO contact with hot surfaces. NO contact with incompatible materials: See Chemical Dangers Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Separated from combustible substances, reducing agents, strong bases, metals and food and feedstuffs. Cool. Keep in the dark. Store in vented containers. Store only if stabilized. STORE IN ORIGINAL CLOSED CONTAINER. BE SURE THAT CONTAINER VENT IS WORKING... DO NOT ADD ANY OTHER PRODUCT TO CONTAINERS. WHEN EMPTY, RINSE THOROUGHLY WITH CLEAN WATER. 30% SOLN

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 1 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans). MAK: 0.71 mg/m³, 0.5 ppm; peak limitation category: I(1); carcinogen category: 4; pregnancy risk group: C

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles or face shield.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state:	Hydrogen peroxide, aqueous solution, stabilized, with more than 60% hydrogen peroxide is a colorless liquid. Vapors may irritate the eyes and mucous membranes. Under prolonged exposure to fire or heat containers may violently rupture due to decomposition. Used to bleach textiles and wood pulp, in chemical manufacturing and food processing.
Colour:	Colorless liquid
Odour:	ODORLESS, OR HAVING AN ODOR RESEMBLING THAT OF OZONE
Melting point/freezing point:	?0.43 °C
Boiling point or initial boiling point and boiling range:	126°C
Flammability:	Noncombustible Liquid, but a powerful oxidizer.
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	Non-flammable
Auto-ignition temperature:	Not flammable. (USCG, 1999)

Decomposition temperature:	no data available
pH:	Weak acid; H ₂ O ₂ concn wt% = 35, 50, 70, 90; corresponding true pH: 4.6, 4.3, 4.4, 5.1
Kinematic viscosity:	1.245 centipoises (liquid)
Solubility:	greater than or equal to 100 mg/mL at 72° F (NTP, 1992)
Partition coefficient n-octanol/water:	-1.36
Vapour pressure:	23.3 mm Hg (30 °C)
Density and/or relative density:	1.11g/mL at 20°C
Relative vapour density:	1 (vs air)
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

Decomposes under the influence of light. Decomposes on warming. This produces oxygen. This increases fire hazard. The substance is a strong oxidant. It reacts violently with combustible and reducing materials. This generates fire and explosion hazard particularly in the presence of metals. Attacks many organic substances such as textiles and paper.

Chemical stability

Hydrogen peroxide is a very unstable compound that breaks down readily to form molecular oxygen and water.

Possibility of hazardous reactions

DANGEROUS/FIRE HAZARD/ BY CHEMICAL REACTION WITH FLAMMABLE MATERIALS. HYDROGEN PEROXIDE IS A POWERFUL OXIDIZER, PARTICULARLY IN THE CONCENTRATED STATE. IT IS IMPORTANT TO KEEP CONTAINERS ... COVERED BECAUSE UNCOVERED CONTAINERS ... MORE PRONE TO REACT WITH FLAMMABLE VAPORS, GASES, ETC.; ... IF UNCOVERED, THE WATER FROM HYDROGEN PEROXIDE SOLN CAN EVAPORATE, CONCENTRATING THE /REMAINING/ MATERIAL AND THUS INCREASING THE FIRE HAZARD. HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED, WITH MORE THAN 60% HYDROGEN PEROXIDE is a powerful

oxidizing agent. Will react or decompose violently and exothermically with readily oxidizable materials or alkaline substances. May decompose violently in contact with iron, copper, chromium, and most other metals or their salts, which act as catalysts for this reaction, and with ordinary dust (which frequently contain rust, also a catalyst for this reaction). Stabilization operates against such reactions, but does not eliminate their possibility. Contact with combustible materials may result in their spontaneous ignition. Solutions containing over 30% hydrogen peroxide can detonate when mixed with organic solvents (such as acetone, ethanol, glycerol); the violence of the explosion increases with increasing concentration of the hydrogen peroxide. Concentration of solutions of hydrogen peroxide under vacuum led to violent explosions when the concentration was sufficiently high (>90%) [Bretherick 2nd ed., 1979]. Mixtures of aqueous hydrogen peroxide with 1-phenyl-2-methyl propyl alcohol tend to explode if acidified with 70% sulfuric acid [Chem. Eng. News 45(43):73(1967); J. Org. Chem. 28:1893(1963)]. Hydrogen selenide and hydrogen peroxide undergo a very rapid reaction [Mellor 1:941(1946-1947)].

Conditions to avoid

no data available

Incompatible materials

Oxidizable materials, iron, copper, brass, bronze, chromium, zinc, lead, silver, manganese [Note: Contact with combustible material may result in SPONTANEOUS combustion].

Hazardous decomposition products

Decomposition continuously occurs even at a slow rate when the compound is inhibited, and thus it must be stored properly and in vented containers. High-strength hydrogen peroxide is a very high-energy material. When it decomposes to oxygen and water, large amounts of heat are liberated, leading to an increased rate of decomposition, since decomposition is accelerated by increases in temperature. This rate increases about 2.2 times per 10 deg C temperature increase between 20 and 100 deg C.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is inadequate evidence in humans for the carcinogenicity of hydrogen peroxide. There is limited evidence in experimental animals for the carcinogenicity of hydrogen peroxide. Overall evaluation: Hydrogen peroxide is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

The substance is corrosive to the eyes, skin and respiratory tract. Corrosive on ingestion. The vapour is severely irritating to the respiratory tract. Ingestion may cause strong foam formation with risk of asphyxiation and aspiration. Exposure to this substance may produce oxygen bubbles (embolism) in the blood, resulting in shock.

STOT-repeated exposure

Repeated or chronic inhalation of the vapour may cause chronic inflammation of the upper respiratory tract. Lungs may be affected by repeated or prolonged exposure. The substance may have effects on the hair. This may result in bleaching.

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

Other adverse effects

no data available

SECTION 13: Disposal considerations**Disposal methods****Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN2015 (For reference only, please check.)

IMDG: UN2015 (For reference only, please check.)

IATA: UN2015 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: HYDROGEN PEROXIDE, STABILIZED or HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 60% hydrogen peroxide (For reference only, please check.)

IMDG: HYDROGEN PEROXIDE, STABILIZED or HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 60% hydrogen peroxide (For reference only, please check.)

IATA: HYDROGEN PEROXIDE, STABILIZED or HYDROGEN PEROXIDE, AQUEOUS SOLUTION, STABILIZED with more than 60% hydrogen peroxide (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 5.1 (For reference only, please check.)

IMDG: 5.1 (For reference only, please check.)

IATA: 5.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: I (For reference only, please check.)

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Rinse contaminated clothing with plenty of water because of fire hazard. Other UN numbers: 2014 (hydrogen peroxide, aqueous solution 20-60%): hazard class 5.1, subsidiary hazard 8, pack group II; 2984 (hydrogen peroxide, aqueous solution 8-20%): hazard class 5.1, pack group III.

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. We as supplier shall not be held liable for any