
MATERIAL SAFETY AND DATA SHEET

1. IDENTIFICATION

Material : Hydrogen Peroxide Solution.

Common Name : Peroxide **Chemical Formula** : H₂O₂.
UN No. : 2014 **CAS No.** : 7722-84-1
EC No. : 231-765-0 **EC Index no.** : 008-003-00-9

Supplier : **Acorn Water**
Address : **Glasslyn Rd.,**
Bandon,
Co. Cork. Ireland.

Emergency Telephone No.: (023) 43466

2. COMPOSITION

Solution of Hydrogen Peroxide in water.

3. HAZARDS IDENTIFICATION

Main Hazard - Oxidising. Contact with combustibles may cause fire. Decomposes yielding oxygen that supports combustion of organic matters and can cause overpressure if confined. It is corrosive to eyes, nose, throat and lungs. May cause irreversible tissue damage to the eyes, including blindness. It may also cause skin irritation.

4. FIRST AID MEASURES

Inhalation : Remove to fresh air, keep patient warm and administer oxygen if necessary. Symptoms may include coughing, sneezing, damage to the nasal or respiratory tract. If respiration stops or shows signs of failing apply artificial respiration. Obtain medical attention urgently.

Skin Contact : Drench immediately with copious amounts of water. Remove contaminated clothing and continue washing the affected areas. Completely decontaminate clothing and shoes before reuse or disposal. If irritation persists obtain medical attention.

Eye Contact : Immediately flood the eye with clean water for at least 15 minutes ensuring the corners and under both eyelids are adequately flushed.

Obtain medical attention for all cases where contact with the eye occurs.

Ingestion : Do not induce vomiting. Provided the patient is conscious, wash out the mouth with water and give about 500 mls of water to drink. Obtain medical attention urgently.

Note to physician: 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 ophthalmological 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 of gastric lavage should be avoided. There is 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

The material is non-combustible, but on decomposition releases oxygen which may intensify fire. Suitable extinguishing media include water, water fog or quenching foam. Unsuitable substances include carbon dioxide and quenching powder. Oxygen is released during decomposition and there is a risk of overpressure and burst due to decomposition in confined spaces and pipes. In case of fire wear respiratory protective equipment independent of surrounding air and chemical protective suit.

6. ACCIDENTAL RELEASE MEASURES

Refer to points No.8 and No.13 for information on personal protective equipment and disposal.

Small Spillages : Dilute and wash away with large amounts of water taking care to avoid splashing.

Large Spillages : Keep unauthorised personnel away from the immediate area. If appropriate inform the police, fire brigade, local authority and E.P.A. Contain the spillage using sand or earth for subsequent disposal. Do not use: textiles, saw dust, combustible materials. Keep away from drains and prevent from entering watercourse. (i.e. rivers, canals etc.).
Never return spilled product into its original container for re-use (risk of decomposition).

7. HANDLING AND STORAGE

7.1 Handling : Contact with eyes and skin must be avoided. Refer to point No. 8 for information on personal protective equipment. An emergency shower, eyewash station and water supply should be provided at locations where accidental exposure is foreseeable, e.g. at filling/discharge points. Never return unused hydrogen peroxide to original container. Empty drums should be triple rinsed before discarding.

Materials used in handling should be compatible with the product and advice should be sought in selection.

7.2 Storage : Only use containers which are specifically permitted for hydrogen peroxide, and/or for transport, storage and tank installations. Suitable materials include vanadium steel (1.4571 or 1.4541), aluminium (min. 99.5%), aluminium magnesium alloys, plastics (PVC, rigid PVC, polyethylene, polypropylene), glass or ceramics. Store drums in cool areas out of direct sunlight and use adequate venting devices on all containers. Do not confine product in unvented vessels or between closed valves as there is a risk of overpressure and bursting due to decomposition in confined spaces. Do not store with alkalis, reducing agents, metallic salts, combustible products and organic solvents (danger of explosion).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Direct contact with the skin must be prevented. Ventilation should be provided to minimise the release of hydrogen peroxide vapours and mists into the work environment. The usual precautionary measures for dealing with chemicals should be observed and wear suitable personal protective equipment when appropriate.

Occupational exposure limits

OES (GB)

$1\text{ml/m}^3 = 1.5\text{mg/m}^3$

TLV/TWA (USA)

$1\text{ml/m}^3 = 1.4\text{mg/m}^3$

Respiratory Protection : Breathing apparatus should be worn if concentrations exceed the OEL due to inadequate ventilation of the work area.

Hand Protection : PVC, neoprene or rubber gloves.

Eye Protection : Close fitting chemical goggles or full-face visor if appropriate.

Skin Protection : Cotton or PVC overalls; PVC or rubber boots. Avoid cotton wool and leather.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colourless liquid. **Odour:** Slightly pungent **pH:** 3.5 @ 20°C

Flash Point/Flammability/Autoflammability/Explosive Properties : Non-flammable.

Oxidising Properties: Strong Oxidiser. **Solubility in water :** Completely Soluble.

	20% w/w solution	35% w/w solution
Boiling Point (°C)	103	108
Vapour Pressure (mmHg)	28 at 30°C	23 at 30°C
Freezing Point (°C)	-15	-33
Specific Gravity (@ 20°C)	1.070	1.130

Mol. Wt. : 34.02

Viscosity : 1.80 mPa (0°C)

10. STABILITY AND REACTIVITY

Hydrogen peroxide is an oxidising agent and is very reactive. It is stable at room temperature, but there is a risk of decomposition when exposed to heat. When coming in contact with the product, impurities, decomposition catalysts, incompatible substances, combustible substances, may lead to self-accelerated, exothermic decomposition and the formation of oxygen. Mixtures with combustible materials (e.g. solvents) can have explosive properties. Impurities to be avoided include metal ions, metallic salts, metals, alkalis, hydrochloric acid, reducing agents, combustible substances and organic solvents.

11. TOXICOLOGICAL INFORMATION

Short Term Effects of Over Exposure:

- Inhalation** : Inhalation of vapours/ aerosols may lead to severe irritation of the respiratory tract and may cause inflammation and pulmonary oedema. Symptoms may occur with delay. LC₅₀ > 0.17 mg/l (rat) (50% H₂O₂).
- Skin Contact** : Causes burns. By time of exposure increase locally erythema or severe irritation (white colouration), even to blistering (burning may occur). Skin absorption LD₅₀ > 2000 mg/kg (rabbit) (35% H₂O₂).
- Eye Contact** : May cause irreversible tissue damage to the eyes, including blindness. Symptoms may occur with delay.
- Ingestion** : Causes severe damage to the mucous membranes or deeper tissue of the mouth, throat, oesophagus and stomach and death may result from subsequent penetration into vital areas. Rapid liberation of oxygen may cause gastric distension and bleeding and may lead to

severe damage to internal organs, in particular , if larger quantities of product are swallowed. LD₅₀ = 1193 mg/kg (rat) (35% H₂O₂).

Long Term Effects Of Over Exposure: Acute effects predominate.

Chronic Effects Of Over Exposure: There are reports of limited evidence of carcinogenicity of hydrogen peroxide to mice administered high concentrations in their drinking water (IARC Monograph 36,1985). However , the international agency for research on cancer concluded that hydrogen peroxide could not be classified as to its carcinogenicity to humans (Group II carcinogen).

12. ECOLOGICAL INFORMATION

Environmental Fate

Hydrogen peroxide is regarded as generally not endangering water courses. Under environmental conditions rapid decomposition takes place forming oxygen and water or it is reduced, generally exerting no significant adverse effects on the environment.

Persistence & Degradation

Hydrogen peroxide half-life in fresh water ranges from 8 hours to 20 days, in air from 10-20 hrs and in soils from minutes to hours depending upon microbiological activity and metal contaminants.

Eco-toxicity

Aquatic toxicity : (all data related to Hydrogen peroxide 100%).

Acute fish toxicity: LC₅₀ (96h) approx. 27 mg/l, various species

Acute toxicity to crustaceans: LC₅₀ (48h) approx. 5 mg/l, various species

Effects on effluent treatment

Reduction & decomposition to water and oxygen.

13. DISPOSAL INFORMATION

Small quantities of material can be disposed of by diluting with a large amount of water and allowing the hydrogen peroxide to decompose and running to drain. For large quantities a specialist waste disposal firm should be used.

14. TRANSPORT INFORMATION

UN Number : 2014

Symbol No. : 8 & 5.1

Classification : Class 5.1,1(c)

Kemlar plate :
aqueous solution

80
2014

Symbol : Corrosive & Oxidising

ADR/RID Name : Hydrogen Peroxide,

with not less than 20%, but not more than 60% hydrogen peroxide.

15. REGULATORY INFORMATION

EC Classification : Corrosive
Hazard Symbol : C
Risk Phrase (R34) : Causes burns
Safety Phrases

(S1/2): Keep locked up and out of reach of children

(S3): Keep in a cool place.

(S28): After contact with skin, wash immediately with plenty of water.

(S36/39): Wear suitable protective clothing, and eye/face protection.

(S45): In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

* This information only applies to solutions between 20% and 40%.

16. OTHER INFORMATION

All personnel involved in the use, handling and transport of hydrogen peroxide should be familiar with the first aid measures and personal protective equipment requirements associated with the material.

References:

- * European agreement concerning the international carriage of dangerous goods by road (ADR) volumes I & II 1999
- * Commission Directive 93/112/EC of 10/12/93, (O.J. No. 314 of 16/12/93 pg 38)
- * Council Directive 67/548/EEC and all appropriate A.T.P'S

• Important Note:

1. Before any product is used the label should be carefully read and current safety literature and information consulted.
2. The product information in this Data Sheet is to the best of Acorn Water's knowledge correct as at the date of publication. User should contact Acorn Water for updated advice and in any event satisfy himself that the product is entirely suitable for his purpose.