

Hydrogen Peroxide 60%

Safety Data Sheet

Regulation No (EC) 1907/2006 ve Classification için Regulation No (EC) No 1272/2008

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Identification of the substance or mixture

Product Name	: Hydrogen Peroxide 60%
Chemical Name	: Hydrogen Peroxide Aqueous Solution
Synonyms	: Hydrogen dioxide, hydroperoxide, peroxide
Chemical Formula	: H ₂ O ₂
Molecular Weight	: 34 g
Regulation (EC) No 1272/2008 Index No (Reach)Pre-Registration Notification No	: 008-003-00-9 : 05-0000369419-37-0000
CAS No	: 7722-84-1
EINECS No	: 231-765-0

1.2. Use of the Substance/Mixture

Recommended use	: - Bleaching agent : - Disinfectants and general biocidal products
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1.3. Company/Undertaking Identification

Company Name	: Hidrojen Peroksit Sanayi ve Tic. A.Ş.
Address	: 600 Evler Mah. Atatürk cad. No:80 Bandırma/Balıkesir TÜRKİYE www.hidrojenperoksit.com.tr
E-Mail, SDS responsible	: esra.semet@united-in.com
Telephone	: +90 266 721 03 12
Fax	: +90 266 721 03 11

2. HAZARDS IDENTIFICATION

CLP Classification için Regulation No (EC) No 1272/2008

Emergency Overview

Physical state:	liquid
Colour	: colourless
Odour	: pungent

Classification of the substance or mixture:

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Acute toxicity – Oral	Category 4 , H302
Acute toxicity - Inhalation (Vapors)	Category 4 , H332
Skin corrosion/irritation	Category 1A, H314
Specific target organ toxicity (single exposure)	Category 3 , H335
Oxidizing Liquids	Category 2 , H272

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GHS Label elements, including precautionary statements CLP Labeling için Regulation No (EC) No 1272/2008

EMERGENCY OVERVIEW

Hazard Statements

- H272 : It can strengthen the fire, oxidizing.
H302 : Harmful if swallowed.
H314 : Leads to severe skin burns and eye damage.
H332 : Harmful if inhaled
H335 : May cause respiratory irritation



GHS03



GHS05



GHS07

Hazard pictograms:

Signal word: Danger

Precautionary statements:

Prevention:

- P210** : Keep away from heat.
P220 : Keep/Store away from clothing/ combustible materials.
P221 : Take any precaution to avoid mixing with combustibles.
P260 : Dust / smoke / gas / mist / vapor / Do not breathe spray.
P261 : Avoid breathing gas/mist/vapours/spray.
P264 : Wash skin thoroughly after handling.
P270 : Do not eat, drink or smoke when using this product.
P271 : Use only outdoors or in a well-ventilated area.
P280 : Wear protective gloves/ eye protection/ face protection.

Response:

- P301+P330+P331** : IF SWALLOWED: Rinse your mouth. / Do NOT induce vomiting.
P303+P361+P353 : IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

P310 : Immediately call a POISON CENTER or doctor/ physician.

P312 : If you do not feel good, UZEM 114 phone or doctor / Call physician.

P321 : Special intervention required (see the label)

P330 : Rinse mouth.

P363 : Wash contaminated clothing before reuse.

P370+P378 : IN CASE OF FIRE: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

P403+233 : Store in a well-ventilated place. Keep container tightly closed.

P405 : Store locked up.

Disposal:

P501 : Dispose of contents/ container to an approved waste disposal plant

3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS – No.	%Concentration	EC No.	GHS Classification
Hydrogen Peroxide (H ₂ O ₂)	7722-84-1	60%	231-765-0	H272,H302,H314,H332,H335,
Water	7732-18-5	40%	231-791-2	Not classified

(CLP Classification için Regulation No (EC) No 1272/2008)

4. FIRST AID MEASURES

4.1. Inhalation

- Remove to fresh air.
- Artificial respiration, preferably mouth-to-mouth if possible.
- If breathing is difficult, give oxygen.
- Call a poison control center or doctor for further treatment advice.

4.2. Eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- In the case of difficulty of opening the lids, administer an analgesic eye wash (oxybuprocaine).
- Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Consult with an ophthalmologist immediately in all cases.

4.3. Skin contact

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- Remove contaminated shoes, socks and clothing, under the shower if necessary; wash the affected
- Wash clothing before reuse.
- Thoroughly clean shoes before reuse.
- Keep warm (blanket), provide clean clothing.
- Consult a physician.

4.4. Ingestion

- Never give anything by mouth to an unconscious person
- If victim is fully conscious, give a cup full of water.
- Rinse mouth.
- Do not induce vomiting.
- Call a physician immediately.
- Take victim immediately to hospital.

If victim is conscious:

- If swallowed, rinse mouth with water (only if the person is conscious).
- Do NOT induce vomiting.

If victim is unconscious but breathing:

- Artificial respiration and/or oxygen may be necessary.

Notes to physician:

-Exposure to material may cause delayed lung injury resulting in pulmonary edema and pneumonitis.
-Exposed individuals should be monitored for 72 hours after exposure for the onset of delayed respiratory symptoms.

Most important symptoms and effects, both acute and delayed:

In case of accidental ingestion, necrosis may result from mucous membrane burns (mouth, esophagus and stomach). Oxygen rapid release may cause stomach swelling and hemorrhaging, which may product major, or even fatal, injury to organs if a large amount has been ingested. In case of skin contact, may cause burns, erythema, blisters or even necrosis. Hydrogen Peroxide irritates respiratory system and, if inhaled, may cause inflammation and pulmonary edema. The effects may not be immediate.

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

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 ophthalmologic 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 or gastric lavage should be avoided. There is a 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

5.1. Suitable extinguishing media

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- Water
- Water spray
- Water fog
- Do not use any other substance.

Extinguishing media which shall not be used for safety reasons

- None.

5.2. Special exposure hazards in a fire

- Oxygen released on exothermic decomposition may support combustion in case of surrounding fire.
- Contact with combustible material may cause fire.
- Contact with flammables may cause fire or explosions.
- Risk of explosion if heated under confinement.

5.3. Specific Hazards Arising from the Chemical

In closed unventilated containers, risk of rupture due to the increased pressure from decomposition. Contact with combustible material may cause fire

5.4. Special protective equipment for fire-fighters

- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.
- Wear chemical resistant oversuit

5.5. Hazardous Combustion Products

- On decomposition product releases oxygen which may intensify fire.

5.6. Explosion data

Sensitivity to Mechanical Impact : Not sensitive.

Sensitivity to Static Discharge : Not sensitive.

5.7. Protective equipment and precautions for firefighters

- Use water spray to cool fire exposed surfaces and protect personnel.
- Move containers from fire area you can do it without risk.
- As in any fire, wear self-contained breathing apparatus and full protective gear, and self-contained breathing apparatus (pressure demand / NIOSH approved or . equivalent)

5.8. Further firefighting advice

Oxidizing material

In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

Decomposition will release oxygen, which will intensify a fire.

Cool closed containers exposed to fire with water spray.

Closed containers of this material may explode when subjected to heat from surrounding fire.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

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5.9. Fire and explosion hazards

Explosive when mixed with combustible material.
Avoid breathing fumes from fire exposed material.

Other information

- Keep product and empty container away from heat and sources of ignition.
- Keep containers and surroundings cool with water spray.
- Approach from upwind.
- HAZCHEM Code: 2P

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

- Evacuate personnel to safe areas.
- Keep people away from and upwind of spill/leak.
- Wear personal protective equipment.
- Drying of this product on clothing or combustible materials may cause fire.
- Keep wetted with water.
- Keep away from Incompatible products.
- Prevent further leakage or spillage if safe to do so.
- Avoid contact with skin, eyes and clothing.
- Eliminate all sources of ignition and remove combustible materials.

6.2. Environmental precautions

- Limited quantity
- Flush into sewer with plenty of water.
- Large quantities:
- If the product contaminates rivers and lakes or drains inform respective authorities.
- Do not flush into surface water or sanitary sewer system
- If discharged into sewers or watercourses, dilute with plenty of water.

6.3. Methods for cleaning up

- Dam up.
- Soak up with inert absorbent material.
- Dilute with plenty of water.
- Do not add chemical products.
- Treat recovered material as described in the section "Disposal considerations".
- Never return spills in original containers for re-use.
- Flush area with flooding quantities of water, adding sodium metabisulfite or sodium sulfite after diluting to about 5%.

6.4. Methods for Containment

- Dike to collect large liquid spills.
- Stop leak and contain spill if this can be done safely.
- Small spillage: Dilute with large quantities of water.

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6.5. In case of spill or leak

- Prevent further leakage or spillage if you can do so without risk.
- Evacuate area of all unnecessary personnel.
- Ventilate the area.
- Eliminate all ignition sources.
- Avoid contact with cellulose, paper, sawdust or similar substances.
- Risk of self-ignition or promotion of fires.
- Combustible materials exposed to hydrogen peroxide should be rinsed immediately with large amounts of water to ensure that all the hydrogen peroxide is removed. Contain and collect spillage with non-combustible absorbent material such as clean sand,
- Earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal.
- Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.
- Regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Other information

- Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed.
- Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in fire.

7. HANDLING AND STORAGE

7.1. Handling

General information on handling:

- Before all operations, passivate the piping circuits and vessels according to the procedure recommended by the producer.
- Never return unused material to storage receptacle.
- May not get in touch with:
 - Organic materials
- Keep away from Incompatible products.
- Keep away from heat.
- Keep at temperature not exceeding 60 °C.
- Do not taste or swallow.
- Do not get in eyes, on skin, or on clothing.
- Avoid breathing vapor or mist.
- Keep from contact with clothing and other combustible materials.
- Keep away from heat, sparks and flames.
- Use only with adequate ventilation.
- Wash thoroughly after handling.
- Wear fire/ flame resistant/ retardant clothing.
- Prevent product contamination.
- Keep only in the original container. (Use only clean and dry utensils.)

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- Store in tightly closed container.
- DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
- Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed. Avoid contamination.

7.2. Storage

General information on storage conditions:

- Store in cool, dry, well ventilated area away from sources of ignition as flame.
- Keep away from heat.
- Keep away from incompatible products
- Keep away from combustible material.
- Keep in container fitted with safety valve or vent.
- Keep in original packaging, tightly closed.
- Keep in a bunded area.
- Regularly check the condition and temperature of the containers.
- Information about special precautions needed for bulk handling is available on request.
- sparks and static electricity. Store out of direct sunlight in well-ventilated place.
- Refer to National Fire Protection Association (NFPA) 430, Code for the Storage of Solid and Liquid Oxidizers.
- Rooms or warehouses should be made of non-combustible materials with impermeable floors.
- Regular basis to detect any abnormalities control for (swollen drums, increases in temperature, etc.).

7.3 Storage incompatibility – General

- Store separate from acids, alkalies, reducing agents, and combustibles.
- Store separate from: Organic materials, Metallic oxides
- Combustible materials. Copper alloys, galvanized iron. Strong reducing agents.
- Heavy metals. Iron. Copper alloys. Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

7.4. Specific use(s)

- For further information, please contact: Supplier

7.5. Packaging material

- Aluminium 99,5 %
- Stainless steel 304L / 316L
- Approved grades of HDPE.

Other information

- Warn people about the dangers of the product.
- Refer to protective measures listed in sections 7 and 8.
- Do not confine the product in a circuit, between closed valves, or in a container without a vent.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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8.1. Exposure Limit Values

Control parameters

Exposure Guidelines

Ingredients with workplace control parameters.

Chemical name

Hydrogen peroxide 7722-84-1

- ACGIH TLV : TWA: 1 ppm
- OSHA PEL : TWA: 1 ppm , TWA: 1.4 mg/m³
- NIOSH : IDLH: 75 ppm, TWA: 1 ppm, TWA: 1.4 mg/m³
- MEXICO : TWA 1 ppm, TWA 1.5 mg/m³, STEL 2 ppm, STEL 3 mg/m³
- British Columbia : TWA: 1 ppm

- Quebec : TWA: 1 ppm, TWA: 1.4 mg/m³

- Ontario TWAEV : TWA: 1 ppm

- Alberta : TWA: 1 ppm, TWA: 1.4 mg/m³

- US. ACGIH Threshold Limit Values : Time weighted average 1 ppm

- US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) : PEL: 1 ppm (1.4 mg/m³)

- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005

time weighted average = 1 ppm

time weighted average = 1.4 mg/m³

- Australia. OELs. (Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment) 08 2005

Remarks: Listed

(Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.)

8.2. Appropriate engineering controls

Engineering controls

- Ensure that eyewash stations and safety showers are close to the workstation location.
- Ensure adequate ventilation.
- Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures.

Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

8.3. Exposure controls

- Provide appropriate exhaust ventilation at machinery.
- Apply technical measures to comply with the occupational exposure limits.

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8.3.1. Individual protection measures, such as personal protective equipment

8.3.1.1. Respiratory protection

- In case of insufficient ventilation, wear self-contained breathing apparatus (SCBA) or other approved air-supplied respirator (ASRSuitable respiratory equipment).
- When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
- In case of emissions, face mask equipment (e.g., a full-face airline respirator (ALR)). DO NOT use any form of air-purifying with type NO-P3 cartridge.
- If concentrations in excess of 10 ppm are expected, use NIOSH/DHHS approved.

8.3.1.2. Hand protection

- Impervious gloves (For hand protection, wear approved gloves made of nitrile, PVC, or neoprene.)
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
- Useing do not cotton, wool or leather for these materials react RAPIDLY with higher concentrations of hydrogen peroxide.
- Thoroughly rinse the outside of gloves with water prior to removal.
- Inspect regularly for leaks.

8.3.1.3. Eye /Face protection

- Chemical resistant goggles must be worn.
- If splashes are likely to occur, wear:
 - Tightly fitting safety goggles
 - Face-shield
- Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.
- Use chemical splash-type monogoggles and a full-face shield made of polycarbonate, acetate, polycarbonate/acetate, PETG or thermoplastic.

8.3.1.4. Skin and body protection

- Chemical resistant apron
- If splashes are likely to occur, wear:
 - Boots
 - Suitable material
 - PVC
 - Rubber products

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact.

When handling this material, gloves of the following type(s) should be worn:

Neoprene

Polyvinylchloride

Impervious butyl rubber gloves

Wear a face shield, chemical goggles and chemical resistant clothing such as an approved splash protective suit made of SBR Rubber, PVC, Gore-Tex or a HAZMAT Splash Protective Suit (Level A, B, or C) when splashing may occur (such as connecting/disconnecting, mechanical first break). For foot protection, wear

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boots made of NBR, PVC, polyurethane, or neoprene. Overboots made of Latex or PVC, as well as firefighter boots or specialized HAZMAT boots are also permitted. DO NOT wear any form of boot or overboots made of nylon or nylon blends. DO NOT use cotton, wool or leather, as these materials react RAPIDLY with higher concentrations of hydrogen peroxide. Rinse immediately if skin is contaminated. Remove contaminated clothing and shoes immediately. Thoroughly rinse the outside of gloves and protective clothing with water prior to removal. Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

8.3.1.5. Hygiene measures

- Ensure that eyewash stations and safety showers are close to the workstation location.
- Take off contaminated clothing and shoes immediately.
- Wash contaminated clothing before re-use.
- When using , drink or smoke. Wash hands before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.
- Avoid breathing vapors, mist or gas.
- Clean water should be available for washing in case of eye or skin contamination. .

Other information

Protective engineering solutions should be implemented and in use before personal protective equipment is considered.

8.4. Environmental exposure controls

- Dispose of rinse water in accordance with local and national regulations

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

9.1. General Information (appearance, odour)

Appearance	: Clear, colorless liquid
Physical State	: Liquid
Colour	: Colourless
Odour	: Pungent (odourless)
Odor threshold	: Not applicable

9.2. Important health safety and environmental information

pH	: <3
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	<i>Remarks:</i> Apparent pH
Boiling point/boiling range	: 119 °C (H2O2 59 %)
Melting point/freezing point:	-56 °C (H2O2 59 %)
Flash point	: The product is not flammable. (None)
Evaporation Rate	: No data available
Flammability(solid,gas)	: The product is not flammable.
Flammability Limit in Air	: Not applicable
	Upper flammability limit (UFL) : Not applicable
	Lower flammability limit (LFL) : Not applicable
Explosive properties	: <i>Explosion danger:</i> <i>Remarks:</i> With certain materials (see section 10). <i>Remarks:</i> In case of heating: No information available
Oxidizing properties	: <i>Remarks:</i> Strong oxidizer
Vapour pressure	: 18 mmHg (68 °F (20 °C)) : 214 Pa (Pure substance) Temperature: 20 °C (68 °F)
	: 72 mbar (H2O2 50 %) <i>Remarks:</i> Total pressure (H2O2 + H2O) <i>Temperature:</i> 50 °C
	: 1 mbar (H2O2 50 %) <i>Remarks:</i> Partial pressure (H2O2) <i>Temperature:</i> 30 °C
Relative density / Density	: 1.24 (H2O2 59 %)
Solubility	: Soluble in: : Water : Polar organic solvents
Partition coefficient: n-octanol/water	: log Kow : -1.5 @ 20 °C : log Pow : -1.1 Method: (calculated) tested substance : hydrogen peroxide 100 %
% Volatiles	: 100 %
Oil/water partition Coefficient	: Not applicable
Viscosity	: 1.249 mPa.s (Pure substance) Temperature: 20 °C (68 °F)
Viscosity, kinematic	: 1.17 cP @ 20 °C
Viscosity, dynamic	: No information available – (1.90 mPa.s (0 °C))
Bulk density	: Not applicable
Vapour density	: No information available
Relative vapor density	: 1.0 (Heavier than air)
Specific gravity	: 1.2
Water solubility	: Completely soluble / miscible
Solubility in other solvents	: No information available
Autoignition temperature	: Not combustible

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Auto-flammability	: The product is not flammable.
Thermal decomposition	: No data available
Decomposition temperature:	100 °C (adiabatic) >= 60 °C (140 °F) <i>Remarks:</i> Self-Accelerating decomposition temperature (SADT) < 60 °C (140 °F) <i>Remarks:</i> Slow decomposition
Surface tension	: ca. 76.65 mN/m (20 °C) 77.2 mN/m (H2O2 70 %) Temperature: 20 °C (68 °F) : 80.4 mN/m (Pure substance) Temperature: 20 °C (68 °F)
Molecular weight	: 34.01 g/mol

10. STABILITY AND REACTIVITY

10.1. Reactivity

- Reactive and oxidizing agent

10.2. Chemical Stability

- Potential for exothermic hazard
- This material is chemically stable under normal and anticipated storage, handling and processing conditions.
- Decomposes on heating.

10.3. Possibility of Hazardous Reactions

- Contact with organic substances may cause fire or explosion.
- Contact with metals, metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

10.4. Hazardous polymerization

- Hazardous polymerization does not occur.

10.5. Conditions / hazards to avoid

- Contamination
- To avoid thermal decomposition, do not overheat.
- Exposure to UV-rays
- pH variations.
- Material decomposes with the potential to produce a rupture of unvented closed containers.

10.6. Materials to avoid

- Acids
 - Bases
 - Metals
-

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- Salts of metals
- Reducing agents
- Organic materials
- Metallic oxides
- Dusts
- Flammable materials((e.g., wood, sawdust, Copper alloys, galvanized iron. Strong reducing agents. Heavy metals. Iron. Copper alloys. Contact with , metallic ions, alkalis, reducing agents and organic matter (such as alcohols or terpenes) may produce self-accelerated thermal decomposition.

10.7. Hazardous decomposition products

- Oxygen
- The release of other hazardous decomposition products is possible
- Oxygen which supports combustion. Liable to produce overpressure in container.
- This material decomposes if contaminated, causing fire and possible explosions. Oxygen can be liberated at temperatures above ambient.

11. TOXICOLOGICAL INFORMATION

Data on this material and/or a similar material are summarized below.

11.1 Toxicological data

Acute oral toxicity

- 35 % solution: LD50 1193 mg/kg bw (rat)
- 50 % solution: LD50 > 225 mg/kg bw (rat)
- 60 % solution: LD50 801 - 872 mg/kg (rat)
- 70 % solution: LD50 1026 mg/kg bw (rat)

Acute inhalation toxicity

- 50% solution: LC50 > 170 mg/m³ (rat) (4-hr)
- No deaths occurred. (Rat) 4 h LC0 > 0.17 mg/l. (50 %) (saturated vapor)
- Hydrogen Peroxide vapors: LC0 9400 mg/m³ (mouse) (5 - 15 minutes)
- Hydrogen Peroxide vapors: LC50 > 2160 mg/m³ (mouse)
- LC50, 4 h, rat, 2,000 mg/m³ (Hydrogen peroxide)
- LC0, 1 h, mouse, 2,170 mg/m³ (Hydrogen peroxide)

Acute dermal toxicity

- 35 % as aqueous solution: LD50 > 2000 mg/kg (rat)
- 35 % solution: LD50 > 2000 mg/kg bw (rabbit)
- 70 % solution: LD50 9200 mg/kg bw (rabbit)

Skin irritation

- rabbit, irritant (skin) (H₂O₂ < 50 %)
- rabbit, corrosive effects, 1 h (H₂O₂ >= 50 %)
- Causes mild skin irritation. (Rabbit) Irritation Index: 1.6 / 8. (35 %) (aqueous solution)

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Eye irritation

- rabbit, Risk of serious damage to eyes. (H₂O₂ 70 %)
- Causes serious eye damage Corrosive. (Rabbit) (35 %) (aqueous solution)

Irritation (other route)

- mouse, Respiratory irritation (RD50), 665 mg/m³, (Hydrogen peroxide)

Sensitisation

- Did not cause sensitization on laboratory animals.(guinea pig)

Chronic toxicity

- Oral, Prolonged exposure, rat/mouse, Target Organs: gastro-intestinal system, observed effect
- Inhalation, Repeated exposure, dog, NOEL: 7 ppm, irritant effects
- Oral, 90-day, mouse, Target Organs: Gastrointestinal tract, Lowest observable effect level: 300 ppm, LOAEL, (Pure substance)
- Oral, 90-day, mouse, NOEL: 100 ppm, NOAEL, (Pure substance)
- Inhalation, 28-day, rat, Target Organs: Respiratory system, Lowest observable effect level: 10 ppm, LOAEL, vapour, (Pure substance)
- Inhalation, 28-day, NOEL: 2 ppm, NOAEL, vapour, (Pure substance)

Information on toxicological effects ; Symptoms :

- Vapors, mists, or aerosols of hydrogen peroxide can cause upper airway irritation, inflammation of the nose, hoarseness, shortness of breath, and a sensation of burning or tightness in the chest.
- Prolonged exposure to concentrated vapor or to dilute solutions can cause irritation and temporary bleaching of skin and hair.
- Exposure to vapor, mist, or aerosol can cause stinging pain and tearing of eyes.

Carcinogenicity

- Oral, Prolonged exposure, mouse, Target Organs:
Duodenum, carcinogenic effect
- Dermal, Prolonged exposure, mouse, Animal testing did not show any carcinogenic effects.
- Oral, Prolonged exposure, rat, Animal testing did not show any carcinogenic effects.
- This product contains hydrogen peroxide. The International Agency for Research on

Cancer (IARC) has concluded that there is inadequate evidence for carcinogenicity of hydrogen peroxide in humans, but limited evidence in experimental animals (Group 3 - not classifiable as to its carcinogenicity to humans). The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a

- Chronic drinking water administration to rat and mouse / affected organ(s): Gastro-intestinal tract / signs: Increased incidence of tumors was reported.

Classified by the International Agency for Research on Cancer as: Group 3: Unclassifiable as to carcinogenicity in humans.

'Confirmed Animal Carcinogen with Unknown Relevance to Humans' (A3).

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Chemical name	ACGIH	IARC	NTP	OSHA
Hydrogen peroxide (7722-84-1)	A3	3		

Genetic toxicity in vitro

Assessment in vitro

- *In vitro, without metabolic activation, mutagenic effects*
- Genetic changes were observed in laboratory tests using: bacteria, animal cells*

Genetic toxicity in vivo

- In vivo, , Remarks: Animal testing did not show any mutagenic effects.
- Genetic changes were observed in a laboratory test using: mice, rats

Possible hazards (summary)

- Irritating to eyes, respiratory system and skin.
- Risk of serious damage to eyes.
- Carcinogenic effect not applicable to human

11.2. Health effects

Main effects

- Target organ effects Eyes, Respiratory System, Skin
- Irritating to skin and mucous membranes
- Risk of serious damage to eyes.

Inhalation

- Inhalation of vapours is irritating to the respiratory system, may cause throat pain and cough.
- Repeated or prolonged exposure: Risk of sore throat, nose bleeds, chronic bronchitis.
- Throat: irritation. (based on reports of occupational exposure to workers)

Eye contact

- Severe eye irritation
- Redness
- Lachrymation
- Swelling of tissue
- Risk of serious damage to eyes.

Skin contact

- Irritation
- Risk of: Causes burns..
- Bleaching of hair. (based on reports of occupational exposure to workers)

Ingestion

- Severe irritation

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- Ingestion causes burns of the upper digestive and respiratory tracts.
- Nausea
- Vomiting
- Bloating of stomach, belching.
- Risk of chemical pneumonitis from product inhalation
- Gastrointestinal tract:*
- Bloating, ulceration, burns. (accidental exposure to concentrated solutions)
- Lung:*
- Accumulation of fluid in the lungs, death. (severity of effects depends on extent of exposure)

Aspiration hazard

Aspiration risk: may cause lung damage if swallowed.

STOT - repeated exposure

Not classified.

STOT - single exposure

-May cause respiratory irritation. (H335)

Repeated dose toxicity

- Repeated drinking water administration to rat and mouse / affected organ(s): Gastro-intestinal tract / signs: irritation
- Repeated inhalation administration to Rat / affected organ(s): nose / signs: irritation

Reproductive toxicity

- No toxicity to reproduction in animal studies.

Mutagenicity

-This product is not recognized as mutagenic by Research Agencies

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity effects

'Hydrogen peroxide is naturally produced by sunlight (between 0.1 and 4 ppb in air and 0.001 to 0.1 mg/L in water). Not expected to have significant environmental effects.'

Aquatic toxicity data:

- Harmful. Fishes, Pimephales promelas (fathead minnow), LC50, 96 h, 16.4 mg/l
- Fishes, Pimephales promelas, NOEC, 96 h, 5 mg/l

Aquatic invertebrates:

- Toxic. Crustaceans, Daphnia pulex (Water flea) EC50, 48 h, 2.4 mg/l
- Crustaceans, Daphnia pulex, NOEC, 48 h, 1 mg/l
- Fish Leuciscus idus, 72 h LC50, 35 mg/L

Algae:

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- Toxic. *Skeletonema costatum*, 72 h ErC50, 1.38 mg/l
- *Daphnia magna*, 24 h EC50, 7.7 mg/l

Microorganisms:

Activated sludge 0.5 h EC50 = 466 mg/l

Activated sludge 3 h EC50 > 1,000 mg/l

Chronic toxicity to aquatic invertebrates:

- Harmful. *Daphnia magna* (Water flea), 21 d NOEC (reproduction), 0.63 mg/l

Chronic toxicity

- Remarks: no data available
 - Algae, various species, EC50, from 72 - 96 h, from 3.7 - 160 mg/l
- Remarks: fresh water
- Algae, *Nitzschia closterium*, EC50, from 72 - 96 h, 0.85 mg/l
- Remarks: salt water

12.2. Mobility

- Will likely be mobile in the environment due to its water solubility but will likely degrade over time
 - Air, Henry's law constant (H) = 1 mPa.m³/mol
- Conditions: 20 °C
- Remarks: non-significant volatility
- Air, condensation on contact with water droplets
- Remarks: rain washout
-
- Water
- Remarks: non-significant evaporation
- Soil/sediments
- Remarks: non-significant evaporation and adsorption

12.3. Persistence and degradability

Hydrogen peroxide in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. Hydrogen peroxide half-life in freshwater ranged from 8 hours to 20 days, in air from 10 - 20 hours, and in soils from minutes to hours depending upon microbiological activity and metal contamination.

Abiotic degradation

- Air, indirect photo-oxidation, t 1/2 from 10 - 20 h
- Conditions: sensitizer: OH radicals
- Water, redox reaction, t 1/2 from 2.5 d, 10000 ppm
- Conditions: mineral and enzymatic catalysis, fresh water
- Water, redox reaction, t 1/2 from 20 d, 100 ppm
- Conditions: mineral and enzymatic catalysis, fresh water
- Water, redox reaction, t 1/2 from 60 h
- Conditions: mineral and enzymatic catalysis, salt water

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- Soil, redox reaction, $t_{1/2}$ from 15 h
Conditions: mineral catalysis

Biodegradation

Readily biodegradable. (0.02 d) biodegradation 99 %

- aerobic, $t_{1/2} < 1$ min

Conditions: biological treatment sludge

Remarks: rapid and considerable biodegradation

- aerobic, $t_{1/2}$ from 0.3 - 2 d

Conditions: fresh water

Remarks: rapid and considerable biodegradation

- anaerobic

Remarks: not applicable

- Effects on waste water treatment plants, Inhibitor > 200 mg/l

Remarks: inhibitory action

12.4. Bioaccumulative potential

- Material may have some potential to bioaccumulate but will likely degrade in most environments before accumulation can occur.

- log Pow -1.1

Result: non-bioaccumulable (enzymatic metabolism)

12.5. Other adverse effects

- Study in progress

Octanol Water Partition Coefficient:

log Pow = -1.57 (calculated)

12.6. Possible hazards (summary)

- Toxic to aquatic organisms.

- Nevertheless, hazard for the environment is limited due to product properties:

- Does not bioaccumulate.

- Considerable abiotic and biotic degradability.

- No toxicity of degradation products (H₂O and O₂). Decomposes into oxygen and water. No adverse effects.

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- In accordance with local and national regulations.

- Small quantities:

- Dilute with plenty of water.

- After this treatment, the product can be discharged into the sewer.

- Large quantities:

- Contact manufacturer.

- disposed as waste water, in compliance with local regulations.

- Dilution with water is the preferred method of for disposal.

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- Take appropriate measures to prevent release to the environment.

13.2. Packaging treatment

- Rinse the empty containers with plenty of water and treat the effluent in the same way as waste.
- Do not rinse the dedicated containers.
- The empty and clean containers are to be reused in conformity with regulations.
- Dispose of in accordance with local regulations.
- Drums Empty as thoroughly as possible. Triple rinse drums before disposal. Avoid contamination; impurities accelerate decomposition.
- Never return product to original container.

14. TRANSPORT INFORMATION

UN 2014 - Hydrogen peroxide, hydrogen peroxide WATER SOLUTIONS rate of more than 20% but less than 60% (not stabilized as necessary) PG II

US Department of Transportation (DOT)

UN Number 2014
Proper shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Class 5.1
Subsidiary hazard class (8)
Packaging group II
Marine pollutant No

IATA-DGR

UN Number 2014
Proper shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION

Class 5.1
Subsidiary hazard class (8)
Packing group II
ICAO-Labels OXIDIZER + CORROSIVE

Air regulation permit shipment of Hydrogen Peroxide (<=40%) in non-vented containers for Air Cargo Only aircraft, as well as for Passenger and Cargo aircraft. HOWEVER, all PeroxyChem Hydrogen Peroxide containers are vented and therefore, air shipments of PeroxyChem H2O2 are not permitted. IATA air regulations state that venting of packages containing oxidizing substances is not permitted for air transport.

International Maritime Dangerous Goods Code (IMDG)

UN-Number 2014
Proper shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Class 5.1
Subsidiary hazard class (8)
Packing group II
Marine pollutant No

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IMDG-Labels
HI/UN No.
EmS:

OXIDIZING AGENT + CORROSIVE
2014
F-H, S-Q

ADG

UN-Number
Proper shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION
Class
Subsidiary hazard class
Packing group
ADG-Labels
HI/UN No.

2014
5.1
8
II
5.1 + 8
58/2014

Remarks:

HAZCHEM Code: 2P

Other information

- Protect from physical damage.
- Keep drums in upright position.
- Drums should not be stacked in transit..
- Do not store drums on wooden pallets.

15. REGULATORY INFORMATION

U.S. Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:

Chemical Name	CAS-No.	SARA Reportable Quantities	SARA Threshold Planning Quantity
HYDROGEN PEROXIDE	7722-84-1	1000 lbs	1000 lbs

SARA Title III - Section 311/312 Hazard Categories:

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	Yes

SARA Title III – Section 313 Toxic Chemicals:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

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WHMIS Hazard Class C - Oxidizing materials
D1B - Toxic materials
E - Corrosive material
F - Dangerously reactive material

15.1. Labels

- Hazardous components which must be listed on the label: Hydrogen peroxide
- Classified as hazardous according to criteria of NOHSC.

pictograms	!	Harmful
H harmfulness EXPRESSIONS	H302 H335/H314	Harmful if swallowed. Irritating to respiratory system and skin.
P Precautionary statements	P405/P102 P403/P233 P302/P352 P280	Keep locked up and out of the reach of children. Store in a well-ventilated area. Keep container tightly closed. If in contact with skin; Wash with plenty of soap and water. Wear protective gloves / protective clothing / eye protection / face protection.

16. OTHER INFORMATION

16.1 Full text of H-Statements referred to under sections 2 and 3.

H272 : It can strengthen the fire, oxidizing.
H302 : Harmful if swallowed.
H314 : Leads to severe skin burns and eye damage.
H332 : Harmful if inhaled
H335 : May cause respiratory irritation

HYDROGEN PEROXIDE A.Ş. believes that the information and recommendations contained herein (including data and statements) are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other materials or in any process. Further, since the conditions and methods of use are beyond the control of Hydrogen Peroxide A.Ş., Hydrogen Peroxide A.Ş. expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.

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