Safety Data Sheet

Hydrogen Peroxide (59%)

1. IDENTIFICATION

Product name: Hydrogen Peroxide (59%)
Product Synonym: Sterilucent Sterilant Disc
CAS Number: 7722-84-1
Chemical Family: inorganic peroxide
Chemical Formula: H_2O_2
Issue Date: 6/29/2010

Supplier: Sterilucent, Inc.
1400 Marshall Street NE
Minneapolis, MN 55413
(612) 767-3260

Customer/Technical Service: 1-877-721-8405

For Chemical Emergency
Spill, Leak, Fire, Exposure, or Accident
Call ChemTel Day or Night

Within North America: 1-800-255-3924
Outside North America: +01-813-248-0585 (collect calls accepted)

Recommended Use
For use as a sterilant in a vaporized hydrogen peroxide (VHP) sterilizer only as directed by the Sterilucent, Inc. Instructions-For-Use document accompanying this product; all other use prohibited.

2. HAZARD(S) IDENTIFICATION

Hazard Classification
Oxidizer, Corrosive.

Signal Word
DANGER

Hazard Statements
Primary Route(s) of Entry: Skin contact, eye contact, and inhalation

Eyes: Corrosive – will burn eyes and mucous membranes surrounding the eyes. May cause severe irritation, tearing, eye damage, and permanent blindness. Severe damage may include ulceration of the cornea for up to a week after exposure.

Skin: Corrosive. May cause irritation, burns, whitening or bleaching of the skin, blisters, ulcers, and permanent scarring.

Ingestion: Corrosive and toxic if ingested. May cause severe irritation and burns to the tongue, mouth, and throat. Other symptoms include; nausea, vomiting, sharp pain in the abdomen, foaming at the mouth, internal bleeding, temporary unconsciousness, fever, and death. Significant neurological impairment has been described following ingestion of high concentrations of hydrogen peroxide. Reacts in the stomach releasing large amounts of oxygen, which may result in the entry of gas into the circulatory system (gas embolism). Large doses produce gastritis and esophagitis.

Inhalation: Hydrogen peroxide does not readily form a vapor at room temperature. Heating or misting may cause severe irritation and inflammation to the nose, throat, and respiratory tract. Symptoms may include nausea, headache, dizziness, vomiting diarrhea, irritability, insomnia, tremors, numbness of the extremities, convulsions, unconsciousness, and shock. In very severe cases, bronchitis or potentially life-threatening accumulation of fluid in the lungs (pulmonary edema) may occur.

Hazardous Identification Pictograms

Precautionary Statement
This product is a strong oxidizer and irritant. Wear appropriate personal protective equipment to avoid all contact with this chemical.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	Percent of Total Weight
Hydrogen peroxide	7722-84-1	50 - 60
Water	7732-18-5	Balance
EU Hazard Classifications: R20/22, R34, R8; S1/2, S17, S26, S28, s36/37/38, S45		

4. FIRST-AID MEASURES

First Aid Measures

Eye: Get medical attention immediately. Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do, but do not delay irrigation or interrupt flushing. Continue rinsing during emergency transport. Neutral saline solution may be used as soon as it is available.

Skin: Take off contaminated clothing and shoes immediately and flush skin with lukewarm, gently flowing water for at least 30 minutes. Get immediate medical attention. Quickly transport person to an emergency care facility. Soak in water all contaminated clothing to avoid fire hazard.

Ingestion: Call a physician or Poison Control Center immediately. If conscious, rinse the mouth out several times with cold water and spit out. Give one or two cups of water or milk to drink. Stop if victim becomes nauseated. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have person rinse their mouth out with water. Never give anything by mouth to an unconscious victim. Quickly transport victim to an emergency care facility.

If breathing is difficult, administer emergency oxygen. If breathing has stopped, begin artificial respiration taking care to avoid contact with contaminated areas surrounding the mouth.

Inhalation: Remove person from source of exposure to fresh air. If symptoms are experienced, seek immediate medical attention. If breathing is difficult, give oxygen. If not breathing, give artificial respiration taking care to avoid contaminated skin around the mouth.

Note to Physician
Consult a Poison Control Center for all exposures except minor instances of irritation. Note that hydrogen peroxide reacts in the stomach releasing large amounts of oxygen, which may result in entry of gas into the circulatory system (gas embolism).

Hydrogen peroxide at these concentrations is a strong oxidizer. Direct contact with the eyes is likely to cause corneal damage, especially if not washed immediately. Careful opthalmological 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

Flash Point Method: Not Combustible
Lower Explosive Limit: Not Applicable
Upper Explosive Limit: Not Applicable

Fire and Explosion Hazards: Non-combustible. However, hydrogen peroxide is a strong oxidizing material. May intensify and accelerate fires by releasing oxygen upon decomposition. May cause heating and/or combustion (oxidation) of incompatible materials. Some substances that do not normally burn in air may ignite or explode upon contact. Contact with organic materials such as; paper, fabric, cotton, wool, leather, wood, etc. can cause spontaneous combustion when they are allowed to dry.

Containers may explode when heated. Runoff may create a fire or explosion hazard.

Extinguishing Media: Flood with water and/or water spray. Do not use dry chemicals or foam. Carbon dioxide and Halon may provide limited control.

Fire Fighting Instructions: Firefighters should wear a self-contained breathing apparatus and full protective gear. Prevent contact of liquid with firefighting equipment and PPE.

For large fires (e.g. tank truck, rail cars), evacuate for ½ mile (800 meters) in all directions. Flood area with water from a distance. If possible, use unmanned hose holders or monitor nozzles. Do not move cargo or vehicle if cargo has been exposed to heat. Move containers from a fire area if it can be done safely without risk. Do not get water inside containers – a violent explosion may occur. Dike fire-control water for later collection and disposal.

6. ACCIDENTAL RELEASE MEASURES

- Evacuate area. Isolate spill or leak area at least 150 ft (50 meters) in all directions. Keep combustibles (e.g. wood, paper, oil, etc) away from spilled material. Do not touch damaged containers or spilled materials unless wearing appropriate PPE. Prevent entry into sewers, waterways, basements, and confined areas. Contact the fire department.

- Dilute with a large volume of water and hold in a pond or diked area until hydrogen peroxide decomposes to less than 0.1%.

- Do not clean up or dispose of large spills except under the supervision of a specialist. Decomposition may be assisted by adding sodium metabisulfite or sodium sulfite after diluting to about 5%.

- Combustible material exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure all hydrogen peroxide is removed. Residual product 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

Handling Precautions:

- Wear appropriate safety clothing and personal protective equipment. Do not drop, throw, strike, crush, puncture, or otherwise damage the container. Do not remove the container from storage until ready for use.

- People working with this chemical should be properly trained regarding its hazards and its safe use. Maintenance and emergency personnel should be advised of potential hazards.

- Never allow contact with materials which can burn. Eliminate all ignition sources. Post “NO SMOKING” signs in area.

- Immediately report leaks, spills, or failures of the engineering controls.

- Prevent contamination of peroxide solutions by any source including dust, metals, and organic materials. Do not allow water to evaporate form the solution. Replace water and maintain level of stabilizer.

- Do not perform any welding, cutting, soldering, drilling, or other hot work on an empty vessel, container, or piping until all material has been cleared and thoroughly decontaminated.

- Wear appropriate personal protective equipment, if necessary to avoid all contact with this chemical and any contaminated equipment.

- Avoid generating vapors or mists. Prevent the release of vapors or mists into the air.

Storage Precautions:

- Store in a cool, well-ventilated area, out of direct sunlight, away from heat and ignition sources, and away from combustible materials. When storing large quantities, store in an isolated, fireproof building, if possible. Keep quantities stored as small as possible. Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Keep storage area separate from work areas. Store away from elevators, building and room exits or main aisles leading to exits. Post warning signs. Inspect periodically for damage or leaks.

- Store oxidizing material according to the occupational health and safety regulations and fire and building codes that describe the kind of storage area and the type of containers for a specified amount of the material. Ground floor storage facilities are usually recommended. For large scale operations, consider the installation of fire detection equipment along with a suitable, automatic fire suppression system.

- Storage facilities should be made of fire resistant materials. Construct walls, floors, shelving and fittings in storage areas from non-combustible materials that resist attack from hydrogen peroxide. Stainless steel (#316) is one material recommended for storage vessels and piping. Store away from incompatible materials, such as organic compounds.

- Inspect all incoming containers to make sure they are properly labeled and not damaged. Store in suitable, labeled containers (usually the shipping container). Containers should be equipped with an adequately sized

vent or other relief device to prevent over pressurization due to decomposition or fire exposure. Protect from damage.

Work/Hygienic Practices:

- Wash thoroughly with soap and water after handling.

Incompatible products:

- Contact with heavy metals, metallic ions, alkalis, reducing agents and organic matter may produce self-accelerated thermal decomposition.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits: Hydrogen Peroxide
ACGIH TLV-TWA: 1 ppm, A3
OSHA PEL-TWA: 1 ppm
ERPG-1: 10 ppm
ERPG-2: 50 ppm
ERPG-3:100 ppm

Engineering Controls: Use with adequate general and local exhaust ventilation. Prevent generation of mists or vapors into the work area. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/Face Protection: Use chemical splash mono-goggles or a full-face shield made of polycarbonate, acetate, polycarbonate/acetate, PETG, or thermoplastic. Emergency eyewash facilities should be provided in areas of use or storage.

Skin Protection:
- Use a splash-protective ensemble consisting of gloves, apron, or chemical resistant suit and boots. Chemical-resistant gloves and boots should be made of nitrile, natural rubber, butyl rubber, or polyvinyl chloride (PVC). Gloves should be gauntlet length for handling large quantities.
- Use an impermeable apron made of PVC or polyethylene. Inner and outer garments should be made of woven polyester fabric, or modacrylic or polyvinylidene fabrics.
- Single or disposable chemical protective suits made of butyl rubber, Responder®, Tychem® BR/LV or Tychem® TK may be used for spill response.

Note
Residual hydrogen peroxide, if allowed to dry on clothing and shoes, may cause the material to ignite and result in a fire. Completely submerged hydrogen peroxide contaminated clothing or other materials in water prior to drying.

Respiratory Protection: Firefighters and emergency responders should wear a positive pressure demand self-contained breathing apparatus. Do not use any form of air-purifying respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless, water-like liquid
Odor: A slight sharp odor, irritating vapor
Chemical Type: Mixture
Physical State: Liquid
Melting Point: -40 to -62 ºF, -40 to -52 ºC

Boiling Point: 237-259 ºF, 114-126 ºC
Specific Gravity: 1.20
Molecular Weight: 34
Percent Volatiles: 100
Vapor Pressure: 18.3 mm Hg @ 30 ºC (50%)
pH Factor: 0 to < 3
Solubility: completely
Evaporation Rate: >1 (butyl acetate = 1)

10. STABILITY AND REACTIVITY

Reactivity: **No test data**

Stability: Unstable in the presence of heat or contamination.
Hazardous Polymerization: will not occur

Other:

Hazardous Decomposition Products: Decomposition continuously occurs even at a slow rate when the compound is inhibited. Store properly in vented containers. When it decomposes to oxygen and water, large amounts of heat are liberated, leading to an increased rate of decomposition.

Conditions to avoid: Excessive heat; Contamination; Exposure to UV-rays; pH variations.

Incompatible Materials: Reducing agents, oxidizable materials, organic materials (e.g. wood, paper, cellulose, grease), combustibles, heavy metals (e.g. copper alloys, iron, brass, bronze, chromium, zinc, lead, silver, manganese), caustic/strong bases (e.g. sodium hydroxide), fuels (e.g. lubricating oil, machine oil, gasoline). Dirt and many metals cause a rapid decomposition with liberation of oxygen gas. Warning – Gas buildup inside a closed container can rupture the container.

11. TOXICOLOGICAL INFORMATION

Acute Studies: Severe irritant/corrosive to eyes, skin, respiratory and gastrointestinal system. May cause irreversible tissue damage.
Chronic/Carcinogenicity: The International Agency for Research on Cancer (IARC) classifies hydrogen peroxide as a chemical that is not classifiable as to carcinogenicity to humans (Group 3).

The ACGIH classifies hydrogen peroxide as a probable animal carcinogen (A3). This agent is carcinogenic in experimental animals at relatively high doses, by route(s) of administration, at site(s), of histological type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiological studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

Ingredient(s) – Carcinogenicity: hydrogen peroxide
Listed in the IARC Monographs

Ingredient(s) – Toxicological Data: hydrogen peroxide
LC50 (rat): 2000 mg/m3 (4 hrs)
LD50 (oral, male rat): 1193 mg/kg (35% solution)
LD50 (oral, female rate): 801 mg/kg (60% solution)
LD50 (oral, male rat): 75 mg/kg (70% solution)

LD50 (oral, mouse): 2000 mg/kg (90% solution)
LD50 (dermal, rabbit): ~690 mg/kg (90% solution)
LD50 (oral, rat): >225 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicological Information: Channel catfish 96-hr LC50: 37.4 mg/L
Fathead minnow 96-hr LC50: 16.4 mg/L
Daphnia magna 24-hr EC50: 7.7 mg/L
Daphnia pulex 48-hr LC50: 2.4 mg/L
Freshwater snail 96-hr LC50: 17.7 mg/L

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

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with applicable federal, state, and local government regulations. Small amounts may be diluted in a large amount of water and allowed to decompose followed by discharge into a suitable treatment system in accordance with all applicable regulatory agencies.

RCRA Information: Waste product and solutions may meet the RCRA Ignitability and Corrosive characteristic.

14. TRANSPORT INFORMATION

Hydrogen peroxide, aqueous solutions with more than 40% but not more than 60% hydrogen peroxide (stabilized as necessary).

Division: 5.1 (Oxidizer)
UN/NA Number: UN2014
Packing Group: II
Labels: Oxidizer, Corrosive
Placard: 5.1 (Oxidizer)

Air (ICAO/IATA)
Label: IATA approved Dangerous Goods in Excepted Quantities labels
Waybill Description/Quantity: Dangerous Goods in Excepted Quantities

DOT Pictograms:

ADR – Europe Pictograms:

TDG – Canada Pictograms:

15. REGULATORY INFORMATION

U.S. Regulatory Information: Toxic Substance Control Act (TSCA): All ingredients of this product are listed on the TSCA 8(b) Chemical Substance Inventory or are exempt

SARA Hazard Classes: Acute Health Hazard
Fire Hazard

SARA Title III – EPA Part 355 Extremely Hazardous Substance
Threshold Planning Quantity (lbs): 1000 – 10000
SARA Section 304 Reportable Quantity: 100

SARA Section 313 Notification: This product does not contain any ingredients regulated under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 or 40 CFR 372

Ingredient(s) U.S. Regulatory Information:
hydrogen peroxide
SARA Title III – EPA Part 355 Extremely Hazardous Substance
OSHA Process Safety Management – 1910.119 App A Hazardous Chemical

Ingredient(s) State Regulations:
hydrogen peroxide
New Jersey – Workplace Hazard
New Jersey – Environmental Hazard
New Jersey – Special Hazard
Pennsylvania – Workplace Hazard
Massachusetts – Hazardous Substance
New York City – Hazardous Substance

Canadian Regulatory Information:
Class C – Oxidizing Material
Class D, Div 2 – Poisonous or Infectious Material: other toxic effects
Class E – Corrosive Material

Ingredient(s) Canadian Regulatory Information:
hydrogen peroxide
WHMIS – Ingredient Disclosure List

European Union (EU) Regulatory Information:
EU Risk Phrases:

- R5 – Heating may cause an explosion
- R8 – Contact with combustible material may cause fire
- R20/22 – Harmful by inhalation and if swallowed
- R35 – Causes severe burns

EU Safety Phrases:

- S1/2 – Keep locked up and out of reach of children
- S17 – Keep away from combustible materials
- S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
- S28 – After contact with skin, wash immediately with plenty of gently flowing water
- S36/37/39 – Wear suitable protective clothing, gloves, and eye/face protection
- S45 – In case of accident or if you feel unwell, seek medical advice immediately

EC. No.: 231-765-0

Other International Regulations:

China: listed
Japanese Gazette (ENCS): 1-419
Korean Existing Chemicals List (ECL): KE-20204
On Philippines Inventory of Chemicals and Chemical Substances (PICCS)

16. OTHER INFORMATION

Revision date: 2015

NFPA Rating:

Health: 3
Fire: 0
Reactivity: 1
Other: OXY

HMIS Rating:

Health: 3
Fire: 0
Reactivity: 1
Personal Protection: H

Disclaimer

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Sterilucent, Inc.