STERIS®

PRODUCT SAFETY DATA SHEET

1. Identification of the Substance and Company

S40™ Sterilant Concentrate

Product No. S4000, S4001, S4002, S4003

SDS No. 4000

NFPA 704 HAZARD RATING

HEALTH:	**3**
FIRE:	**2**
REACTIVITY:	**2**

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2. Hazards Identification

OXIDIZER/ FLAMMABLE/HARMFUL/ CORROSIVE/ DANGEROUS FOR THE ENVIRONMENT

3. Composition/Information on Ingredients

Compartment A - Liquid

Hazardous Components	% By Wt.	CAS No.	EU No.	Symbol	R Phrases	Oral LD_{50}	Inhalation LC_{50}
Peracetic acid	35.5	79-21-0	201-186-8	EU: F, O, C, Xn, N Australia: O, Xn, C	EU: 7, 10, 20/21/22, 35,50 Australia: 7, 10, 20/21/22, 35	50 – 500 mg/kg (rat) at 35% solution	4,080 mg/m^3 (rat) at 5% solution
Acetic acid	40.0	64-19-7	200-580-7	EU: F, C Australia: C	EU: 10, 35 Australia: 10, 35	3,310 mg/kg (rat)	5,620 ppm 1 hr. (rat)
Hydrogen peroxide	6.5	7722-84-1	231-765-0	EU: C, Xn Australia: O, C	EU: 5, 8, 20/22, 35 Australia: 8, 34	1193 mg/kg (rat) at 35% solution	>0.17 mg/l (rat) 50% solution
Sulfuric acid	1.0	7664-93-9	231-639-5	EU: C Australia: C	EU: 35 Australia: 35	2140 mg/kg (rat)	510 mg/m3 2 hr. (rat)

Compartment B - Solid

Hazardous Component	% By Wt.	CAS No.	EU No.	Symbol	R Phrases	Oral LD_{50}	LC_{50}
Tetrasodium EDTA	5 - 10	64-02-8	200-573-9	EU: [Xi] Australia: [Xi]	EU: [R36/38] Australia: [R36/38]	>2000mg/kg (rat)	ND

4. First Aid Measures

Eye Contact: In case of contact, immediately flush with plenty of water for at least 15 minutes. Call a physician.
Skin Contact: In case of contact, immediately wash with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before reuse.
Inhalation: Move patient to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.
Ingestion: Do NOT induce vomiting. Rinse mouth with water. Drink large quantities of water. Get medical attention immediately.

5. Fire-Fighting Measures

Flash Point: 115°F (46°C) **Method:** Closed cup (modified)
Autoignition Temperature: 424°F (218°C)
Flammable Limits: % Volume in Air: **LEL**: ND **UEL**: ND
Flammability Classification: Liquid, Flammable.
Special Hazards: NFPA Class 3 oxidizer. Stabilized Peracetic acid decomposes under fire conditions to release oxygen that intensifies the fire.
Extinguishing Media: Use water spray to keep fire exposed containers cool.
Special Fire Fighting Procedures: Wear positive-pressure self-contained breathing apparatus and full protective clothing. Use flooding quantities of water.

6. Accidental Release Measures

Remove all sources of ignition and ventilate area. Wearing appropriate protective equipment flush material with large quantities of water until all material is dissolved (diluted 1:20). Remove unopened containers to a sink of water and submerge, open and dilute.

7. Handling and Storage

7.1 Handling

Do not remove container from carton until time of use. Avoid physical damage to container.

7.2 Storage

Store in a cool dry area at 16-27°C (61-81°F). Store in an upright position. Avoid heat or open flame, moisture, sunlight or contaminating substances. Provide mechanical local exhaust ventilation.

8. Exposure Control/Personal Protection

8.1 Occupational Exposure Limits

Acetic acid: OSHA PEL, ACGIH TLV and NOHSC = 10 ppm (TWA); OSHA PEL and NOHSC = 15 ppm (STEL)
Hydrogen peroxide: OSHA PEL, ACGIH TLV, HSE WEL and NOHSC = 1 ppm (TWA); HSE WEL = 2 ppm (STEL)
Sulfuric acid: OSHA PEL, ACGIH TLV and NOHSC = 1 mg/m^3 (TWA) / OSHA PEL and ACGIH TLV = 3 mg/m^3 (STEL)

8.2 Personal Protection

Respirator Protection: MHSA/NIOSH-approved respirator if exposure limits are exceeded (see Section 8.1).
Eye Protection: Safety glasses or goggles.
Protective Gloves: Rubber or Neoprene
Other Protective Clothing and Equipment: Boots, apron and gauntlets to prevent prolonged or repeat contact.
Ventilation: Adequate ventilation to maintain air concentrations below established limits.

9. Physical and Chemical Properties (of liquid unless indicated)

Solubility in Water: Complete **Specific Gravity (68°F/20°C):** 1.13
pH (1% solution): Liquid: 2 – 3; **Solid:** ~9.3 **Vapor Pressure (mm Hg at 77°F/25°C):** 20
Boiling Point: Approx. 225°F (107°C) **Freezing/Melting Point:** -47°F (-44°C)
Percent volatile: 99
Appearance/Odor: Liquid - Clear, colorless with a pungent, vinegar odor.; **Solid** - White granular powder

10. Stability and Reactivity

Stability: Closed container is stable at room temperature under normal storage and handling conditions. Self-accelerating decomposition temperature (SADT) for peroxyacetic acid is 83°C.
Hazardous Polymerization: Will not occur
Incompatible Materials: Dirt, alkali and organics including primary alcohols, heavy metals, reducing and oxidizing agents.
Conditions to Avoid: Open flames, light, elevated temperatures, moisture, contamination and combustibles such as paper and wood.
Hazardous Decomposition or Byproducts: Acetic acid and oxygen

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11. Toxicological Information
11.1 Acute (Primary Routes of Exposure)
Eyes: Corrosive. Contact may cause irreversible eye damage including blindness.
Skin: Corrosive. Contact may cause severe burns. Absorption is moderately hazardous.
Dermal LD_{50} (rabbit) > 200 mg/kg
Inhalation: Vapors and mists will irritate the nose, throat and lungs but will usually subside when exposure ceases. Coughing and breathing difficulty may occur.
Inhalation LC_{50} (rat) 4 hour = 0.450 mg/L
Ingestion: Moderately toxic. Oral LD_{50} (rat) = 50-500 mg/kg
11.2 Long Term Exposure
Carcinogenicity: IARC lists "Strong-inorganic-acid mists containing sulfuric acid (occupational exposure to)" as Group 1 (Carcinogenic to Humans). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions. ACGIH lists hydrogen peroxide as an A3 (Animal Carcinogen) and "sulfuric acid contained in strong inorganic acid mists" as an A2 (Suspected Human Carcinogen

12. Ecological Information
Environmental Fate:
S40 Sterilant Concentrate hydrolyzes to acetic acid and hydrogen peroxide with a half life of less than 20 minutes at 122°F (50°C).

13. Disposal Considerations
Dispose in accordance with local, state, and Federal regulations. Do not allow undiluted material to enter storm or sanitary sewer systems. Do not mix S40 Sterilant Concentrate with hypochlorite solutions. Dispose of used container in proper waste receptacle. Dispose of leaking or damaged containers by submerging the container in a water-filled sink in a well-ventilated area while wearing goggles or face shield and rubber gloves. Open container and flush with large quantities of water (at least 20 parts water) until container contents have dissolved. Dispose of thoroughly rinsed container in proper waste receptacle.

14. Transport Information
Shipping Name: Organic Peroxide Type E, Liquid (35% Peroxyacetic acid, Stabilized)
Hazard Class: 5.2 Subsidiary: 8
ID Number: UN 3107
Packing Group: II
Label: 5.2 Organic peroxide (Subrisk [8] Corrosive)
Road /Rail and Sea, qualified for limited quantity exceptions, and may display limited quantity marks.
ROAD/RAIL
ADR/RID Class: UN 3107, Organic Peroxide Type E, Liquid (35% Peroxyacetic acid, Type E, Stabilized), 5.2 [8] PGII
SEA
IMDG Class: Organic Peroxide Type E, Liquid (35% Peroxyacetic acid, Type E, Stabilized), 5.2 [8]
Marine Pollutant: No
AIR
ICAO/IATA Class: Organic Peroxide Type E, Liquid (35% Peroxyacetic acid, Type E, Stabilized), 5.2 [8]

(Peroxyacetic acid and Peracetic acid are synonymous.)
Special Provisions: US DOT Approval for Air Shipment (CA-1995110005). Certificate must accompany shipment. Certificate applies to shipments within the United States only.

Written Competent Authority approval is required to fly STERIS S40 to, from or through certain countries due to the fact the product vents and produces a vapor. The IATA Dangerous Goods Regulations lists Country (and Operator) variations for origin, destinations and/or transit points that will require such approval prior to shipping this commodity.

15. Regulatory Information
RCRA Hazardous Waste Number: Peracetic acid: D001, D002

SARA 311/312 Codes:
Peracetic acid:
Acute Hazard: Yes
Chronic Hazard: No
Fire Hazard: Yes
Reactivity Hazard: Yes
Sudden Release Hazard: Yes

SARA 313 Toxic Chemical: Peracetic acid, Sulfuric Acid
SARA 302 EHS (Extremely Hazardous Substance): Peracetic acid: 500 lbs / 227 Kg Threshold Planning Quantity (TPQ). Sulfuric acid Reportable Quantity (RQ) and Threshold Planning Quantity (TPW) = 1,000 lbs/ 454 Kg

Reportable Quantity: Peracetic acid: 500 lbs / 227 Kg
OSHA Specifically Regulated Substance, Process Safety: Peracetic acid: 500 lbs / 227 Kg Threshold Quantity

State Regulations: NA
EU Regulations: This preparation is classified as dangerous as defined by the UK Chemicals (Hazard Information and Packaging for Supply) Regulations. These regulations implement a number of EC Directives including the Dangerous Substances Directive (67/548/EEC and amendments), the Dangerous Preparations Directive (88/379/EEC and amendments) and the Safety Data Sheets Directive (91/155/EEC and amendment).

Australian Regulations: This preparation is classified as dangerous as defined by Australia's National Commission's *National Model Regulations for the Control of Workplace Hazardous Substances* [NOHSC:1005(1994)] and in accordance with the *Approved Criteria for Classifying Hazardous Substances* [NOHSC:1008(1994)] and the *List of Designated Hazardous Substances* [NOHSC:1005(1994)].

EEC/AUSTRALIAN Classification: OXIDIZER/ FLAMMABLE/HARMFUL/ CORROSIVE/ DANGEROUS FOR THE ENVIRONMENT
Hazard Symbol: O, F, Xn, C, N
Risk Phrases: R7: May cause fire, R10: Flammable, R20: Harmful by inhalation, R21: Harmful in contact with skin, R22: Harmful if swallowed, R35: Causes severe burns, R50: Very toxic to aquatic organisms
Safety Phrases: S3/7: Keep container tightly closed in a cool place, S36/37/39: Wear suitable protective clothing, gloves and eye/face protection, S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice, S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible), S61: Avoid release to the environment. Refer to special instructions/safety data sheet

16. Other Information
The information on this sheet is not a specification and does not guarantee specific properties. The information is intended to provide general knowledge as to health and safety based upon our knowledge of the handling, storage and use of the product. It is not applicable to unusual or non-standard uses of the product or where instructions or recommendations are not followed.

S40 Sterilant Concentrate consists of liquid 35% Peracetic acid (PAA) and powdered inactive salts/builders. 35% PAA exists in equilibrium with Hydrogen peroxide and Acetic acid. PAA poses the greatest hazard of these three constituents and is therefore the focus of this MSDS. The precautions listed in this MSDS pertaining to PAA are equal to or more stringent than those required for the other equilibrium components. Unless otherwise noted, this MSDS applies to S40 Sterilant Concentrate and not as diluted.

NA - Not Applicable
ND - No Data