SAFETY DATA SHEET

1. Identification

Chlorosulfonic Acid/Sulfur Trioxide Blend

Product identifier

Other means of identification 130000026293

SDS number Manufacturing of pharmaceutical products.

Recommended use Not to be used as a biocidal product. Not to be used as a drain cleaner. Not to be used as a direct component of a cleaning product. Not to be used for cleaning sludge out of oil tanks.

Recommended restrictions

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name Nexpera LLC

Address 131 Continental Dr. Suite 300
Newark, DE 19713
United States of America

Website Nexpera.com

Telephone 1-800-441-9362

1.4. Emergency telephone number CHEMTREC: 1-800-424-9300 (outside the U.S. 1-703-527-3887)

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Acute toxicity, inhalation	Category 1
	Skin corrosion/irritation	Category 1A
	Serious eye damage/eye irritation	Category 1
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
	Specific target organ toxicity, repeated exposure (inhalation)	Category 2 (respiratory system, teeth)

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement May be corrosive to metals. Fatal if inhaled. Causes severe skin burns and eye damage. May cause respiratory irritation. May cause damage to organs (respiratory system, teeth) through prolonged or repeated exposure by inhalation.

Precautionary statement

Prevention Keep only in original container. Do not breathe mist/vapors. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Wear respiratory protection.

Response If swallowed: Rinse mouth. Do NOT induce vomiting. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC)

Reacts violently with water. Reacts with most metals to form flammable hydrogen gas.

Supplemental information Corrosive to the respiratory tract.

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	%
Chlorosulfonic acid	7790-94-5	70 - 80
Sulfur trioxide	7446-11-9	20 - 30

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Take off immediately all contaminated clothing. Flush thoroughly with water for at least 15 minutes. Call a physician or poison control center immediately. Apply compresses of ice water while patient is being transported to medical facilities. Chemical burns must be treated by a physician. Wash contaminated clothing before reuse.

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.

Ingestion Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms/effects, acute and delayed Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Sulfur trioxide forms sulfuric acid when exposed to water or moisture in the air. Prolonged exposure to sulfuric acid mist may cause cancer.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Chemical burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General information Take off all contaminated clothing immediately. Wash contaminated clothing before reuse. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. IF exposed or concerned: Get medical advice/attention.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Powder. Carbon dioxide (CO2).

The product itself does not burn. Use fire-extinguishing media appropriate for surrounding materials. Carefully apply fine water mist or mid-expansion foam to slowly dilute to non fuming sulfuric acid. This process may release sulfuric acid mists into the air. Reaction with water and surrounding materials will generate heat, hydrogen chloride gas, and sulfuric acid mist.

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed. Combustion products include: Sulfur dioxides. Sulfuric acid. Hydrogen chloride.

Special protective equipment and precautions for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray. Do not get water inside container.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe vapors or spray mist. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up	This product is miscible in water. Should not be released into the environment. Prevent entry into waterways, sewer, basements or confined areas. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Dilute spill to non-fuming sulfuric acid (<100%) using a water fog or aqueous foam. Remove product with clean and dry vacuum truck or pump to storage/salvage vessel. Following product recovery, flush area with water. Neutralize with lime, soda ash or other alkali material. Small Spills: Neutralize with lime, soda ash or other alkali material. Flush with plenty of water. Clean surface thoroughly to remove residual contamination. Retain all contaminated water for removal and treatment. Put material in suitable, covered, labeled containers. For waste disposal, see Section 13 of the SDS.
Environmental precautions	Avoid release to the environment. Inform appropriate managerial or supervisory personnel of all environmental releases. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not taste or swallow. Do not breathe vapors or spray mist. Provide adequate ventilation. Do not get in eyes, on skin, or on clothing. Wash hands thoroughly after handling. Wash contaminated clothing before reuse. When using do not eat, drink or smoke. Should be handled in closed systems, if possible. Use only outdoors or in a well-ventilated area. Do not mix water and/or aqueous solutions with sulfur trioxide. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store locked up. Store in original tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS). Protect containers from damage. Never allow product to get in contact with water during storage. Store in a cool, dry place out of direct sunlight. Store in a corrosive resistant container.

8. Exposure controls/personal protection

Occupational exposure limits	No exposure limits noted for ingredient(s).
Biological limit values	No biological exposure limits noted for the ingredient(s).
Appropriate engineering controls	Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear chemical splash goggles in combination with a full-length face shield or an acid hood.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.
Skin protection	
Other	Wear appropriate chemical resistant clothing. Full body chemical protective clothing. Chemical resistant boots.
Respiratory protection	Use a NIOSH-approved respirator as appropriate.
Thermal hazards	None known.
General hygiene considerations	Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance	
Physical state	Liquid.
Form	Liquid.
Color	Clear to light yellow.
Odor	Pungent.
Odor threshold	Not available.
pH	< 1
Melting point/freezing point	Not available.

Initial boiling point and boiling range	Not available.
Flash point	Does not flash.
Evaporation rate	< 1 (Butyl Acetate = 1.0)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
Vapor pressure	ca. 97 mm Hg at 15 °C (59 °F)
Vapor density	ca. 1.834 at 20 °C (68 °F) (Air = 1.0)
Relative density	ca. 1.77 at 25 °C (77 °F)
Solubility(ies)	
Solubility (water)	Completely soluble. Reacts violently with water liberating sulfuric acid mist cloud and hydrogen chloride gas.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
Density	ca. 1.77 at 25 °C (77 °F)
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	Reacts violently with water liberating hydrogen chloride gas and sulfuric acid mist. Contact with metal may release flammable hydrogen gas. Reacts violently with strong alkaline substances. This product may react with reducing agents. Can react with moisture in air to produce sulfuric acid mist.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Heat. Contact with incompatible materials. Do not mix with other chemicals.
Incompatible materials	Water. Metals. Organic material. Nitrates. Chlorates. Perchlorates. Carbides. Strong oxidizers. Reducing agents. Cyanides. Sulfides. Bases. Picrates.
Hazardous decomposition products	Hydrochloric acid. Sulfur oxides.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Corrosive to the respiratory tract. Sulfuric acid is corrosive to eyes, skin and mucous membranes. Prolonged or repeated inhalation may damage respiratory tissue and may erode tooth enamel.
Skin contact	Causes severe skin burns. May be harmful in contact with skin.
Eye contact	Causes serious eye damage.
Ingestion	Fatal if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. Sulfur trioxide forms sulfuric acid when exposed to water or moisture in the air. Prolonged exposure to strong inorganic acid mists may cause cancer.

Information on toxicological effects

Acute toxicity	Fatal if inhaled.

Components	Species	Test Results
Chlorosulfonic acid (CAS 7790-94-5)		
Acute		
Dermal		
LD50	Rabbit	2858 mg/kg
Inhalation		
LC50	Rat	38.5 mg/l, 4 Hours
Sulfur trioxide (CAS 7446-11-9)		
Acute		
Inhalation		
Aerosol		
LC50	Rat	0.375 mg/l, 4 Hours

Skin corrosion/irritation Causes severe skin burns.

Serious eye damage/eye irritation Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Not a respiratory sensitizer.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a known human carcinogen, (IARC category 1). This classification applies only to mists containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions.

IARC Monographs. Overall Evaluation of Carcinogenicity

Strong inorganic acid mists containing sulfuric acid (CAS N/A)	1 Carcinogenic to humans.

NTP Report on Carcinogens

Strong inorganic acid mists containing sulfuric acid (CAS N/A)	Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Sulfuric acid is corrosive to eyes, skin and mucous membranes. Prolonged or repeated inhalation may damage respiratory tissue and may erode tooth enamel.

Aspiration hazard Not an aspiration hazard.

12. Ecological information

Ecotoxicity Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

Persistence and degradability Not applicable.

Bioaccumulative potential The product is not expected to bioaccumulate.

Mobility in soil No data available.

Other adverse effects Chlorosulfonic acid violently reacts with water and readily hydrolyzes to hydrogen chloride and sulfuric acid.

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Hazardous waste code D002: Waste Corrosive material [pH ≤2 or =>12.5, or corrosive to steel]
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

Waste from residues / unused products	Dispose in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

DOT

UN number	UN1754
UN proper shipping name	Chlorosulfonic acid (Chlorosulfonic acid RQ = 1000 LBS)
Transport hazard class(es)	
Class	8
Subsidiary risk	6.1
Label(s)	8, 6.1
Packing group	I
Environmental hazards	
Marine pollutant	No.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Special provisions	2, B9, B10, B14, B32, T20, TP2, TP38, TP45
Packaging exceptions	None
Packaging non bulk	227
Packaging bulk	244

IATA

UN number	UN1754
UN proper shipping name	FORBIDDEN DANGEROUS GOODS
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	Not applicable.
Environmental hazards	No.
ERG Code	8W
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IMDG

UN number	UN1754
UN proper shipping name	CHLOROSULPHONIC ACID
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	I
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not established. However, this product is a liquid and if transported in bulk covered under MARPOL 73/78, Annex I.

15. Regulatory information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Chlorosulfonic acid (CAS 7790-94-5) Listed.

SARA 304 Emergency release notification

Sulfur trioxide (CAS 7446-11-9) 100 LBS

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)

Not listed.

Toxic Substances Control Act (TSCA) All components of the mixture on the TSCA 8(b) inventory are designated “active”.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Chemical name	CAS number	Reportable quantity (pounds)	Threshold planning quantity (pounds)	Threshold planning quantity, lower value (pounds)	Threshold planning quantity, upper value (pounds)
Chlorosulfonic acid	7790-94-5	1000	1000		
Sulfur trioxide	7446-11-9	100	100		

SARA 311/312 Hazardous chemical Yes

Classified hazard categories
Corrosive to metal
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)
Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
Sulfur trioxide	7446-11-9	20 - 30

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Sulfur trioxide (CAS 7446-11-9)

Safe Drinking Water Act (SDWA) Not regulated.

Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number

Sulfur trioxide (CAS 7446-11-9) 6552

Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))

Sulfur trioxide (CAS 7446-11-9) 20 %WV

DEA Exempt Chemical Mixtures Code Number

Sulfur trioxide (CAS 7446-11-9) 6552

US state regulations

US. Massachusetts RTK - Substance List

Chlorosulfonic acid (CAS 7790-94-5)
Sulfur trioxide (CAS 7446-11-9)

US. New Jersey Worker and Community Right-to-Know Act

Chlorosulfonic acid (CAS 7790-94-5)
Sulfur trioxide (CAS 7446-11-9)

US. Pennsylvania Worker and Community Right-to-Know Law

Chlorosulfonic acid (CAS 7790-94-5)
Sulfur trioxide (CAS 7446-11-9)

US. Rhode Island RTK

Chlorosulfonic acid (CAS 7790-94-5)
Sulfur trioxide (CAS 7446-11-9)

California Proposition 65

WARNING: This product can expose you to chemicals including Strong inorganic acid mists containing sulfuric acid, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

Strong inorganic acid mists containing sulfuric acid (CAS N/A) Listed: March 14, 2003

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 03-August-2017

Revision date 08-November-2023

Version # 02

NFPA ratings

Disclaimer Nexpera LLC cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.