

Sodium Perchlorate Solution

Section 1. Identification

GHS product identifier	: Sodium Perchlorate Solution
Synonyms	: Perchloric Acid, Sodium Salt in Aqueous Solution, SP
Restrictions on use	: None known.
In case of emergency - Chemical	
Hours of operation	: 24 hours a day, 7 days a week
CHEMTREC Customer Number	: CCN721187
Telephone number	: +1 703 741 5970 (International) +1 800 424 9300 (US & Canada)

Manufacturer / Supplier

American Pacific
10622 West 6400 North
Cedar City, UT 84721

Telephone: +1 (435) 865-5000
Fax: +1 (435) 865-5005

Use of substance/ preparation	: Analytical chemistry, oxidizer in various propellant or explosive mixtures, various industrial uses involving need for oxidizing or ionization in aqueous solution properties
--	---

Section 2. Hazards identification

OSHA/HCS status	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	: OXIDIZING LIQUIDS - Category 1 ACUTE TOXICITY (oral) - Category 4 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: May cause fire or explosion; strong oxidizer.
Harmful if swallowed.
Causes serious eye irritation.
May cause damage to organs through prolonged or repeated exposure. (thyroid)

Precautionary statements

Section 2. Hazards identification

Prevention	: Wear fire resistant or flame retardant clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing and other combustible materials. Do not breathe vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Do not touch eyes. Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection.
Response	: In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion. IF SWALLOWED: Rinse mouth. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes. Get medical help. If eye irritation persists: Get medical help. Get medical help if you feel unwell.
Storage	: Store in a well-ventilated place. Store separately.
Disposal	: Dispose of contents and container in accordance with all local, regional, national and international regulations.
Other hazards which do not result in classification	: None known.
Hazards identified when used	: Based on known or expected use, no additional hazards are expected.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
Synonyms	: Perchloric acid, sodium salt (1:1)

Ingredient name	Identifiers	Conc. (% w/w)	GHS Classification
sodium perchlorate	CAS: 7601-89-0 EC: 231-511-9	≥65 - ≤75	OXIDIZING SOLIDS - Category 1 ACUTE TOXICITY (oral) - Category 4 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2

Any concentration shown as a range is to protect confidentiality or is due to batch variation. If specific chemical identify is withheld, it is to protect confidentiality.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	: Rinse immediately contaminated clothing and skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention following exposure or if feeling unwell. Wash clothing before reuse. Clean shoes thoroughly before reuse. Continue to rinse for at least 15 minutes.

Section 4. First aid measures

- Ingestion** : Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Airborne concentrations of sodium perchlorate can aggravate pre-existing respiratory problems. Chronic exposure may interfere with the uptake of iodine by the thyroid which may cause hypothyroidism.
- Skin contact** : May cause local irritation or stinging effect.
- Ingestion** : Harmful if swallowed. Ingestion of large quantities has been reported to cause staggering in small mammals.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness
- Inhalation** : No specific data.
- Skin contact** : No specific data.
- Ingestion** : Perchlorates act to reversibly and competitively inhibit iodine uptake by the thyroid gland. Perchlorate is soluble in water, so exposure to sodium perchlorate can be via water contaminated with sodium perchlorate or inhalation in the workplace. With chronic exposure given sufficient dose (see (United States National Research Council) NRC, 2005) and duration, sodium perchlorate can cause thyroidal stores of iodine to be reduced, which may lead to hypothyroidism. For workers that live in areas of the world with endemic iodine deficiency, it is important that these people receive adequate iodine in the diet or are supplemented with iodine.

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

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Section 5. Fire-fighting measures

- Extinguishing media** : water - other extinguishing materials are ineffective
- Specific hazards arising from the chemical** : Sodium perchlorate is an oxidizing agent and may cause rapid combustion or explosions if mixed with fuels, including organic materials or powdered metals.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
halogenated compounds
metal oxide/oxides
- Special protective actions for fire-fighters** : Do not fight fires involving mixtures of Sodium perchlorate and fuels. Sodium perchlorate is an oxidizing agent and may cause rapid combustion or explosions if mixed with fuels.
Burning sodium perchlorate may produce chlorine, chlorine dioxide, hydrogen chloride, and oxides of nitrogen as well as mixtures with any other compounds involved in the combustion. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without

Section 5. Fire-fighting measures

suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

- : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

- : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flames, smoking or flames in hazard area. Do not breathe vapor. Put on appropriate personal protective equipment.

For emergency responders

- : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

- : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill

- : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Absorb with an inert material and place in an appropriate waste disposal container. Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Dispose of via a licensed waste disposal contractor.

Large spill

- : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Do not absorb in sawdust or other combustible material. It may lead to a fire risk when it dries out. Wash spillages into an effluent treatment plant or proceed as follows. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

- : Put on appropriate personal protective equipment (see Section 8). Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Keep away from clothing, incompatible materials and combustible materials. Wear fire resistant clothing. Keep away from heat. Empty containers retain product residue and can be hazardous. Do not reuse container. Ground and bond process equipment. Mixing Sodium Perchlorate with fuels of any type may result in rapid combustion or explosions. When handling materials contaminated with Sodium Perchlorate such as dust collector bags or any other combustible material, thoroughly wet the bags with water before handling, keep the bags wet while handling, and use non-sparking tools or tools coated with non-sparking material if non-sparking tools are not available. AVOID friction, impact, or static electricity ignition sources when organic materials are contaminated with Sodium Perchlorate. Fire resistant fabrics do not reduce the hazard. Finely powdered metals are frequently as combustible with Sodium Perchlorate as are organic materials. Sodium Perchlorate in any form should be handled in a manner to minimize any potential contact with water that may ultimately become drinking water and handling that allows contact with soil that may create a path to drinking water should be avoided to prevent potential environmental liability. Handle away from heat and humidity sources (if possible in covered and well ventilated premises). Avoid contact with incompatible substances (organic materials and reducing agents, especially fuels, oils, greases, etc.).

Section 7. Handling and storage

Avoid contact with eyes and skin (wear appropriate personal protective equipment: glasses, gloves and mask in case of dust).

Prevent any contamination of the environment via the sewers or water sources.

Advice on general occupational hygiene

- : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

- : Store away from combustibles and flammables - Keep container closed when not in use. Control static electricity and other ignition sources. Do not store with reducing agents, organic materials, especially fuels, oils, greases, etc. Do not store with explosive substances that may detonate. Do not store close to a heat source that could cause temperatures to approach the decomposition temperature.

Section 8. Exposure controls/personal protection

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

Control parameters

Occupational exposure limits

Ingredient name

sodium perchlorate

Exposure limits

ACGIH TLV (United States)

TWA: 10 mg/m³ (Inhalable particle).

TWA: 3 mg/m³ (Respirable particle).

Appropriate engineering controls

- : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. Under dusty conditions, wear chemical safety goggles.

Skin protection

Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

- : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Avoid contamination of cotton or other absorbent material. As in any industrial working environment, workers should routinely wear clean clothes to work. Do not wear any work clothing that has become contaminated with sodium perchlorate. Remove contaminated clothing immediately and keep wet until thoroughly washed. Keeping contaminated clothing wet minimizes hazards until the laundering is completed. Showering is recommended after handling any industrial chemical. Smoking of tobacco should not be permitted while wearing contaminated clothing. Leather boots may become contaminated and could be a source of combustion damaging feet. Rubber boots are recommended.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Liquid. [Clear.]
- Color** : Not available.
- Odor** : Odorless.
- Odor threshold** : Not available.
- pH** : 6 to 8
- Melting point** : Not applicable.
- Boiling point** : 110°C (230°F)
- Flash point** : Not applicable.
- Evaporation rate** : Slightly slower than water
- Flammability (solid, gas)** : Not available.
- Lower and upper explosive (flammable) limits** : Not applicable
- Vapor pressure** : Not applicable.
- Vapor density** : Not applicable
- Relative density** : 1.62
- Molecular weight** : 122.44 g/mol
- Solubility(ies)** :

Media	Result
water	Miscible in water.

- Partition coefficient: n-octanol/water** : Not available
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Kinematic (104°F (40°C)): Not applicable.
- Explosive properties** : Not available.
- Oxidizing properties** : Not available.

Section 10. Stability and reactivity

- Reactivity** : Do not mix with organic materials, reducing agents, metal powders or powdered carbon.
- Chemical stability** : The product is stable.

Section 10. Stability and reactivity

Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following: contact with combustible materials Reactions may include the following: risk of explosion
Conditions to avoid	: Avoid elevated temperatures which can dry out the product and may cause spontaneous exothermic decomposition at 482° C or greater. Cloth fabric such intimately contaminated with Sodium Perchlorate solution is not subject to ignition through friction or impact as long as it stays wetted with the water of solution and as long as the temperature is not sufficient to vaporize the water of solution. However, if materials become dry then they are subject to high-energy static electricity, friction, and impact. If allowed to dry this material will exhibit properties of a 5.1 oxidizer
Incompatible materials	: Highly reactive or incompatible with the following materials: combustible materials reducing materials Sulfuric acid, powdered metals, and intimate mixtures with organics.
Hazardous decomposition products	: Chlorine Chlorine dioxide nitrogen oxides hydrogen chloride

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Test	Result	Dose	Remarks
sodium perchlorate	Acute Dermal Toxicity Acute Toxicity (Dermal)	Rat - Dermal - LD50	>2000 mg/kg	

Conclusion/Summary : Harmful if swallowed.

Irritation/Corrosion

Product/ingredient name	Test	Result	Remarks
sodium perchlorate	Acute Dermal Irritation/Corrosion Acute Toxicity: Dermal Irritation/corrosion OECD 405 [Acute Eye Irritation/Corrosion]	Rabbit - Skin - Not irritant Rabbit - Eyes - Irritant	

Conclusion/Summary

Skin	: Not available.
Eyes	: Causes serious eye irritation.
Respiratory	: Not available.

Respiratory or skin sensitization

Product/ingredient name	Test	Result	Remarks
sodium perchlorate	Skin Sensitization: Local Lymph Node Assay Skin sensitization: Local Lymph Node Assay	Mouse - skin Not sensitizing	

Conclusion/Summary

Skin	: Not available.
Respiratory	: Not available.

Germ cell mutagenicity

Section 11. Toxicological information

Product/ingredient name	Test	Result	Remarks
sodium perchlorate	OECD 471 [Bacterial Reverse Mutation Test] OECD 473 [In vitro Mammalian Chromosomal Aberration Test] OECD 476 [In vitro Mammalian Cell Gene Mutation Test]	In vitro - Bacteria Negative In vitro - Mammalian-Human Negative In vitro - Mammalian-Animal Negative	

Conclusion/Summary : Not available.

Carcinogenicity

Product/ingredient name	Test	Result	Remarks
Not available.			

Conclusion/Summary : Not available.

Reproductive toxicity

Product/ingredient name	Test	Species	Result	Remarks
sodium perchlorate	OECD 416 [Two-Generation Reproduction Toxicity Study] OECD 414 [Prenatal Developmental Toxicity Study] OECD 414 [Prenatal Developmental Toxicity Study]	Rat - Oral Rat - Oral Rabbit - Oral	Maternal toxicity: Positive Fertility effects: Negative Developmental: Negative Maternal toxicity: Negative Fertility effects: Negative Developmental: Negative Maternal toxicity: Positive Fertility effects: Negative Developmental: Negative	Based on data for a similar substance. Based on data for a similar substance. Based on data for a similar substance.

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
sodium perchlorate	Category 2	oral	thyroid

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye irritation.
- Inhalation** : Airborne concentrations of sodium perchlorate can aggravate pre-existing respiratory problems. Chronic exposure may interfere with the uptake of iodine by the thyroid which may cause hypothyroidism.
- Skin contact** : May cause local irritation or stinging effect.
- Ingestion** : Harmful if swallowed. Ingestion of large quantities has been reported to cause staggering in small mammals.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain or irritation
watering
redness

Section 11. Toxicological information

Inhalation	: No specific data.
Skin contact	: No specific data.
Ingestion	: Perchlorates act to reversibly and competitively inhibit iodine uptake by the thyroid gland. Perchlorate is soluble in water, so exposure to sodium perchlorate can be via water contaminated with sodium perchlorate or inhalation in the workplace. With chronic exposure given sufficient dose (see (United States National Research Council) NRC, 2005) and duration, sodium perchlorate can cause thyroidal stores of iodine to be reduced, which may lead to hypothyroidism. For workers that live in areas of the world with endemic iodine deficiency, it is important that these people receive adequate iodine in the diet or are supplemented with iodine.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Test	Result	Remarks
sodium perchlorate	OECD 408 [Repeated Dose 90-Day Oral Toxicity Study in Rodents]	Sub-chronic - Rat - Oral - NOAEL 1 mg/kg	Based on data for a similar substance.

Conclusion/Summary : Not available.

General : May cause damage to organs through prolonged or repeated exposure.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Result	Species	Remarks
sodium perchlorate	OECD 203 [Fish, Acute Toxicity Test]	Acute - LC50 >1000 mg/l [96 hours]	Fish - <i>Danio rerio</i>	Based on data for a similar substance. Based on data for a similar substance.
	OECD 202 [Daphnia sp. Acute Immobilization Test and Reproduction Test]	Acute - EC50 >100 mg/l [48 hours]	Crustaceans - <i>Daphnia magna</i>	
	OECD 201 [Alga, Growth Inhibition Test]	Acute - EC50 >435.7 mg/l [72 hours]	Algae - <i>Raphidocelis subcapitata</i>	
	OECD 201 [Alga, Growth Inhibition Test]	Chronic - EC10 >435.7 mg/l [72 hours] EC50 >700 mg/l [3 hours]	Algae - <i>Raphidocelis subcapitata</i> Micro-organism	
	OECD 215 [Fish, Juvenile Growth Test]	Chronic - NOEC 11.48 mg/l [84 days] Chronic - NOEC 10 mg/l [7 days]	Fish - <i>Danio rerio</i> Crustaceans - <i>Ceriodaphnia dubia</i>	

Conclusion/Summary : Not available.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Do not dispose of sodium perchlorate where it is likely to contact water and dissolve and then enter the environment. Verify the local state (country) requirements where the material is sited before disposing. If transported to another country (state), additional regulations may apply. In any case, manage disposal to protect persons and the environment. The information offered in section 13 is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method

Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	Not Regulated for Transport.	Not Regulated for Transport.	Not Regulated for Transport.	Not Regulated for Transport.
UN proper shipping name	-	-	-	-
Transport hazard class(es)	-	-	-	-
Packing group	-	-	-	-
Environmental hazards	No.	No.	No.	No.

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not applicable.

Notice to reader : The above transport information is provided to assist in the proper classification of this product and may not be suitable for all shipping conditions.

Section 15. Regulatory information

United States

TSCA 5(a)2 final significant new use rules

None of the components are listed.

TSCA 5(a)2 proposed significant new use rules

None of the components are listed.

TSCA 5(e) substance consent order

None of the components are listed.

TSCA 6 final risk management

Section 15. Regulatory information

None of the components are listed.

[TSCA 12\(b\) - Chemical export notification](#)

None of the components are listed.

[SARA 302/304](#)

None of the components are listed.

SARA 304 RQ : Not applicable.

[Canada](#)

Canada Significant New Activity Notice : None of the components are listed.

Canadian NPRI : None of the components are listed.

CEPA Toxic substances : None of the components are listed.

[Singapore](#)

Singapore - hazardous chemicals under government control

None.

[Korea](#)

K-REACH/CCA - Banned : None of the components are listed.

K-REACH/Article 39 (Accident Precaution Chemicals) : None of the components are listed.

Dangerous Materials Safety Management Act : Not applicable.

[International regulations](#)

[Montreal Protocol](#)

Not listed.

[Stockholm Convention on Persistent Organic Pollutants](#)

Not listed.

[UNECE Aarhus Protocol on POPs and Heavy Metals](#)

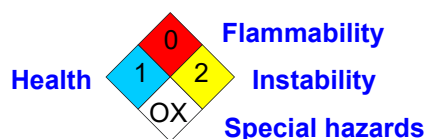
Not listed.

Section 16. Other information

[Hazardous Material Information System \(U.S.A.\)](#)

Health	*	2
Flammability		0
Reactivity		3
PPE		X

[National Fire Protection Association \(U.S.A.\)](#)



Section 16. Other information

Key to abbreviations

: ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
UN = United Nations
WOE = Weight of Evidence

Indicates information that has changed from previously issued version.

Notice to reader

IMPORTANT: The information presented herein, while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. **NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, IS MADE REGARDING PERFORMANCE, STABILITY OR OTHERWISE.** This information is not intended to be all-inclusive as to the manner and conditions of use, handling and storage. Other factors may involve other or  additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as, and nothing herein shall be construed as a recommendation to infringe any existing patents or violate any Federal, Other National Governmental Entity, State, Provincial, or local laws.