

1. Company and Product Identification

- 1.1 Identification – Product Name: **RoClean[®] L403**
- 1.2 Other means of identification: Organic / Inorganic acid mixture
 Synonym: Mixture, none
 Recommended Use of the Chemical: Reverse osmosis membrane cleaner
- 1.3 and Restrictions on Use: Use only as directed on the label.
- 1.4 Name, Address, and Telephone: **AVISTA TECHNOLOGIES**
 Number of the Manufacturer, or Other Responsible Party: 140 Bosstick Street
 San Marcos, CA 92069
 (760) 744-0536
- Competent Person email address: klindsey@avistatech.com
- 1.5 24 Hour Emergency No.: 1-800-424-9300 (United States)
 1-703-527-3887 (International Collect)



DRINKING WATER TREATMENT ADDITIVES CLASSIFIED BY NSF INTERNATIONAL TO ANSI/NSF 60 AS STANDARD DRINKING WATER TREATMENT CHEMICAL FOR USE OFF-LINE IN REVERSE OSMOSIS SYSTEMS

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: This product is a colorless to amber colored liquid. Depending on the duration of contact, over-exposures can moderately to severely irritate the skin or eyes, or cause burns. This product is neither reactive nor flammable. Thermal decomposition of this product produces irritating vapors and toxic gases (e.g. carbon monoxide, carbon dioxide, phosphorous oxides, and sodium oxide). Emergency responders must wear personal protective equipment (and have appropriate fire-extinguishing protection) suitable for the situation to which they are responding.

- | | |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Physical Hazards Summary | Corrosive to metals, category 1 |
| Potential Health Hazards Summary | Acute Oral Toxicity, category 4
Skin irritation, category 2B
Eye irritation category 2 A
STOT repeated exposure category 2 |
| Potential Ecological Effects Summary | The components of this product will decompose into other organic and inorganic compounds over time under normal environmental conditions |
| 2.1 Classification of Product | Acute Oral Toxicity, category 4
Skin irritation, category 2B |
| U.S. OSHA classification | Eye irritation category 2 A
STOT repeated exposure category 2
Corrosive to metals, category 1 |
| Classification as per EC 1272/2008 | Acute Oral Toxicity, category 4 |

(CLP/GHS) Skin irritation, category 2B
 Eye irritation category 2 A
 STOT repeated exposure category 2
 Corrosive to metals, category 1
 Acute Oral Toxicity, category 4
 Skin irritation, category 2B
 WHMIS classification Eye irritation category 2 A
 STOT repeated exposure category 2
 Corrosive to metals, category 1

Hazardous Materials Information System (HMIS) Rating

Health	2
Flammability	0
Physical Hazard	0
Protective Equipment	C

2.2 Label Elements OSHA/GHS

General Warnings P101 If medical advice is needed, have product container or label at hand.
 P102 Keep out of reach of children.
 P103 Read label before use
 P403 Store in a well-ventilated place.
 P233 Keep container tightly closed

Signal Word DANGER

Hazard statements H319 Causes serious eye irritation
 H312 Harmful in contact with skin
 H332 Harmful if inhaled
 H314 Causes severe skin burns and eye damage
 H290 May be corrosive to metals

Precautionary statements P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P305 IF IN EYES: rinse extensively with large amounts of water
 P351 Rinse cautiously with water for several minutes.
 P338 Remove contact lenses, if present and easy to do. Continue rinsing.
 IF INGESTED or INHALED Immediately call a POISON CENTER or doctor/physician.
 P310
 P234 Keep only in original container
 P390 Absorb spillage to avoid material damage
 P404 Store in a closed container

Hazard pictograms



2.3 Unclassified Hazards None

2.4 Ingredients with unknown acute toxicity None

3. COMPOSITION and INFORMATION ON INGREDIENTS

Chemical name CAS # EINECS #	% w/w	US OSHA	GHS/EU CLP	WHMIS
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Phosphoric acid 7664-38-2 231-633-2	25-35	Acute Oral Toxicity, category 4 Skin irritation, category 2B Eye irritation category 2 B STOT repeated exposure category 2	Acute Oral Toxicity, category 4 Skin irritation, category 2B Eye irritation category 2 B STOT repeated exposure category 2	Acute Oral Toxicity, category 4 Skin irritation, category 2B Eye irritation category 2 B STOT repeated exposure category 2
Chelate Proprietary Proprietary	25-35	Eye Irritant, Category 2A	Eye Irritant, Category 2A	Eye Irritant, Category 2A
Citric acid 77-92-9 201-069-1	10-20	Irritant, Category 2	Irritant, Category 2	Irritant, Category 2
Product	100	Acute Oral Toxicity, category 4 Skin irritation, category 2B Eye irritation category 2 A STOT repeated exposure category 2 Corrosive to metals, category 1		

NE = Not Established. C = Ceiling Limit. See Section 16 for Definitions of Terms Used.

Canada HMIRA Registration: Registration Number: 03331706 Registration date: 30 May 2019

4. FIRST-AID MEASURES

4.1 Description of Necessary Measures

Skin exposure: If this product contaminates the skin, immediately begin decontamination with running water. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim should seek immediate medical attention if any adverse exposure symptoms develop.

Eye exposure: If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 15 minutes. Victim must seek medical attention.

Inhalation: If mist of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers.

Ingestion: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. DO NOT INDUCE VOMITING. Have victim rinse mouth with water, if conscious. Never induce vomiting or give a diluent (e.g., water) to someone who is unconscious, having convulsions, or unable to swallow. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

4.2 Most Important Symptoms/Effects:

Immediate: Inhalation exposure may cause coughing or sneezing. Symptoms of skin and eye contact may include redness and irritation. Ingestion may cause stomach pains, cramps, and gastritis.

Delayed: Prolonged or repeated skin overexposure to this product may cause dermatitis (dry, red skin). Symptoms may include tingling, redness, and visible injury.

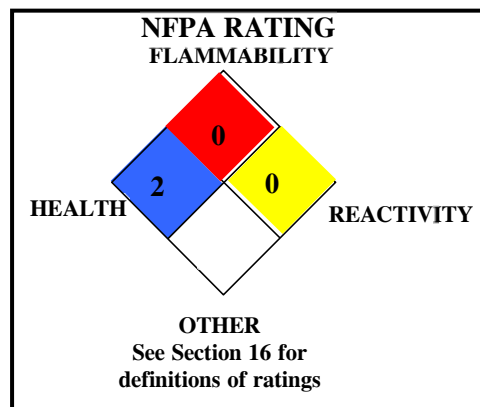
4.3 Indication of Immediate Medical Attention and Special Treatment Needed, If Necessary:

TARGET ORGANS: Acute: Skin, eyes, respiratory system.
Chronic: Skin, eyes, respiratory system

Victims of chemical exposure must be taken for medical attention if any adverse effects occur. Rescuers should be taken for medical attention if necessary. Take a copy of label and SDS to physician or health professional with victim.

5. FIRE-FIGHTING MEASURES

Flammable properties Non-flammable aqueous
 solution



Autoignition Temperature °C: Not applicable.

Flammable Limits (in air by volume, %):

Upper: Not applicable.

Lower: Not applicable.

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|-------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----|----------------|-----|------|-----|--------------|-----|-------|-----|-------|-----|
| 5.1 | Suitable And Unsuitable Extinguishing Media: | This material will not contribute to the intensity of a fire. Use extinguishing material suitable to the surrounding fire.
<table border="0" style="width: 100%; margin-left: 20px;"> <tr> <td style="width: 15%;">Water spray</td> <td style="width: 15%;">YES</td> <td style="width: 15%;">Carbon dioxide</td> <td style="width: 15%;">YES</td> </tr> <tr> <td>Foam</td> <td>YES</td> <td>Dry chemical</td> <td>YES</td> </tr> <tr> <td>Halon</td> <td>YES</td> <td>Other</td> <td>YES</td> </tr> </table> | Water spray | YES | Carbon dioxide | YES | Foam | YES | Dry chemical | YES | Halon | YES | Other | YES |
| Water spray | YES | Carbon dioxide | YES | | | | | | | | | | | |
| Foam | YES | Dry chemical | YES | | | | | | | | | | | |
| Halon | YES | Other | YES | | | | | | | | | | | |
| 5.2 | Specific Hazards Arising from Chemical: | When involved in a fire, this material may decompose and produce irritating fumes and toxic gases (e.g., carbon monoxide, carbon dioxide, phosphorous oxides, and nitrogen oxides).

<u>Explosion Sensitivity to Mechanical Impact:</u> Not applicable.
<u>Explosion Sensitivity to Static Discharge:</u> Not applicable. | | | | | | | | | | | | |
| 5.3 | Special Protective Equipment and Precautions For Fire-Fighters: | Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. | | | | | | | | | | | | |

6. ACCIDENTAL RELEASE MEASURES

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|-----|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6.1 | Personal Precautions | Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. |
| | Protective equipment | For small releases (< 20 L), clean up spilled liquid wearing gloves, goggles, faceshield, and suitable body protection. The minimum Personal Protective Equipment recommended for response to non-incident releases (more than 20 L) should be Level C: triple-gloves (neoprene gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and full-face respirator with acid mist and HEPA filter. |
| | Emergency procedures | Monitoring must indicate that exposure levels are below those provided in Section 8 (Exposure Controls-Personal Protection) and that oxygen levels are above 19.5% before anyone is permitted in the area without Self-Contained Breathing Apparatus. |
| 6.2 | Methods and Materials for Containment and Cleaning Up | Vacuum or soak- up solids liquid for recovery/disposal. Neutralize residue with sodium bicarbonate or other neutralizing agent for dilute acids. Decontaminate the area thoroughly. Test area with litmus paper to ensure neutralization. Place all spill residues in a suitable plastic container. Dispose |

7. HANDLING and STORAGE

- 7.1 Precautions for Safe Handling All employees who handle this material should be trained to handle it safely. Open containers carefully on a stable surface. Empty containers may contain residual liquid; therefore, empty containers should be handled with care.
- As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid generating dust of this product. Remove contaminated clothing immediately.
- During equipment maintenance follow practices indicated in Section 6 (Accidental Release Measures) to decontaminate equipment or clean-up small spills. Make certain that application equipment is locked and tagged-out safely if necessary. Collect all rinsates and dispose of according to applicable U.S. Federal, State, or local procedures or appropriate local standards.
- 7.2 Conditions For Safe Storage Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Store away from incompatible materials. Material should be stored in secondary containers, or in a diked area, as appropriate. Storage and use areas should be covered with impervious materials. Keep container tightly closed when not in use. Store in original container, away from metals. If appropriate, post warning signs in storage and use areas. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged.

Incompatibilities Strong bases, oxidizers, and water reactive materials. May be corrosive to metals.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1 Control Parameters

CHEMICAL NAME	CAS #	% w/w	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL			OTHER
			TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	
Phosphoric acid	7664-38-2	25 - 35	1	3	1	3	1000	NIOSH REL: TWA = 1 STEL = 3
Chelate	Proprietary	25 - 35	NE	NE	NE	NE	NE	NE
Citric acid	77-92-9	10 - 20	NE	NE	NE	NE	NE	NE
Water and other components which are present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers and mutagens).		Balance	None of the other components contribute significant additional hazards at the concentration present in this product. All pertinent hazard information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4).					

- 8.2 Appropriate Engineering Controls. Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in this Section or as low as reasonably practical. Ensure eyewash/safety shower stations are available near areas where this product is used.
- 8.3 Personal Protective Equipment
Respiratory protection: None needed under normal conditions of use. Use NIOSH approved respirators if ventilation is inadequate to control mists or vapor. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the applicable local standards. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-face piece pressure/demand SCBA or a full-face piece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

- Eye protection: Use approved safety goggles or safety glasses, as described in OSHA 29 CFR 1910.133. Splash goggles with a faceshield may be needed if splash hazards exist.
- Hand protection: Wear chemical impervious gloves (e.g., Solvex™, Neoprene).
- Body protection: If needed, use body protection appropriate for task (e.g., Tyvek™ suit, rubber apron) to protect from splashes and sprays.

9. PHYSICAL and CHEMICAL PROPERTIES

Appearance	This product is a colorless to amber colored liquid .		
Odor	Light disinfectant odor	Odor Threshold	NE
Freezing Point °C	< 0	pH (2% solution)	2.5-3.5
Initial Boiling Point °C	> 100	Boiling Point Range °C	N/A
Flammability	Non-flammable	Evaporation Rate (water = 1)	Similar to water
Vapor Density (air = 1)	<1	Vapor Pressure mm Hg @ 20°C:	18 - 20
Solubility (in water)	Soluble	Relative density (water = 1)	1.3-1.4
Viscosity	Similar to water	Oil-Water Partition Coefficient	N/A
Decomposition Temperature	NE		
How to Detect This Substance (Warning Properties):	Litmus paper will turn red in contact with product.		

10. STABILITY and REACTIVITY

10.1	Reactivity	Not considered reactive.
10.2	Chemical Stability	Stable
10.3	Possibility of hazardous reactions	Hazardous polymerization will not occur.
10.4	Conditions to avoid	Avoid mixing with incompatible materials.
10.5	Incompatible Materials	Strong bases, oxidizers, and water reactive materials
10.6	Hazardous Decomposition Products	Thermal decomposition of this product may generate nitrogen oxides, carbon monoxide, phosphorous oxides, and carbon dioxide.

11. TOXICOLOGICAL INFORMATION

Toxicity data for hazardous ingredients	Oral LD ₅₀ mg/kg	Dermal LD ₅₀ mg/kg	Inhalation LD ₅₀ mg/kg
Phosphoric acid	LD ₅₀ (oral, rat) = 1759 mg/kg	LD ₅₀ (dermal, rabbit) = 3149mg/kg	N/A
	Standard Draize Test (Skin-Rabbit, adult) 595 mg/24 hours: Severe irritation effects Standard Draize Test (Eye Effects-Rabbit, adult) 119 mg: Severe irritation effects TDLo (Oral-Man) 1286 mL/kg LDLo (Unreported-Man) 220 mg/kg		
Chelate	LD ₅₀ (Intraperitoneal-Rat) 1548 mg/kg; Behavioral: convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration: cyanosis; Gastrointestinal: changes in structure or function of salivary glands	N/A	N/A
	Standard Draize Test (Skin-Rabbit, adult) 500 mg/24 hours: Moderate irritation effects Standard Draize Test (Eye -Rabbit, adult) 1900 mg Standard Draize Test (Eye-Rabbit, adult) 100 mg/24 hours: Moderate irritation effects		
Citric acid	LD ₅₀ (Oral-Rat) 3 g/kg LD ₅₀ (Oral-Mouse) 5040 mg/kg LD ₅₀ (Intraperitoneal-Rat) 883 mg/kg LD ₅₀ (Intraperitoneal-Mouse) 903 mg/kg LD ₅₀ (Subcutaneous-Rat) 5500 mg/kg LD ₅₀ (Subcutaneous-Mouse) 2700 mg/kg LD ₅₀ (Intraperitoneal-Mouse) 903 mg/kg	LD ₅₀ (dermal, rabbit) > 2000 mg/kg	N/A

	LD ₅₀ (Intravenous-Rabbit, adult) 330 mg/kg LD ₅₀ (Intravenous-Mouse) 42 mg/kg LDLo (Oral-Rabbit, adult) 7000 mg/kg	
	Standard Draize Test (Skin-Rabbit, adult) 500 mg/24 hours: Moderate irritation effects Standard Draize Test (Eye-Rabbit, adult) 750 mg/24 hours: Severe irritation effects	

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

12.1	Ecotoxicity	LC ₅₀ , mg/L	EC ₅₀ , mg/L
	RoClean L403		
	Aquatic	<i>Daphnia magna</i> > 1000 Fat Head Minnow > 1000	NE
	Terrestrial	NE	NE
12.2	Persistence and Degradability	The components of this product decompose in soil and water.	
12.3	Bioaccumulative Potential	This product is not expected to bioaccumulate	
12.4	Mobility in Soil	When spilled onto soil, this product will infiltrate downward, the rate being greater with lower concentration because of reduced viscosity.	
12.5	Other Adverse Ecological Effects	This product may be harmful to aquatic life <u>if large volumes</u> of it are released into an aquatic environment.	

13. DISPOSAL CONSIDERATIONS

Preparing Wastes of this Product for Disposal	Waste disposal must be in accordance with appropriate U.S. Federal, State, and local regulations or with local regulations. This product, if unaltered by the handling, may be disposed of by treatment at a permitted facility or as advised by your local waste regulatory authority.
Disposal of Contaminated Packaging	Cleaned containers can be recycled or disposed of as non-contaminated waste, if authorized by your local authorities. Dispose of containers as required by local regulations.
U.S. EPA Waste Number	Not applicable as supplied.

14. TRANSPORT INFORMATION

THIS MATERIAL IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.

14.1	UN Number	UN 3264
14.2	UN Proper Shipping Name	Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, Citric Acid)
14.3	Transport Hazard Class(es)	8, Corrosive
	Transport label(s) required	8, Corrosive
14.4	Packing Group	III
14.5	Marine Pollutant	Not regulated
	NA Emergency Response Guide Number (2018)	154
14.6	Transport in Bulk (Annex II of MARPOL 73/78 and IBC Code)	IBC03
14.7	Special Transport Precautions	Category A: Clear of living quarters
	National Motor Freight Classification	#70

14.8 UN Number UN3264
 UN Proper Shipping Name Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, Citric Acid)
 Transport Hazard Class(es) 8, Corrosive
 Transport label(s) required 8, Corrosive
 Packing Group III
 Packaging Instructions Y841/852/856

International Maritime Organization

14.9 UN Number UN 3264
 UN Proper Shipping Name Corrosive liquid, acidic, inorganic, n.o.s. (Phosphoric acid, Citric Acid)
 Transport Hazard Class(es) 8, Corrosive
 Transport label(s) required 8, Corrosive
 Packing Group III
 Marine Pollutant Not regulated
 NA Emergency Response Guide Number (2018) 154
 Transport in Bulk (Annex II of MARPOL 73/78 and IBC Code) IBC03

15. SAFETY, HEALTH and ENVIRONMENTAL REGULATIONS SPECIFIC FOR THE PRODUCT

PROGRAM	Phosphoric acid	Chelate	Citric acid
US EPA PROGRAMS			
Clean Air Act Hazardous Air Pollutants	NO	NO	NO
Safe Drinking Water Act	NO	NO	NO
RCRA F, K, P, U or D-lists	NO	NO	NO
Epa Priority Pollutant	NO	NO	NO
SARA 302 RQ	NO	NO	NO
SARA 302 TPQ	NO	NO	NO
SARA 313 LISTED	YES	NO	NO
SARA CHEMICAL CATEGORIES			
SARA 311/312 ACUTE	NO	NO	NO
SARA 311/312 CHRONIC	NO	NO	NO
SARA 311/312 FIRE	NO	NO	NO
SARA 311/312 PRESSURE	NO	NO	NO
SARA 311/312 REACTIVITY	NO	NO	NO
EPA EXTREMELY HAZARDOUS SUBSTANCE	NO	NO	NO
CALIFORNIA SAFE DRINKING WATER ACT (Proposition 65)			
This product does not contain any chemical listed on the California Safe Drinking Water Act list (Proposition 65)			
US OSHA PROGRAMS			
PEL	NO	NO	NO
PSM	NO	NO	NO
CHEMICAL SECURITY PROGRAMS			
DHS CFATS	NO	NO	NO
	NO	NO	NO
US DRUG ENFORCEMENT ADMINISTRATION			

DEA Controlled Substances	NO	NO	NO
REACH Pre-registered List	YES	YES	YES
TSCA	YES	YES	YES
TSCA Reset Rule	All ingredients in this product comply with the U.S. EPA TSCA Inventory Notification Requirements Rule (40 CFR 710 Subpart B.)		
European Inventory of Existing Commercial Chemical Substances (EINECS)	YES	YES	YES
EU No-Longer Polymers List (NLP)	N/A	N/A	N/A
Philippines	YES	YES	YES
Japan	YES	YES	YES
Australia	YES	YES	YES
Korea	YES	YES	YES
China	YES	YES	YES
New Zealand Inventory of Chemicals	YES	YES	YES

16. OTHER INFORMATION

16.1	Original Preparation	July 2, 1999
16.2	Revision History	February 19, 2004, 28 June 2013; GHS update May 24, 2016, Content corrections; 14 Aug 2016, information update, format changes; Hazard classification revision, 12 Jan 2018; 26 Oct 2018 TSCA Reset Rule update.; 9 July 2019 Hazard Review
16.3	Prepared by	ADVANCED CHEMICAL SAFETY, Inc. PO Box 152329 San Diego, CA 92195 (619) 990 4908
16.4	Date of Printing	July 15, 2019

DEFINITIONS OF TERMS

16.5	A large number of abbreviations and acronyms appear on an SDS. Some of these which are commonly used include the following:	
	Section 2	<p>GHS: Global Harmonization System OSHA: U.S. Occupational Safety and Health Administration. CLP: Classification and Packaging WHMIS: Workplace Hazardous Materials Information System STOT: Specific Target Organ Toxicity</p>
	Section 3	<p>CAS #: Chemical Abstract Service index number EINECS #: European Chemical Substances Information System index number</p>
	Section 5	<p>NFPA: Nation Fire Protection Association Health Hazard: 0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials); 1 (materials that on exposure under fire conditions could cause irritation or minor residual injury); 2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury); 3 (materials that can on short exposure could cause serious temporary or residual injury); 4 (materials that under very short exposure could cause death or major residual injury). Flammability Hazard Reactivity Hazard: Refer to definitions for "Hazardous Materials Identification System".</p> <p>Flash Point: Minimum temperature at which a liquid gives off sufficient vapors to form an ignitable mixture with air. Autoignition Temperature: The minimum temperature required to initiate combustion in air with no other source of ignition. LEL: The lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source. UEL: The highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source.</p>
	Section 8	<p>ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits. TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour Time Weighted Average (TWA), the 15-minute Short Term Exposure Limit, and the instantaneous Ceiling Level (C). Skin absorption effects must also be considered PEL - Permissible Exposure Limit - This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (<u>Federal Register</u>: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL," is placed next to the PEL which was vacated by Court Order. IDLH - Immediately Dangerous to Life and Health - This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury. The DFG - MAK is the Republic of Germany's Maximum Exposure Level, similar to the U.S. PEL. NIOSH is the National Institute of Occupational Safety and Health, which is the research arm of the U.S. Occupational Safety and Health Administration (OSHA). NIOSH issues exposure guidelines called Recommended Exposure Levels (RELs). When no exposure guidelines are established, an entry of NE (Not Established) is made for reference.</p>
	Section 11	<p>LD₅₀ : Lethal Dose (solids & liquids) which kills 50% of the exposed animals; LC₅₀ : Lethal Concentration (gases) which kills 50% of the exposed animals; ppm: Concentration expressed in parts of material per million parts of air or water; mg/m³ : Concentration expressed in weight of substance per volume of air; mg/kg: Quantity of material, by weight, administered to a test subject, based on their body weight in kg IARC - the International Agency for Research on Cancer; NTP - the National Toxicology Program, RTECS - the Registry of Toxic Effects of Chemical Substances, OSHA and CAL/OSHA. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used. TDLo, the lowest dose to cause a symptom and TCLo the lowest concentration to cause a symptom; TDo, LDLo, and LDo, or TC, TCo, LCLo, and LCo, the lowest dose (or concentration) to cause lethal or toxic effects. BEI - Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.</p>
	Section 12	<p>LC₅₀: The lowest concentration in water which kills 50% of the test subjects. EC₅₀: The Effect Concentration in water at which 50% of the test species is affected.</p>
	Section 13	US EPA Hazardous Waste Codes: refer to 40 CFR 261.20
	Section 14	<p>DOT: US Department of Transportation IATA: International Air Transport Association IMO: International Maritime Organization MARPOL: International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 IBC Code: Merchant Shipping Code</p>
	Section 15	<p>RCRA: US Resource Conservation and Recovery Act SARA: US Superfund Amendments and Reauthorization Act PSM: US OSHA Process Safety Management CFATS: US Department of Homeland Security Chemical Facility Anti-Terrorism Standard DSL: Canadian Domestic Substances List NDSL: Canadian Non-Domestic Substances List REACH: European Registration, Evaluation, Authorization and Restriction of Chemicals list TSCA: US Toxic Substances Control Act</p>