



SAFETY DATA SHEET

Page 1 of 7
POC-4001

Prepared to OSHA, ACC, ANSI, WHSR, WHMIS, GHS & EU Standards

SDS Revision: 1.1

SDS Revision Date: 12/14/2019

1. PRODUCT & COMPANY IDENTIFICATION

1.1	Product Name:	PETRA UNIVERSAL COOLING SYSTEM CLEANER
1.2	Chemical Name:	Aqueous Solution
1.3	Synonyms:	4001
1.4	Trade Names:	Petra Universal Cooling System Cleaner
1.5	Product Use:	Cooling System Cleaner
1.6	Distributor's Name:	Petra Oil NZ
1.7	Distributor's Address:	50 Jacobs Lane, Ngaruawahia 3792, New Zealand
1.8	Emergency Phone:	NZ NATIONAL POISONS CENTRE (0800) 764 766
1.9	Business Phone / Fax:	Tel: +64 (21) 771 703

2. HAZARDS IDENTIFICATION

2.1	Hazard Identification:	This product is classified as a HAZARDOUS SUBSTANCE but not as DANGEROUS GOODS according to the classification criteria of WHSR and ADG Code (Australia). WARNING! CAUSES SKIN IRRITATION. CAUSES SERIOUS EYE IRRITATION. <u>Classification:</u> Skin Irrit. 2, Eye Irrit. 2A
2.2	Label Elements:	<u>Hazard Statements</u> (H): H315 – Causes skin irritation. H319 – Causes serious eye irritation. <u>Precautionary Statements</u> (P): P264 – Wash hands and exposed skin areas with soap and warm water thoroughly after handling. P280 - Wear protective gloves/protective clothing/eye protection/face protection. P302+P352 – IF ON SKIN: Wash with plenty of soap and water. P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P321 - Specific treatment: See section 4.1 of the Safety Data Sheet. P333+P313 - If skin irritation or rash occurs: Get medical advice/attention. P362 – Take off contaminated clothing. P501 - Dispose of contents/container to appropriate waste disposal facility, in accordance with local, regional, national, international regulations.
2.3	Other Warnings:	In the event of an exposure or medical inquiry involving this product, please contact a physician or local poison control center, who may seek advice from the U.S. manufacturer, and show them this SDS. If medical advice is needed, have product container or label at hand. KEEP OUT OF REACH OF CHILDREN.



3. COMPOSITION & INGREDIENT INFORMATION

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m ³)									OTHER
					ACGIH		NOHSC			OSHA				
					ppm		ppm			ppm				
					TLV	STEL	ES-TWA	ES-STEL	ES-PEAK	PEL	STEL	IDLH		
WATER	7732-18-5	ZC0110000	231-791-2	≥ 95	NA	NA	NF	NF	NF	NA	NA	NA		
SODIUM DIHYDROGEN ORTHO-PHOSPHATE MONOHYDRATE	10049-21-5	NA	600-102-0	1-5	NA	NA	NF	NF	NF	NA	NA	NA		
SODIUM-2(3H)-BENZO-THIAZOLETHIONE	2492-26-4	NA	219-660-8	0.5-1.5	NA	NA	NF	NF	NF	NA	NA	NA		
SODIUM NITRATE	7631-99-4	WC560000	231-554-3	≤ 1	NA	NA	NF	NF	NF	NA	NA	NA		
SODIUM HYDROXIDE	1310-73-2	WB4900000	215-185-5	≤ 1	(2)	NA	NF	2	NF	(2)	NA	(10)	(2) NIOSH	
	Skin Corr. 1A; H314													
DISODIUM METASILICATE, PENTAHYDRATE	10213-79-3	NA	NA	≤ 1	NA	NA	NF	NF	NF	NA	NA	NA		
DISODIUM TETRABORATE, DECAHYDRATE	1303-96-4	VZ2275000	NA	≤ 1	NA	NA	5	NF	NF	NF	NA	NA		
	Repr. 1B; H360FD													
2-METHYLOXIRANE	9003-11-6	NA	618-355-0	≤ 1	NA	NA	NF	NF	NF	NA	NA	NA		
SODIUM CHLORIDE	7647-14-5	NA	231-598-3	≤ 0.1	NA	NA	NF	NF	NF	NA	NA	NA		



SAFETY DATA SHEET

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4. FIRST AID MEASURES

4.1	First Aid:	<p>Ingestion: Rinse mouth. DO NOT INDUCE VOMITING. Contact Poison Control Center or local emergency telephone number for assistance and instructions. If you feel unwell, seek medical advice (show the label where possible). If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.</p> <p>Eyes: Remove contact lenses, if present and easy to do. Continue rinsing. If product gets in the eyes, flush eyes thoroughly with copious amounts of water for at least 15 minutes, holding eyelid(s) open to ensure complete flushing. If the eyes or face become swollen during or following use, consult a physician or emergency room immediately.</p> <p>Skin: Remove contaminated clothing and wash affected areas with soap and water. If discomfort persists and/or the skin reaction worsens, contact a physician immediately. Do not wear contaminated clothing until after it has been properly cleaned.</p> <p>Inhalation: Remove victim to fresh air at once. Under extreme conditions, if breathing stops, perform artificial respiration. Seek immediate medical attention.</p>															
4.2	Effects of Exposure:	<p>Ingestion: Irritation to the gastrointestinal tract. This material can enter the lungs during swallowing or vomiting and cause lung damage.</p> <p>Eyes: Irritation upon direct contact. Symptoms may include stinging, tearing, redness and swelling.</p> <p>Skin: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Causes skin irritation.</p> <p>Inhalation: This product may be moderately irritating to the nose, throat and other tissues of the respiratory system. Symptoms of overexposure can include coughing, wheezing, nasal congestion, and difficulty breathing.</p>															
4.3	Symptoms of Overexposure:	<p>Ingestion: Nausea, intestinal discomfort, vomiting and/or diarrhea.</p> <p>Eyes: Overexposure in eyes may cause redness, itching and watering.</p> <p>Skin: Symptoms of skin overexposure may include redness, itching, and irritation of affected areas.</p> <p>Inhalation: Shortness of breath.</p>															
4.4	Acute Health Effects:	Causes skin irritation. Causes serious eye irritation. May be harmful if swallowed.															
4.5	Chronic Health Effects:	None reported by the manufacturer.															
4.6	Target Organs:	Eyes, Skin															
4.7	Medical Conditions Aggravated by Exposure:	Pre-existing skin, eye disorders.															
		<table border="1"> <tr> <td colspan="2">HEALTH</td> <td>2</td> </tr> <tr> <td colspan="2">FLAMMABILITY</td> <td>1</td> </tr> <tr> <td colspan="2">PHYSICAL HAZARDS</td> <td>0</td> </tr> <tr> <td colspan="2">PROTECTIVE EQUIPMENT</td> <td>B</td> </tr> <tr> <td>EYES</td> <td>SKIN</td> <td></td> </tr> </table>	HEALTH		2	FLAMMABILITY		1	PHYSICAL HAZARDS		0	PROTECTIVE EQUIPMENT		B	EYES	SKIN	
HEALTH		2															
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PROTECTIVE EQUIPMENT		B															
EYES	SKIN																

5. FIREFIGHTING MEASURES

5.1	Fire & Explosion Hazards:	Keep containers cool by spraying them with water until the fire has been extinguished. When exposed to high temperatures, may produce hazardous decomposition products such as oxides of carbon (e.g., CO, CO ₂) and nitrogen (e.g., NO _x) and smoke.	
5.2	Extinguishing Methods:	Foam. Dry powder. Carbon dioxide. Water spray. Sand. Do not use a heavy water stream.	
5.3	Firefighting Procedures:	As in any fire, wear MSHA/NIOSH approved self-contained breathing apparatus (pressure-demand) and full protective gear. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment. Fight fire upwind. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway. Firefighters must use full bunker gear including NIOSH-approved positive pressure self-contained breathing apparatus to protect against potential hazardous combustion or decomposition products and oxygen deficiencies.	

6. ACCIDENTAL RELEASE MEASURES

6.1	Spills:	<p>Before cleaning any spill or leak, individuals involved in spill cleanup must wear appropriate Personal Protective Equipment.</p> <p>For small spills (e.g., < 1 gallon (3.8 L)) wear appropriate personal protective equipment (e.g., goggles, gloves). Maximize ventilation (open doors and windows) and secure all sources of ignition. Remove spilled material with absorbent material and place into appropriate closed container(s) for disposal. Dispose of properly in accordance with local, state and federal regulations. Wash all affected areas and outside of container with plenty of warm water and soap. Remove any contaminated clothing and wash thoroughly before reuse.</p> <p>For large spills (e.g., ≥ 1 gallon (3.8 L)), deny entry to all unprotected individuals. Dike and contain spill with inert material (e.g., sand or earth). Transfer liquid to containers for recovery or disposal and solid diking material to separate containers for proper disposal. Remove contaminated clothing promptly and wash affected skin areas with soap and water. Keep spills and cleaning runoffs out of municipal sewers and open bodies of water.</p>
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SAFETY DATA SHEET

Page 3 of 7
POC-4001

Prepared to OSHA, ACC, ANSI, WHSR, WHMIS, GHS & EU Standards



SDS Revision: 1.1

SDS Revision Date: 12/14/2019

7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices:	Avoid prolonged contact with the product. Avoid breathing vapors of this product. Use in a well-ventilated location (e.g., local exhaust ventilation, fans). After use, wash hands and exposed skin with soap and water. Do not eat, drink or smoke while handling product.
7.2	Storage & Handling:	Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.
7.3	Special Precautions:	Do not breathe mist/spray.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1	Exposure Limits: ppm (mg/m ³)	ACGIH		NOHSC			OSHA			OTHER	
		CHEMICAL NAME(S)									
		TLV	STEL	ES-TWA	ES-STEL	ES-PEAK	PEL	STEL	IDLH		
		(2)	NA	NF	2	NF	(2)	NA	(10)	(2) NIOSH	
		NA	NA	5	NF	NF	NF	NA	NA		
8.2	Ventilation & Engineering Controls:	When working with large quantities of product, provide adequate ventilation (e.g., local exhaust ventilation, fans), to keep exposure below the airborne exposure limits. Ensure that an eyewash station, sink or washbasin is available in case of exposure to eyes.									
8.3	Respiratory Protection:	No special respiratory protection is required under typical circumstances of use or handling. If necessary, use only respiratory protection authorized per U.S. OSHA's requirement in 29 CFR §1910.134, or applicable U.S. state regulations, or the appropriate standards of Canada, its provinces, E.C. member states, or Australia.									
8.4	Eye Protection:	Wear protective eyewear (e.g., safety glasses with side-shield) at all times when handling this product. Always use protective eyewear when cleaning spills or leaks. Contact lenses pose a special hazard; soft lenses may absorb and concentrate irritants.									
8.5	Hand Protection:	If anticipated that prolonged & repeated skin contact will occur during use of this product, wear latex or rubber gloves for routine industrial use. If necessary, refer to U.S. OSHA 29 CFR §1910.138, the appropriate standards of Canada, of the E.C. member states.									
8.6	Body Protection:	No special body protection is required under typical circumstances of use and handling. Wear appropriate protective clothing to prevent skin contact, (boots, lab coat, apron, coveralls) as needed. If necessary, refer to appropriate standards of Canada, the E.C. member states, or U.S. OSHA.									

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Appearance:	Colorless to light yellow liquid.
9.2	Odor:	Characteristic odor.
9.3	Odor Threshold:	NA
9.4	pH:	10.8-11.2
9.5	Melting Point/Freezing Point:	NA
9.6	Initial Boiling Point/Boiling Range:	> 100 °C (> 212 °F)
9.7	Flashpoint:	NA
9.8	Upper/Lower Flammability Limits:	NA
9.9	Vapor Pressure:	NA
9.10	Vapor Density:	NA
9.11	Relative Density:	1.036
9.12	Solubility:	NA
9.13	Partition Coefficient (log P _{ow}):	NA
9.14	Autoignition Temperature:	NA
9.15	Decomposition Temperature:	NA
9.16	Viscosity:	NA
9.17	Other Information:	NA

10. STABILITY & REACTIVITY

10.1	Stability:	Stable under ambient conditions when stored properly.
10.2	Hazardous Decomposition Products:	If exposed to <u>extremely high temperatures</u> , products of thermal decomposition may include irritating vapors and toxic gases (e.g., oxides of carbon & nitrogen).
10.3	Hazardous Polymerization:	Will not occur.
10.4	Conditions to Avoid:	Exposure to, or contact with, extreme temperatures or incompatible chemicals.
10.5	Incompatible Substances:	Strong acids or alkalis.



SAFETY DATA SHEET

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SDS Revision: 1.1

SDS Revision Date: 12/14/2019

11. TOXICOLOGICAL INFORMATION

11.1	Routes of Entry:	Inhalation: YES	Absorption: YES	Ingestion: YES
11.2	Toxicity Data:	This product has NOT been tested on animals to obtain toxicology data. Toxicology data, found in scientific literature, is available for some of the components of the product and is presented below. <u>Sodium Nitrate</u> – LD ₅₀ (oral, rat): 1,267 mg/kg; LD ₅₀ (dermal, rabbit): 2,680 mg/kg; <u>Sodium Tetraborate</u> – LD ₅₀ (oral, rat): 2,660 mg/kg; <u>Sodium Dihydrogen Orthophosphate Monohydrate</u> – LD ₅₀ (oral, rat): 8,290 mg/kg; <u>Sodium-2(3H)-Benzothiazolethione</u> – LD ₅₀ (oral, rat): > 2,000 mg/kg; <u>Sodium Chloride</u> – LD ₅₀ (oral, rat): 3,000 mg/kg.		
11.3	Acute Toxicity:	Causes skin irritation. Causes serious eye irritation. May be harmful if swallowed.		
11.4	Chronic Toxicity:	None reported by the manufacturer.		
11.5	Suspected Carcinogen:	NA		
11.6	Reproductive Toxicity:	This product is not reported to produce reproductive toxicity in humans.		
	Mutagenicity:	This product is not reported to produce mutagenic effects in humans.		
	Embryotoxicity:	This product is not reported to produce embryotoxic effects in humans.		
	Teratogenicity:	This product is not reported to cause teratogenic effects in humans.		
	Reproductive Toxicity:	This product is not reported to produce reproductive toxicity in humans.		
11.7	Irritancy of Product:	See Section 4.2		
11.8	Biological Exposure Indices:	NE		
11.9	Physician Recommendations:	Treat symptomatically.		

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability:	Long-term ecological studies have not been conducted for this product. The following <u>Partition Coefficient (Log P_{ow})</u> data is available for some of the components for this product. <u>Sodium Hydroxide</u> : -3.88; <u>Sodium Chloride</u> : -3.0; <u>Sodium-2(3H)-Benzothiazolethione</u> : -0.46; <u>Sodium Nitrate</u> : -3.8.
12.2	Effects on Plants & Animals:	There are no specific data available for this product. An environmental fate analysis has not been conducted on this specific product; however, ay be harmful to plant growth, blooming and fruit formation.
12.3	Effects on Aquatic Life:	<u>Sodium Nitrate</u> - LC ₅₀ (Lepomis macrochirus, 96h): 9,400 mg/L; LC ₅₀ (Oncorhynchus mykiss, 96h): 1,658 mg/L; LC ₅₀ (Daphnia magna, 48h): 5,980 mg/L; <u>Sodium Hydroxide</u> - LC ₅₀ (Oncorhynchus mykiss, 96h): 45.4 mg/L; <u>Sodium-2(3H)-Benzothiazolethione</u> - LC ₅₀ (Oncorhynchus mykiss, 96h): 3.8 mg/L; <u>Sodium Nitrate</u> - LC ₅₀ (Oncorhynchus mykiss, 96h): 4,650 mg/L; <u>Disodium Tetraborate</u> - LC ₅₀ (Pimephales promelas, 96h): 1,900 mg/L; LC ₅₀ (Daphnia magna, 96h): 141 mg/L.

13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal:	Review current local, state and federal laws, codes, statutes and regulations to determine current status and appropriate disposal method for the ingredients listed in Section 3. Dispose of in accordance with local, state, provincial and federal laws and regulations. Disposal of hazardous waste must be through by a licensed treatment, storage or disposal facility (TSDF).
13.2	Special Considerations:	Contact the federal, state or provincial environmental authority to determine suitability for recycling and or proper disposal requirements.

14. TRANSPORTATION INFORMATION

The basic description (ID Number, proper shipping name, hazard class & division, packing group) is shown for each mode of transportation. Additional descriptive information may be required by 49 CFR, IATA/ICAO, IMDG and the CTDGR.

14.1	49 CFR (GND):	NOT REGULATED
14.2	IATA (AIR):	NOT REGULATED
14.3	IMDG (OCN):	NOT REGULATED
14.4	TDGR (Canadian GND):	NOT REGULATED
14.5	ADR/RID (EU):	NOT REGULATED
14.6	SCT (MEXICO):	NOT REGULATED
14.7	ADGR (AUS):	NOT REGULATED

15. REGULATORY INFORMATION

15.1	SARA Reporting Requirements:	This product does not contain any substances subject to SARA Title III, Section 313 reporting requirements.
15.2	SARA TPQ:	There are no specific Threshold Planning Quantities for the components of this product.
15.3	TSCA Inventory Status:	The components of this product are listed on the TSCA Inventory.
15.4	CERCLA Reportable Quantity:	NA
15.5	Other Federal Requirements:	NA
15.6	Other Canadian Regulations:	This product has been classified according to the hazard criteria of the CPR and the SDS contains all of the information required by the CPR. The components of this product are listed on the DSL/NDL. None of the components of this product are listed on the Priorities Substances List. WHMIS D2B (Other Toxic Effects).





SAFETY DATA SHEET

Page 5 of 7
POC-4001

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SDS Revision Date: 12/14/2019

15. REGULATORY INFORMATION

15.7	State Regulatory Information:	<p>Sodium Nitrate is listed on the following state criteria list(s): Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Pennsylvania Right-to-Know List (PA). Sodium Tetraborate is listed on the following state criteria list(s): FL, MA, MN, PA, WA. Sodium Hydroxide is found on the following state criteria list(s): FL, MA, MN, NJ, PA, WA.</p> <p>No other ingredients in this product, present in a concentration of 1.0% or greater, are listed on any of the following state criteria lists: California Proposition 65 (CA65), Delaware Air Quality Management List (DE), Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Michigan Critical Substances List (MI), Minnesota Hazardous Substances List (MN), New Jersey Right-to-Know List (NJ), New York Hazardous Substances List (NY), Pennsylvania Right-to-Know List (PA), Washington Permissible Exposures List (WA), Wisconsin Hazardous Substances List (WI).</p>
15.8	Other Requirements:	<p>All components are either listed on the U.S. TSCA inventory or are not regulated under TSCA under 40 CFR § 720.30.</p> <p>Listed on AICS (Australian Inventory of Chemical Substances)</p> <p>Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)</p> <p>Listed on KECI (Korean Existing Chemicals Inventory)</p> <p>New Zealand Inventory of Chemicals (NZIoC) Registration Status:</p> <p>CAS 7732-18-5: Maybe used as a single component chemical under an appropriate group standard</p> <p>CAS 10049-21-5: HSR003590</p> <p>CAS 2492-26-4: HSR004677</p> <p>CAS 7631-99-4: HSR001350</p> <p>CAS 1310-73-2: HSR001547</p> <p>CAS 10213-79-3: HSR003419</p> <p>CAS 9003-11-6: HSR006667</p> <p>CAS 7647-14-5: HSR002722</p> <p>NZIoC Classification: 6.3A, 6.4A; N.O.S. (Subsidiary Hazard) – HSR002624</p> <p>Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)</p>

16. OTHER INFORMATION

16.1	Other Information:	<p>WARNING! CAUSES SKIN IRRITATION. CAUSES SERIOUS EYE IRRITATION. Wash hands and exposed skin areas with soap and warm water thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection. IF ON SKIN: Wash with plenty of soap and water. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment: See section 4.1 of the Safety Data Sheet. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing. KEEP OUT OF REACH OF CHILDREN.</p>	
16.2	Terms & Definitions:	See last page of this Safety Data Sheet.	
16.3	Disclaimer:	<p>This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's, Smarter Sorting's & Petra Oil Company's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness is not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.</p>	
16.4	Prepared for:	<p>Petra Oil Company 50 Jacobs Lane Ngaruawahia 3792, New Zealand Tel: +64 (21) 771 703 Email: agacita@petraoilco.com</p>	
16.5	Prepared by:	<p>Smarter Sorting 2900 E. Cesar Chavez Street Austin, TX 78702 USA Tel: +1 (512) 593-2594 E-mail: support@smarterorting.com https://www.smarterorting.com</p>	



SAFETY DATA SHEET

Page 6 of 7

POC-4001

Prepared to OSHA, ACC, ANSI, WHSR, WHMIS, GHS & EU Standards

SDS Revision: 1.1

SDS Revision Date: 12/14/2019

16. OTHER INFORMATION

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16.2	Terms & Definitions:	See last page of this Safety Data Sheet.
16.3	Disclaimer:	This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR §1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of ShipMate's, Smarter Sorting's & Petra Oil Company's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness is not guaranteed and no warranties of any type, either expressed or implied, are provided. The information contained herein relates only to the specific product(s). If this product(s) is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.
16.4	Prepared for:	Petra Oil Company 11085 Regency Green Drive Cypress, TX 77429 USA Tel: +1 (713) 856-5700 Email: agacita@petraoilco.com 
16.5	Prepared by:	Smarter Sorting 2900 E. Cesar Chavez Street Austin, TX 78702 USA Tel: +1 (512) 593-2594 E-mail: support@smarterorting.com https://www.smarterorting.com 



SAFETY DATA SHEET

Page 7 of 7
POC-4001

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SDS Revision: 1.1

SDS Revision Date: 12/14/2019

DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a SDS. Some of these that are commonly used include the following:

GENERAL INFORMATION:

CAS No.	Chemical Abstract Service Number
RTECS No.	Registry of Toxic Effects of Chemical Substances Number
EINECS No.	European Inventory of Existing Commercial Chemical Substances Number

EXPOSURE LIMITS IN AIR:

ACGIH	American Conference on Governmental Industrial Hygienists
IDLH	Immediately Dangerous to Life and Health
NOHSC	National Occupational Health and Safety Commission (Australia)
OSHA	U.S. Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
STEL	Short Term Exposure Limit
TLV	Threshold Limit Value
TWA	Time Weighted Average

FIRST AID MEASURES:

CPR	Cardiopulmonary resuscitation - method in which a person whose heart has stopped receives manual chest compressions and breathing to circulate blood and provide oxygen to the body.
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HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard

HEALTH
FLAMMABILITY
PHYSICAL HAZARDS
PERSONAL PROTECTION

PERSONAL PROTECTION RATINGS:

A		G	
B		H	
C		I	
D		J	
E		K	
F		X	Consult your supervisor or SOPs for special handling directions.

Safety Glasses	Splash Goggles	Face Shield & Protective Eyewear	Gloves
Boots	Protective Apron	Protective Clothing & Full Suit	Dust Respirator
Full Face Respirator	Dust & Vapor Half-Mask Respirator	Full Face Respirator	Airline Hood/Mask or SCBA

OTHER STANDARD ABBREVIATIONS:

Carc	Carcinogenic
Irrit	Irritant
NA	Not Available
NR	No Results
ND	Not Determined
NE	Not Established
NF	Not Found
SCBA	Self-Contained Breathing Apparatus
Sens	Sensitization
STOT RE	Specific Target Organ Toxicity – Repeat Exposure
STOT SE	Specific Target Organ Toxicity – Single Exposure

NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

FLAMMABILITY LIMITS IN AIR:	
Autoignition Temperature	Minimum temperature required to initiate combustion in air with no other source of ignition
LEL	Lower Explosive Limit - lowest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source
UEL	Upper Explosive Limit - highest percent of vapor in air, by volume, that will explode or ignite in the presence of an ignition source

HAZARD RATINGS:

0	Minimal Hazard
1	Slight Hazard
2	Moderate Hazard
3	Severe Hazard
4	Extreme Hazard
ACD	Acidic
ALK	Alkaline
COR	Corrosive
W	Use No Water
OX	Oxidizer
TREFOIL	Radioactive

TOXICOLOGICAL INFORMATION:

LD ₅₀	Lethal Dose (solids & liquids) which kills 50% of the exposed animals
LC ₅₀	Lethal concentration (gases) which kills 50% of the exposed animal
ppm	Concentration expressed in parts of material per million parts
TD ₁₀	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD ₁₀ , LD ₁₀ , & LD ₅₀ or TC, TC ₁₀ , LC ₁₀ , & LC ₅₀	Lowest dose (or concentration) to cause lethal or toxic effects
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances
BCF	Bioconcentration Factor
TL _m	Median threshold limit
log Kow or log Koc	Coefficient of Oil/Water Distribution

REGULATORY INFORMATION:

WHMIS	Canadian Workplace Hazardous Material Information System
DOT	U.S. Department of Transportation
TC	Transport Canada
EPA	U.S. Environmental Protection Agency
DSL	Canadian Domestic Substance List
NDSL	Canadian Non-Domestic Substance List
PSL	Canadian Priority Substances List
TSCA	U.S. Toxic Substance Control Act
EU	European Union (European Union Directive 67/548/EEC)
WGK	Wassergefährungsklassen (German Water Hazard Class)

WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION (WHMIS) SYSTEM:

Class A	Class B	Class C	Class D1	Class D2	Class D3	Class E	Class F
Compressed	Flammable	Oxidizing	Toxic	Irritation	Infectious	Corrosive	Reactive

CLP/GHS (1272/2008/EC) PICTOGRAMS:

GHS01	GHS02	GHS03	GHS04	GHS05	GHS06	GHS07	GHS08	GHS09
Explosive	Flammable	Oxidizer	Pressurized	Corrosive	Toxic	Harmful Irritating	Health Hazard	Environment