SAFETY DATA SHEET



EnviroCure UV®

PATENT PENDING

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Impregnated Cured-in-Place (CIPP)			
Chemical Name	Unsaturated Polyester Resin Impregnated Felt			
Trade Name	EnviroCure UV®			
Product Use	Use • Cured-in-Place Pipe			
Company	• United Felts, 450 College Drive, Martinsville, VA 24112			
Company Contact	Mark Chandler			
Company Phone • 276-656-1904				
Emergency	• 276-656-1904			

2. HAZARDS IDEN	TIFICATION						
Hazard Identification	Prepared in accordance with UN Globally Harmonized standards. Intended to comply with OSHA 29 CFR 1910.1200, Canadian WHMIS, Australian Work Health and Safety and GHS Standards, and EU Directives.						
	EYE IRRITATION. CAU	LE SOLID. HARMFUL IF INHALED. CAUSES SERIOUS USES SKIN IRRITATION. SUSPECTED OF DAMAGING SUSPECTED OF CAUSING CANCER. MAY CAUSE ATION. CAUSES DAMAGE TO ORGANS THROUGH PEATED EXPOSURE.					
		ol. 1, Acute Tox. (inh.) 4, Skin Irrit. 2, Eye Irrit. 2A, STOT SE 3, STOT RE 1, Asp. 1					
Hazard Statement(s)							
	H228	Flammable solid.					
	H332	Harmful if inhaled.					
	H315	Causes skin irritation.					
	H319	Causes serious eye irritation.					
	H361d	Suspected of damaging the unborn child.					
	Suspected of causing cancer.						
	<i>H335</i> • May cause respiratory irritation.						
	H372	Causes damage to organs through prolonged or repeated exposure.					

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2. HAZARDS IDENTIFICATION (CONTINUED)

Precautionary
Statement(s)

P201	Obtain special instructions before use.
P202	 Do not handle until all safety precautions have been read and understood.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P210	Keep away from heat, sparks and hot surfaces. No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosionproof electrical/ventilating/lighting/material-handling equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P260	Do not breathe vapor or mist.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P314	Get medical attention if you feel unwell.
P301+P310	 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P303+P361+P353	• IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313	IF exposed or concerned: Get medical attention.
P312	Call a POISON CENTER or physician if you feel unwell.
P331	Do NOT induce vomiting.
P332+P313	If skin irritation occurs: Get medical attention.
P337+P313	If eye irritation persists: Get medical attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use dry chemical, CO2, water spray (fog) or foam.
P405	Store locked up.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents and container in accordance with all local, regional national and international regulations.

Other Warnings

• WARNING: This product can expose you to chemicals including Styrene, which is known to the State of California to cause cancer, and Methanol, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.









							EXPOS	URE LIMIT	S IN AIR (m	g/m³)			
3. COMPOSITION/INFORMATION ON INGREDIENTS				GIH pm	NOHSC ppm			OSHA ppm					
Chemical Name	Cas #	RTECS No.	EINECS No.	%	TLV	STEL	ESTWA	ESSTEL	ESPEAK	PEL	STEL	IDLH	OTHER
FELT SUBSTRATE	Na	NA	NA	NA	NA	NA	NF	NF	NF	NA	NA	NA	
STYRENE	100-42-5	WL3675000	202-851-5	20-50	20	40	(50)	213	NF	100	100	700	NIOSH 50
	Flam. Liq. 3	3; Acute Tox. 4 *	; Eye Irrit. 2; Sk	in Irrit. 2; H	226, H3	332, H319	9, H315						
COBALT BIS(2- ETHYL HEXANOATE)	136-52-7	NA	205-250-6	0.1-1	NA	NA	NF	NF	NF	NA	NA	NA	
	Skin Sens. 1A, Eye Irrit. 2A, Repr. 1B, Aq. Acute 1, Aq. Chronic 3												
PROPRIETARY INGREDIENTS	NA	NA	NA	0.1-1	NA	NA	NF	NF	NF	NA	NA	NA	

4. FIRST AID MEASURE

	 International Shipments: 1-801-629-0667) or the nearest Poison Control Center number for assistance and instructions. Seek immediate medical attention. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration. Eyes: Flush eyes thoroughly with copious amounts of water for at least 15 minutes, holdin eyelid(s) open to ensure complete flushing. If irritation persists, seek immediate medical attention. Skin: Remove contaminated clothing and wash affected areas with soap and water. If irritation persists, seek prompt medical attention. Do not wear contaminated clothing unt after it has been properly cleaned. Inhalation: Remove victim to fresh air at once. If breathing is difficult, administer supplemental oxygen and seek immediate medical attention. If breathing stops, perform artificial respiration.
Effects of Exposure	 Ingestion: If product is swallowed, may cause nausea, vomiting and/or diarrhea. Eyes: Causes serious eye irritation. Skin: Causes skin irritation. Inhalation: Exposure may cause respiratory tract irritation in some sensitive individuals.
Symptoms of Overexposure	 Ingestion: Adverse symptoms may include the following: Irritating to mouth, throat and stomach. Skin: Prolonged contact with skin may result in bleaching and irritation of skin. The product can cause allergic skin reactions (e.g., rashes, welts, dermatitis) in some sensitive individuals. Symptoms of skin overexposure may include redness, itching, and irritation of affected areas. Eyes: Overexposure in eyes may cause redness, itching and watering (risk of serious damage to eyes). Contact may cause serious eye irritation including stinging, watering, redness. Inhalation: Adverse symptoms may include the following: respiratory tract irritation, coughing.
Acute Health Effects	Severe irritation to eyes. Moderate irritation to skin near affected areas. Acute health hazards may be delayed. Most common symptoms include irritating properties to eyes, respiratory system and skin.
Chronic Health Effects	These ingredients may be irritating to skin and mucous membrane of the eye and respiratory system. Overexposure may trigger asthma-like symptoms in some sensitive individuals. May also induce skin sensitization and respiratory hypersensitivity. Possible allergic dermatitis.



4. FIRST AID MEASURE (CONTINUED)

Target Organs	• Eyes • Skin
Medical Conditions Aggravated by Exposure	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Preexisting dermatitis, other skin conditions, and disorders of the target organs (eyes, skin, and respiratory system) or impaired kidney function may be more susceptible to the effects of this substance.
	 Health - 1 Flamability - 3 Physical Hazards - 0 Protective Equipment - B

5. FIRE FIGHTING MEASURES

Fire & Explosion Hazards	 DANGER! FLAMMABLE SOLID. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain. If involved in a fire, this product may decompose at high temperatures to form toxic gases (e.g., CO, CO₂, NOx).
Extinguishing Methods	• Water Fog, CO ₂ , Halon (if permitted), Dry Chemical, Foam. Do not use water jet.
Firefighting Procedures	 Fight fires as for surrounding materials. Fire-fighters should wear appropriate protective equipment including protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Fire should be fought from a safe distance. Keep containers cool until well after the fire is out. Cool containers with water spray to prevent pressure build-up, auto-ignition or explosion. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway.

Spills	No action shall be taken involving any personal risk or without suitable training.
	Evacuate surrounding areas. Shut off all ignition sources. No flares, smoking or flames
	in hazard area. Avoid breathing vapors or fumes. Provide adequate ventilation.
	• Emergency Responders: If specialised clothing is required to deal with the spillage,
	take note of any information in Section 8 on suitable and unsuitable materials.
	• Small Spill: Wear appropriate personal protective equipment (e.g., goggles, gloves).
	Maximize ventilation (open doors and windows. 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.
	• Large Spill: Approach release from upwind. Prevent entry into sewers, water courses,
	basements or confined areas. Collect and place in container for disposal according
	to local regulations (see Section 13). Use spark-proof tools and explosion-proof
	equipment. Dispose of via a licensed waste disposal contractor. Contaminated
	absorbent material may pose the same hazard as the spilled product. Wash all
	affected areas and outside of container with plenty of warm water and soap.
	Remove any contaminated clothing and wash thoroughly before reuse.



7. HANDLING AND STORAGE

Work & Hygiene Practices	• Put on appropriate personal protective equipment (see Section 8). 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. Do not breathe vapor or mist. Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
Storage & Handling	Keep away from sources of heat and direct sunlight.
Special Precautions	Refer to the product label and/or technical data sheet for further information. Keep container closed when not in use. Keep this and all chemicals out of reach of children

8. EXPOSURE CONTROLS/PERSONAL PROTECTION		AC	ACGIH NOHSC							
Exposure Limits: ppm (mg/m3)										
Chemical Name		TLV	STEL	ESTWA	ESSTEL	ESPEAK	PEL	STEL	IDLH	OTHER
STYRENE		20	40	(50)	213	NF	100	100	700	NIOSH 50
	WARNING: This product can exp to the State of California to caus California to cause birth defects www.P65Warnings.ca.gov.	e can	icer, ai	nd Meth	anol, wh	ich are kr	nown	to the	State	of
Ventilation & Engineering Controls	Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.									
Respiratory Protection	• Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. 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.									
Eye Protection	AVOID EYE CONTACT DUE TO I approved standard should be us exposure to mists or vapors. Dep may be worn. If necessary, refer European Standard EN166.	ed w pendi	hen a ng on	risk asse the use	essment of this p	indicates roduct, s	this i	s nece or saf	ssary t ety gla	o avoid isses



8. EXPOSURE CONTROLS/PERSONAL PROTECTION (CONTINUED)

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. 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.



Body Protection

• No special body protection is required under typical circumstances of use and handling. 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. If necessary, refer to appropriate standards of Canada, the E.C. member states, or U.S. OSHA.

9. PHYSICAL & CHEMICAL PROPERTIES

Appearance	• Cloth
Odor	Aromatic odor
Odor Threshold	• 0.01 - 0.1 ppm, styrene
На	• NA
Melting Point/Freezing Point	• 83.8°F (30.6°C), styrene
Initial Boiling Point/Boiling Range	• 293°F (145°C), styrene
Flashpoint	• 88°F (31°C), styrene
Lower Flammability Limits Upper Flammability Limits	• LEL: 1.1%; UEL: 6.1%, styrene
Vapor Pressure	• 5.0 mm Hg @ 68°F (20°C), styrene
Vapor Density	• 3.6 (Air = 1), styrene
Relative Density	• 1.1 (water = 1)
Solubility	• Slight
Partition Coefficient (log Pow)	• NA
Autoignition Temperature	• 914°F (490°C), styrene
Decomposition Temperature	• NA
Viscosity	• NA
Other Information	• NA



10. CHEMICAL STABILITY & REACTIVITY INFORMATION

Stability	The product is stable. Stable under recommended storage and handling conditions.
Hazardous Decomposition Products	• Under normal conditions of storage and use, hazardous decomposition products should not be produced. However, if involved in a fire, oxides of carbon (CO, CO ₂) and nitrogen (NOx).
Hazardous Polymerization	Under normal conditions of storage and use, hazardous reactions will not occur.
Conditions to Avoid	Strong oxidizers
Incompatible Substances	Reactive or incompatible with the following materials: oxidizing materials.

11. TOXICOLOGICAL INFORMATION

11. TOXICOLOGICA	LINFORMATION
Toxicity Data	 This product has not been tested on animals to obtain toxicological data. There are toxicology data for some of the components of this product, and are presented below: Styrene: LC50 (inh, rat, 4h) 2770 mg/L; LD50 (oral, rat) 2650 mg/kg. Cobalt bis-(2-Ethylhexanoate): LD50 (oral, rat) 2650 mg/kg.
Acute Toxicity	See section 4
Chronic Toxicity	See section 4
Suspected Carcinogen	 This product contains Styrene and Cobalt bis-(2-Ethylhexanoate which are reasonably anticipated to be a human carcinogen (IARC 2B). Styrene induced pulmonary toxicity and carcinogenicity in mice was shown to be caused by a metabolite of styrene, probably styrene oxide. (Dec.2001 Toxicology Vol.169 Issue 2). WARNING: This product can expose you to chemicals including Styrene, which is known to the State of California to cause cancer, and Methanol, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.
Reproductive Toxicity	Suspected of damaging the unborn child.
Mutagenicity	Irritant to the eyes. Corrosive to Eyes
Embryotoxicity	This product is not reported to cause embryotoxic effects in humans.
Teratogenicity	This product is not reported to cause teratogenic effects in humans.
Reproductive Toxicity	Suspected of damaging the unborn child.
Irritancy of Product:	See section 4
Biological Exposure Indices	• NA
Physician Recommendations	Treat symptomatically.



12. ECOLOGICAL INFORMATION

Environmental Stability	Bioaccumulative Potential: Styrene: BCF: 13.49; LogPow: 0.35
Effects on Plants & Animals	There are no specific data available for this product.
Effects on Aquatic Life	There are no specific data available for this product; however, very large releases of this product may be harmful or fatal to overexposed aquatic life.

13. DISPOSAL CONSIDERATIONS

Waste Disposal	Dispose of in accordance with federal, state and local regulations. The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. 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. Avoid disposal. Attempt to use product completely
	in accordance with intended use. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
Special Considerations	U.S. EPA Waste Number: D001 (characteristic - ignitable)

14. TRANSPORT INFORMATION

FARMALE ORD	 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. 	
49 CFR (GND)	UN3175, SOLIDS, CONTAINING FLAMMABLE LIQUIDS, N.O.S. (styrene), 4.1, II	
IATA (AIR)	UN3175, SOLIDS, CONTAINING FLAMMABLE LIQUIDS, N.O.S. (styrene), 4.1, II	
IMDG (OCN)	UN3175, SOLIDS, CONTAINING FLAMMABLE LIQUIDS, N.O.S. (styrene), 4.1, II	
TDGR (Canadian GND)	UN3175, SOLIDS, CONTAINING FLAMMABLE LIQUIDS, N.O.S. (styrene), 4.1, II	
ADR/RID (EU)	UN3175, SOLIDS, CONTAINING FLAMMABLE LIQUIDS, N.O.S. (styrene), 4.1, II	
SCT (MEXICO)	UN3175, SOLIDOS, CONTIENE LIQUIDOS INFLAMABLES, N.E.P. (styreno), 4.1, II	
ADGR (AUS)	UN3175, SOLIDS, CONTAINING FLAMMABLE LIQUIDS, N.O.S. (styrene), 4.1, II	

15. REGULATORY INFORMATION

SARA Reporting Requirements	This product contains Styrene, a substance subject to SARA Title III, section 313 reporting requirements.
SARA TPQ	There are no specific Threshold Planning Quantities for the components of this product.
TSCA Inventory Status	The components of this product are listed on the TSCA Inventory.
CERCLA Reportable Quantity	• NA
Other Federal Requirements	• NA



15. REGULATORY INFORMATION (CONTINUED)

Other Canadian Regulations

• This product has been classified according to the hazard criteria of the HPR and the SDS contains all of the information required by the HPR. The components of this product are listed on the DSL/NDSL. None of the components of this product are listed on the Priorities Substances List. WHMIS B4, D2B (Flammable Solid, Other Toxic Effects).





State Regulatory Information

- Styrene is found on the following state criteria lists: California Proposition 65 (CA65), Florida Toxic Substances List (FL), Massachusetts Hazardous Substances List (MA), Michigan Critical Substances List (MI), Minnesota Hazardous Substances List (MN).
- 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). This product does not contain any chemicals known to the State of California to cause cancer or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Other Requirements

• This product is found on the following inventory lists: Australia - AICS, China - IECSC, Europe - ELINCS/EINEC, Japan - ENCS; Korea - KECI; New Zealand - NZIoC; Philippines -PICCS; USA - TSCA



16. OTHER INFORMATION

Other Information

DANGER! FLAMMABLE SOLID. HARMFUL IF INHALED. CAUSES SERIOUS EYE IRRITATION. CAUSES SKIN IRRITATION. SUSPECTED OF DAMAGING THE UNBORN CHILD. SUSPECTED OF CAUSING CANCER. MAY CAUSE RESPIRATORY IRRITATION. CAUSES DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection. Keep away from heat, sparks and hot surfaces. - No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/ material handling equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Keep container tightly closed. Use only outdoors or in a wellventilated area. Do not breathe vapor or mist. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Get medical attention if you feel unwell. IF exposed or concerned: Get medical attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. case of fire: Use dry chemical, CO2, water spray (fog) or foam. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting. IF exposed or concerned: Get medical advice/attention. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Take off contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention. Store locked up. Store in a well-ventilated place. Keep cool. Keep container tightly closed. Dispose of contents and container in accordance with all local, regional, national and international regulations. KEEP AWAY FROM SOURCES OF HEAT AND DIRECT SUNLIGHT.

WARNING: This product can expose you to chemicals including Styrene, which is known to the State of California to cause cancer, and Methanol, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Terms & Definitions

See last page of this Safety Data Sheet.

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 & Ferratex Solutions, Inc.'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

Prepared for

• Vortex Products, 564 W. 9320 S., Sandy, UT 84070

Prepared by

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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.
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM	• HMIS
HEALTH, FLAMMABILITY & REACTIVITY RATINGS	 O - Minimal Hazard HEALTH 1 - Slight Hazard FLAMMABILITY 2 - Moderate Hazard PHYSICAL HAZARDS 3 - Severe Hazard PERSONAL PROTECTION 4 - Extreme Hazard
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



DEFINITION OF TERMS (CONTINUED)

HAZARD RATINGS	• 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	LD50 - Lethal Dose (solids & liquids) which kills 50% of the exposed animals
INFORMATION	LC50 - Lethal concentration (gases) which kills 50% of the exposed animal
	ppm - Concentration expressed in parts of material per million parts
	TDIo - Lowest dose to cause a symptom
	TCLo - Lowest concentration to cause a symptom
	• TDIo, LDIo, & LDo or TC, TCo, LCIo, & LCo - 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
	TLm - Median threshold limit
	log KOW or log KOC - Coefficient of Oil/Water Distribution
REGULATORY	WHMIS - Canadian Workplace Hazardous Material Information System
INFORMATION	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 - Wassergefährdungsklassen (German Water Hazard Class)
WORKPLACE HAZARDOUS	
MATERIALS IDENTIFICATION	
(WHMIS) SYSTEM	Class B - Flammable Class D2 - Irritation
CLP/GHS (1272/2008/EC)	
PICTOGRAMS	• GHS02 - • GHS08 - • GHS07 -
	Flammable Health Harmful
	Hazard Irritating