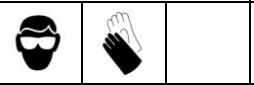
MATERIAL SAFETY DATA SHEET

Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS & 2001/58 EC Standards | MSDS Revision: 1.0 | MSDS Revision Date: 05/15/2008

1. PRODUCT IDENTIFICATION

1.1	Product Name:	**CaiKote™ EMI**
1.2	Chemical Name:	See ingredients listed in section 3
1.3	Synonyms:	CaiKote™ EMI, Conductive Paint
1.4	Trade Names:	CaiKote™ EMI
1.5	Product Use:	Conductive paint for EMI/ESD shielding
1.6	Manufacturer's Name:	CAIG Laboratories, Inc.
1.7	Manufacturer's Address:	12200 Thatcher Court, Poway, CA 92064-6876
1.8	Business Phone:	+1 (800)-224-4123
1.9	Emergency Phone:	**CHEMTREC 1-800-424-9300/1-703-527-3887**
1.10	Other Product Names:	CaiKote™ EMI, CK-EMI-4L, Liquid, 118 mL CaiKote™ EMI, CK-EMI-32L, Liquid, 944 mL

CHEMICAL RESPONSE CARD:	02
RESPONSE TEAM PPE:	
WHMIS:	
HEALTH:	2
FLAMMABILITY:	3
REACTIVITY:	0
PERSONAL PROTECTION:	B

2. HAZARD IDENTIFICATION

2.1 Hazard Identification:

This product is classified as a HAZARDOUS SUBSTANCE and as DANGEROUS GOODS according to the classification criteria of NOHSC: 1088 (2004) and ADG Code (Australia). CAUTION! Flammable liquid and vapor. Vapors may ignite explosively. Avoid contact with skin and eyes. Contains solvents harmful if swallowed. Intentional misuse by concentrating and inhaling contents can be harmful or fatal. This product is lead free.

2.2 Routes of Entry:

Inhalation:	YES	Absorption:	NO	Ingestion:	YES

2.3 Effects of Exposure:

EYES: Moderate to severe irritation.
SKIN: Irritant and potential skin sensitizer. Prolonged or repeated contact may cause contact dermatitis (localized redness or rash).
INGESTION: Gastrointestinal irritation and central nervous system depression.
INHALATION: Central nervous system depressant. Irritating to the upper respiratory tract.

2.4 Symptoms of Overexposure:

EYES: Moderate to severe irritation, redness, and watering.
SKIN: Contact dermatitis, characterized by localized red or puffy dry skin and itching.
INGESTION: Nausea, vomiting, and diarrhea.
INHALATION: Mouth, nose, and throat irritation, dizziness, nausea, light-headedness, drunkenness, and loss of coordination.

2.5 Acute Health Effects:

INGESTION: Gastrointestinal irritation and central nervous system depression.
EYES: Moderate to severe irritation.
SKIN: Irritant and potential skin sensitizer. Prolonged or repeated contact may cause contact dermatitis (localized redness or rash).
INGESTION: Gastrointestinal irritation and central nervous system depression.
INHALATION: Central nervous system depressant. Irritating to the upper respiratory tract.

2.6 Chronic Health Effects:

This product contains methyl ethyl ketone (MEK) which has been shown to cause minor toxic effects in laboratory animals at concentrations well above those acceptable in the workplace. No evidence of these effects exists for humans. This product contains silver metal. Exposure to silver may cause argyria, a blue-gray discoloration of the eyes, skin, mucous membranes and upper respiratory tract.

2.7 Target Organs:

Eyes, skin and respiratory system.

NA = Not Available; ND = Not Determined; NE = Not Established; C = Ceiling Limit; See Section 16 for Additional Definitions of Terms Used
NOTE: All WHMIS required information is included. It is located in appropriate sections based on the ANSI Z400.1-2004 format.

3. COMPOSITION & INGREDIENT INFORMATION

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m³) ACGIH ppm TLV	ACGIH ppm STEL	NOHSC ppm ES-TWA	NOHSC ppm ES-STEL	NOHSC ppm ES-PEAK	OSHA ppm TLV	OSHA ppm STEL	OSHA ppm IDLH	OTHER
PROPYLENE GLYCOL METHYL ETHER	107-98-2	UB7700000	203-539-1	1-5	100	150	369	150	553	NA	NA	360	
METHYL ETHYL KETONE (MEK)	78-93-3	EL6475000	201-159-0	10-30	200	300	445	300	890	200	300	3000	
COPPER	7440-50-8	GL53250000	231-159-6	10-30	0.1	1	0.2	NF	NF	0.1	1	100	FUME
ACCESS#266 PROPRIETARY NON-HAZ/NON-WHMIS CONTROLLED	NA	NA	NA	5-10	NA	NA	NF	NF	NF	NA	NA	NA	
N-BUTYL ALCOHOL	71-36-3	EO1400000	200-751-6	3-7	20		50	NF	152	100	300	1400	
ACETONE	67-64-1	AL31500000	200-662-2	3-7	500	750	1185	1000	2375	1000	2400	NA	
ACCESS#1261 PROPRIETARY NON-HAZ/NON-WHMIS POLYMER	NA	NA	NA	1-5	NA	NA	NF	NF	NF	NA	NA	NA	
ACCESS#1008 PROPRIETARY NON-HAZ/NON-WHMIS CONTROLLED	NA	NA	NA	1-5	NA	NA	NF	NF	NF	NA	NA	NA	
SILVER	7440-22-4	VW350000	231-131-3	1-5	0.1	NA	.01	NF	NF	0.01	NA	10	DUST
N-PROPYL ACETATE	109-60-4	AJ3675000	203-686-1	1-5	200	250	835	250	1040	200	840	1700	
PROPYLENE GLYCOL METHYL ETHER ACETATE	108-65-6	NA	203-603-9	1-5	100	NA	274	100	548	100	NA	NA	

4. FIRST AID MEASURES

4.1 First Aid:

EYES: Flush eyes thoroughly with copious amounts of water for at least 15 minutes, holding 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 until after it has been properly cleaned.

INGESTION: If swallowed, wash out mouth with water provided person is conscious. Call Poison Control for further instructions. DO NOT INDUCE VOMITING. Contact a physician.

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.

4.2 Medical Conditions Aggravated by Exposure:

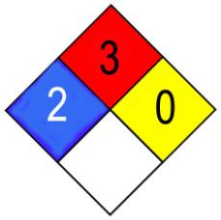
None reported by the manufacturer.

HEALTH	2
FLAMMABILITY	3
REACTIVITY	0
PROTECTIVE EQUIPMENT	

EYES	SKIN		

5. FIREFIGHTING MEASURES

5.1	Flashpoint & Method: **-4 °C (24 °F) Pensky-martens closed cup**				
5.2	Autoignition Temperature: **NA**				
5.3	Flammability Limits:	Lower Explosive Limit (LEL):	**NA**	Upper Explosive Limit (UEL):	**NA**
5.4	Fire & Explosion Hazards: **Vapors can ignite explosively when exposed to extreme heat. Vapors are heavier than air and may collect in low-lying or confined spaces. Noxious or irritating fumes or gases may be released during a fire.**				
5.5	Extinguishing Methods: **Dry chemical, water spray or regular foam.**				
5.6	Firefighting Procedures: **Keep containers cool until well after the fire is out. Prevent runoff from fire control or dilution from entering sewers, drains, drinking water supply, or any natural waterway. Firefighters should wear full-face, self-contained breathing apparatus (MSHA/NIOSH approved or the equivalent) and impervious clothing whenever fighting fires involving chemicals. HAZCHEM CODE 3[Y]E.**				



6. ACCIDENTAL RELEASE MEASURES

6.1	Spills: **<u>SMALL SPILLS</u>: Secure spill area, and maximize ventilation. Stop spill at source if safely possible. Deny entry to all unprotected individuals. Individuals involved in the cleanup must wear appropriate personal protective equipment. Do not touch or walk through spilled material. Stop leak if you can do it without risk. It is recommended that measures be taken to monitor the spill area in the event that TLV levels exceed the exposure limits. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.** **<u>LARGE SPILLS</u>: Secure spill area, and maximize ventilation. Dike far ahead of spill for later disposal. Stop spill at source if safely possible. Deny entry to all unprotected individuals. Individuals involved in the cleanup must wear appropriate personal protective equipment. Do not touch or walk through spilled material. Stop leak if you can do it without risk. It is recommended that measures be taken to monitor the spill area in the event that TLV levels exceed the exposure limits. A vapor suppressing foam may be used to reduce vapors. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean non-sparking tools to collect absorbed material.** **<u>MITIGATION and DISPOSAL</u>: Recover spill material and place into appropriate container(s) for disposal. Contact appropriate local, state and federal authorities for assistance and/or requirements.**

7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices: **Wash hands thoroughly after using this product and before eating, drinking, or smoking. Remove soiled clothing to prevent prolonged skin contact.**
7.2	Storage & Handling: **Store at ambient temperatures Store in cool and well ventilated area. Keep away from direct sunlight, heat, sparks, open flame, and other sources of ignition. Normal shelf-life: 2-3 years.**
7.3	Special Precautions: **Empty containers retain hazardous properties. Do not cut, drill, grind, weld or perform similar operations on or near containers.**

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

8.1	Ventilation & Engineering Controls: **Use with adequate ventilation (e.g., open doors and windows, local exhaust ventilation). Provide mechanical ventilation to maintain exposure below TLV(S), Overexposure to vapors and mist may be prevented by ensuring ventilation controls, local exhaust and/or fresh air entry. Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station).**
8.2	Respiratory Protection: **A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirators use.**
8.3	Eye Protection: **Safety glasses equipped with side shields should be adequate protection under most conditions of use. Wear goggles and/or face shield if splashing or spraying is anticipated. Have suitable eye wash water available.**
8.4	Hand Protection: **Where contact is likely, impervious gloves are recommended. Do not wear rings, watches, or jewelry that could entrap the material against the skin.**
8.5	Body Protection: **Avoid prolonged and/or repeated skin contact. Use clean and impervious protective clothing (e.g., neoprene or Tyvek®) if splashing or spraying conditions are present. Protective clothing should include long-sleeves, apron, boots and additional facial protection. Remove oil contaminated clothing. Launder oil contaminated clothing before reusing. Contaminated leather goods should be removed promptly and discarded.**

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Density:	**1.04**
9.2	Boiling Point:	**57 °C (134.6 °F)**
9.3	Melting Point:	**NA**
9.4	Evaporation Rate:	**NA**
9.5	Vapor Pressure:	**45.18mm Hg at 20 °C**
9.6	Molecular Weight:	**NA**
9.7	Appearance & Color:	**Copper**
9.8	Odor Threshold:	**ND**
9.9	Solubility:	**Insoluble**
9.10	pH	**NA**
9.11	Viscosity:	**1,000 cPs**
9.12	Other Information:	**VOC 725 g/l**

10. STABILITY & REACTIVITY

10.1	Stability: **Stable under normal conditions of use (see section 7).**
10.2	Hazardous Decomposition Products: **Oxides of carbon, oxides of copper and oxides of silver.**
10.3	Hazardous Polymerization: **Will not occur.**
10.4	Conditions to Avoid: **Use or storage near open flames, sparks, high heat (>100 °F) or other heat sources, and proximity to incompatible substances and direct sunlight.**
10.5	Incompatible Substances: **Strong oxidizers.**

11. TOXICOLOGICAL INFORMATION

11.1	Toxicity Data: **This product has not been tested on animals to obtain toxicological data. There are toxicology data for the components of this product, which are found in the scientific literature. These data have not been presented in this document.**	
11.2	Acute Toxicity: **See section 2.5**	
11.3	Chronic Toxicity: **See section 2.6**	
11.4	Suspected Carcinogen: **YES. Silver IARC Group 4: Substance nonclassifiable with regard to carcinogenicity .Tumorigenic :See RTECS. This product contains carbon black, which is classified as a Group 2B carcinogen by the IARC.**	
11.5	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 produce teratogenic effects in humans.**
	Reproductive Toxicity:	**This product is not reported to produce reproductive effects in humans.**
11.6	Irritancy of Product: **See Section 2.3**	
11.7	Biological Exposure Indices: **NE**	
11.8	Physician Recommendations: **Treat symptomatically.**	

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability: **This product will slowly volatile from soil. Components of this product will slowly decompose into organic compounds.**
12.2	Effects on Plants & Animals: **Methyl Ethyl Ketone: Rat (4hr) LD50- 2740mg/kg** **n-Butyl Alcohol: Rat (4hr) LD50- 2510mg/kg** **n-Propyl Acetate: Rat (4hr) LD50- 99800mg/kg** **Propylene Glycol Momether Acetate: Rat (4hr) LD50- 8532mg/kg**
12.3	Effects on Aquatic Life: **Releases of large volumes of this product are expected to be harmful or fatal to overexposed aquatic life.**
12.4	Environmental Impact (Percent by Weight): **VOC content: 95.0 %**

13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal: **Dispose of in accordance with federal, state or local regulations.**
13.2	Special Considerations: **Care must be taken to prevent environmental contamination from the use of this material. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state, federal and provincial regulations.**

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, SCT, ADGR and the CTDGR.

14.1	49 CFR (Ground): **CONSUMER COMMODITY, ORM-D (≤ 1.0 L)** **EXCEPTED QUANTITIES OF: UN1263, PAINT, 3, II**
14.2	IATA (Air): **DANGEROUS GOODS IN EXCEPTED QUANTITIES: UN1263, PAINT, 3, II**
14.3	IMDG (Ocean): **UN1263, PAINT, 3, II, LTD QTY**
14.4	TDGR (Canada): **MARK PACKAGE "LIMITED QUANTITY" or "QUANTITÉ LIMITÉE" or "LTD QTY" or "QUANT LTÉE" (≤ 1.0 L)** **UN1263, PAINT, 3, II, LTD QTY**
14.5	ADR/RID (EU): **UN1263, PAINT, 3, II, LTD QTY**
14.6	SCT (Mexico): **UN1263, PINTURA, 3, II, CANTIDAD LIMITADA (≤ 1.0 L)**
14.7	ADGR (Australia): **UN1263, PAINT, 3, II, LTD QTY**

15. REGULATORY INFORMATION

15.1	U.S. EPA SARA Reporting Requirements: **This material contains Methyl Ethyl Ketone, n-Butyl alcohol, Silver and Copper which are subject to the reporting requirement of Section 313 of SARA Title III and 40 CFR Part 373.**
15.2	U.S. EPA SARA Threshold Planning Quantity: **None of the chemicals in this product have a TPQ.**
15.3	U.S. EPA TSCA Inventory Status: **All chemical substances of this product are listed on the TSCA inventory or are otherwise exempt from inventory status.**
15.4	U.S. EPA CERCLA Reportable Quantity (RQ): **Acetone 2240 kg; 5000 lbs.**
15.5	Other U.S. Federal Requirements: **Methyl Ethyl Ketone is listed as a Hazardous Air Pollutant (HAP). Silver is listed as a Priority Pollutant under the Clean Water Act. Silver is listed as a toxic pollutant under the Clean Water Act.**
15.6	Other Canadian Regulations **This product has been classified according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR. 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.**
15.7	U.S. State Regulatory Information: **Propylene glycol methyl ether can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.** **Methyl Ethyl Ketone can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.** **Copper can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.** **n-Butyl alcohol can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.** **Acetone can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.** **n-Propyl acetate can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.** **Silver can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts.** **WARNING: This product contains the following chemicals that are know to the State of California to cause cancer, birth defects or other reproductive harm: Crystalline Silica, Toluene, Benzene, Ethyl Acrylate.** **TSCA – All components of this product are listed or are excluded from listing on the U.S. Toxic Substance Control Act (TSCA), Chemical Substance Inventory.**

15. REGULATORY INFORMATION- continued

15.8 67/548/EEC (European Union) and Australia NOHSC:2011 (2003) Requirements::

The primary component of this product is listed in Annex I of EU Directive 67/548/EEC:
Methyl Ethyl Ketone: (XI) Irritant (F+) Flammable
R: 11-36-66-67 Highly flammable, Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.
S: 9-16 Keep container in a well ventilated place. Keep away from sources of ignition - No smoking.
N-Butyl alcohol: (Xi) Irritant
R: 10-36 Flammable. Irritating to eyes.
Silver
R: 33 Danger of cumulative effects
S: 28A-37-45 After contact with skin, wash immediately with plenty of water. Wear suitable gloves. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16. OTHER INFORMATION

16.1 Other Information:

NA

16.2 Terms & Definitions:

See last page of this MSDS.

16.3 Disclaimer:

This Material 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 & CAIG Laboratories, Inc.'s knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are 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:

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DEFINITION OF TERMS

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

GENERAL INFORMATION:

CAS No.	Chemical Abstract Service Number

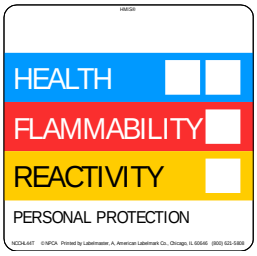
EXPOSURE LIMITS IN AIR:

ACGIH	American Conference on Governmental Industrial Hygienists
TLV	Threshold Limit Value
OSHA	U.S. Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
IDLH	Immediately Dangerous to Life and Health

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.

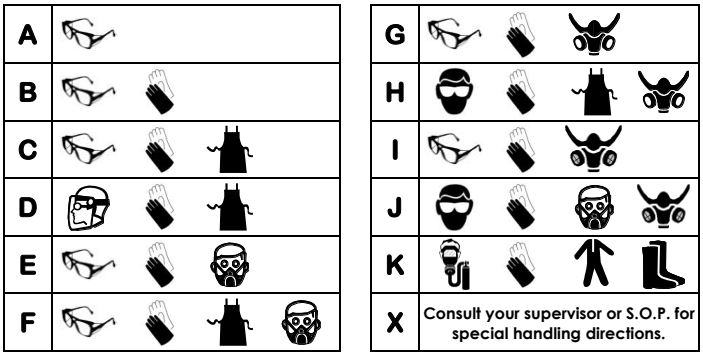
HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

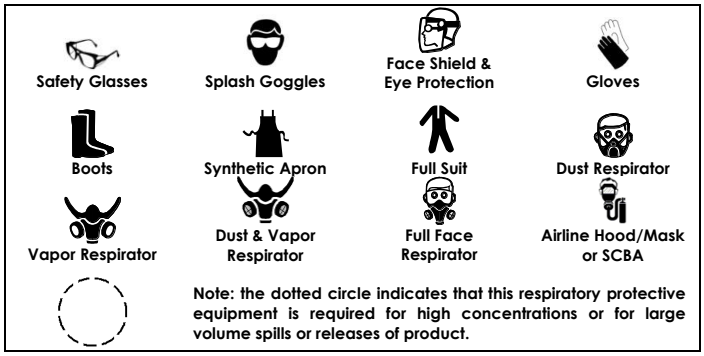


HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

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

PERSONAL PROTECTION RATINGS:





OTHER STANDARD ABBREVIATIONS:

NA	Not Available
NR	No Results
NE	Not Established
ND	Not Determined
ML	Maximum Limit
SCBA	Self-Contained Breathing Apparatus

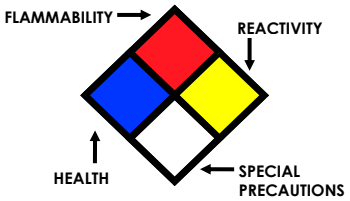
NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

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



TOXICOLOGICAL INFORMATION:

LD_{50}	Lethal Dose (solids & liquids) which kills 50% of the exposed animals s
LC_{50}	Lethal concentration (gases) which kills 50% of the exposed animal
ppm	Concentration expressed in parts of material per million parts
TD_{lo}	Lowest dose to cause a symptom
TCLo	Lowest concentration to cause a symptom
TD_{lo}, LD_{lo}, & LD_o or TC, TC_o, LC_{lo}, & LC_o	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 K_{OW} or log K_{OC}	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)

EC INFORMATION:

C	E	F	N	O	T+	Xi	Xn
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful