1. PRODUCT & COMPANY IDENTIFICATION

1.1	Product Name:	**L-40**
1.2	Chemical Name:	Metal Powder
1.3	Synonyms:	NA
1.4	Trade Names:	L-40
1.5	Product Use:	Professional Use Only
1.6	Distributor's Name:	Formetrix™, Inc.
1.7	Distributor's Address:	171 Forbes BLVD, Suite 2000, Mansfield MA. 02048
1.8	Emergency Phone:	**CHEMTREC: +1 (703) 527-3887 / +1 (800) 424-9300**
1.9	Business Phone / Fax:	Tel: +1 (774) 719-2358

2. HAZARDS IDENTIFICATION

2.1 Hazard Identification:

This product is classified as a HAZARDOUS SUBSTANCE but NOT DANGEROUS GOODS according to the classification criteria of NOHSC: 1088 (1999) and ADG Code (Australia).

WARNING! CAUSES SERIOUS EYE IRRITATION. MAY CAUSE RESPIRATORY IRRITATION.

Classification: Eye Irrit. 2; STOT RE 3

2.2 Label Elements:

Hazard Statements (H): H319 – Causes serious eye irritation. H335 – May cause respiratory irritation.

Precautionary Statements (P): P261 – Avoid breathing dust/spray. P264 – Wash hands and exposed skin areas with soap and warm water thoroughly after handling. P271 – Use only outdoors or in a well-ventilated area. P280 – Wear protective gloves/eye protection. P304+P340 – IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312 – Call a POISON CENTER or doctor/physician if you feel unwell. P337+P313 – If eye irritation persists: Get medical advice/attention. P403+P233 – Store in a well-ventilated place. Keep container tightly closed. P405 – Store locked up. P501 – Dispose of contents/container to licensed and permitted disposal or recycling facility.

2.3 Other Warnings:

Wear suitable protective equipment. Fumes and gases generated during welding can be harmful to your health and noise generated during welding, can damage hearing.

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

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 PEL	OSHA ppm STEL	OSHA ppm IDLH	OTHER
IRON	7439-89-6	NO4565500	231-096-4	≥ 15	(5.0)	NA	NF	NF	NF	(10.0)	NA	NA	0.5 – NIOSH
CHROMIUM #	7440-47-3	GB4200000	231-157-5	< 20	(0.5)	NA	(0.5)	NF	NF	(1.0)	NA	NA	
NICKEL	7440-02-0	Qr5950000	231-111-4	< 5.0	NA	NA	NF	1	NF	NA	NA	10	SENSITIZER
	Carc. 2; STOT RE 1; Skin Sens. 1; Aquatic Chronic 3; H351, H372**, H317, H412												
MOLYBDENUM	7439-98-7	QA4680000	231-107-2	< 5.0	10	NA	NF	10	NF	NA	NA	1000	
COPPER	7440-50-8	GL5325000	231-159-6	< 1.0	0.2	NA	NF	0.2	NF	0.1	NA	100	
CARBON *	7440-44-0	FF5250100	231-153-3	< 1.0	(3.5)	NA	NF	NF	NF	(3.5)	NA	(1750)	
	Eye Irrit. 2; STOT SE 3; H319, H335												
NIOBIUM	7440-03-1	QT9900000	231-113-5	< 0.1	(5.0)	NA	NF	NF	NF	(5.0)	NA	NA	
SILICON	7440-21-3	VW0400000	231-130-8	< 0.1	(10.0)	NA	(10.0)	NF	NF	(10.0)	NA	NA	
NITROGEN	7727-37-9	QW9700000	231-783-9	< 0.1	NA	NA	NF	NF	NF	NA	NA	NA	ASPHYXIANT
	Press. Gas; H280												
PHOSPHOROUS	7723-14-0	TH3500000	231-768-7	< 0.1	(0.02)	NA	NF	(0.1)	NF	NA	NA	(5)	
	Pyr. Sol. 1; Acute Tox. 2 *; Acute Tox. 2 *; Skin Corr. 1A; Aquatic Acute 1; H250, H330, H300, H314, H400												
SULFUR	7704-34-9	NA	231-722-6	< 0.1	(0.02)	NA	NF	(0.1)	NF	NA	NA	(5)	
	Skin Irrit. 2; H315												
OXYGEN	7782-44-7	RS2060000	231-956-9	< 0.1	NA	NA	NF	NF	NF	NA	NA	NA	
	Press. Gas; Ox. Gas 1; H270												
ALUMINUM	7429-90-5	BD0330000	231-072-3	< 0.1	10	NA	NF	2	NF	NA	NA	NA	
	Water-react. 2; Flam. Sol. 1; H261, H228												

3. COMPOSITION & INGREDIENT INFORMATION – cont'd

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 PEL	OSHA ppm STEL	OSHA ppm IDLH	OTHER
VANADIUM	1314-62-1	YW2460000	215-239-8	< 0.1	NA	NA	(0.05)	NF	NF	NA	NA	35	
	Muta. 2; Repr. 2; STOT RE 1; Acute Tox. 4 *; Acute Tox. 4 *; STOT SE 3; Aquatic Chronic 2; H341, H361d ***, H372 **, H332, H302, H335, H411												
MANGANESE	7439-96-5	OO9275000	231-105-1	< 0.1	(10.0)	NA	(1.0)	NF	NF	(10.0)	NA	(500)	(1.0)

4. FIRST AID MEASURES

4.1 First Aid:

Ingestion: DO NOT INDUCE VOMITING. Contact ChemTrec at +1 (703) 527-3887 or the nearest Poison Control Center or local emergency telephone 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, 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.

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 Effects of Exposure:

Ingestion: Gastrointestinal irritation, nausea and or/vomiting

Eyes: Mild to moderate irritant.

Skin: Redness, irritation, rash at site of exposure

Inhalation: Inhalation of chromium and chromates in fumes can cause metallic taste tightness in the chest, nausea, fever, fatigue and allergic reaction. Fumes may cause irritation to nasal membranes, bronchial tubes and lungs.

4.3 Symptoms of Overexposure:

Ingestion: Intestinal discomfort, nausea vomiting and diarrhea

Eyes: Mild irritation, redness and watering.

Skin: Contact dermatitis, characterized by localized red or puffy dry skin and itching.

Inhalation: Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, metal fume fever, difficulty in breathing, frequent coughing or chest pain.

4.4 Acute Health Effects: Moderate irritation to eyes and skin near affected areas. Additionally, high concentrations of vapors can cause drowsiness, dizziness, headaches and nausea.

4.5 Chronic Health Effects: The material may accentuate any pre-existing dermatitis condition.

4.6 Target Organs: Eyes, Respiratory System.

4.7 Medical Conditions Aggravated by Exposure: Individuals with allergies or impaired respiratory function may have symptoms worsened by exposure to welding fumes; however, such reaction cannot be predicted due to the variation in the composition and in the quantity of the decomposition products.

HEALTH	1
FLAMMABILITY	0
PHYSICAL HAZARDS	0
PROTECTIVE EQUIPMENT	E

EYES	SKIN	LUNG

5. FIREFIGHTING MEASURES

5.1 Fire & Explosion Hazards: This product is not flammable.

5.2 Extinguishing Methods: Water, CO_2, Halon (if permitted), Dry Chemical

5.3 Firefighting Procedures: Fight fires as for surrounding materials. Firefighters should wear a MSHA/NIOSH approved or equivalent self-contained breathing apparatus (SCBA) and protective clothing. Fire should be fought from a safe distance. 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.

6. ACCIDENTAL RELEASE MEASURES

6.1 Spills: Spilled product may produce a slip hazard. Before cleaning any spill, individuals involved in spill cleanup must wear appropriate Personal Protective Equipment including gloves, glasses and NIOSH approved (or equivalent) dust respirator. Carefully vacuum or sweep up the spilled powder. Dispose of properly in accordance with local, state and federal regulations. Wash all affected areas. Remove any contaminated clothing and wash thoroughly before reuse.

7. HANDLING & STORAGE INFORMATION

7.1	Work & Hygiene Practices:	Avoid contact to eyes, skin, and mucous membranes. Avoid inhalation of vapors, gases, fumes and dusts. Wash thoroughly after handling and use. Do not smoke, eat, drink, chew gum or tobacco, or apply cosmetics within the working area. Do not store or bring tobacco products, gum, food, drinks or cosmetics within the working area. Otherwise follow the standards of good industrial hygiene practices.
7.2	Storage & Handling:	No unusual methods are required. Keep product contained and retain all warning and identity labels. Preferred storage is a sheltered warm area with temperature and humidity control to prevent high humidity and "going through the dew point." Keep away from incompatible materials listed in Section 10. Open containers slowly on a stable surface. Keep container tightly closed when not in use.
7.3	Special Precautions:	Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1, "Safety in Welding, Cutting and Allied Processes," published by the American Welding Society, P. O. Box 351040, Miami, FL 33135 and OSHA Publication 2206 (29 C.F.R. 1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for additional details regarding fire and explosion control, exposure control and other special precautions.

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**	
IRON	(5.0)	NA	NF	NF	NF	(10.0)	NA	NA	0.5 – NIOSH
CHROMIUM #	(0.5)	NA	(0.5)	NF	NF	(1.0)	NA	NA	
NICKEL	NA	NA	NF	1	NF	NA	NA	10	SENSITIZER
MOLYBDENUM	10	NA	NF	10	NF	NA	NA	1000	
COPPER	0.2	NA	NF	0.2	NF	0.1	NA	100	
CARBON	(3.5)	NA	NF	NF	NF	(3.5)	NA	(1750)	
NIOBIUM	(5.0)	NA	NF	NF	NF	(5.0)	NA	NA	
SILICON	(10.0)	NA	(10.0)	NF	NF	(10.0)	NA	NA	
NITROGEN	NA	NA	NF	NF	NF	NA	NA	NA	ASPHYXIANT
PHOSPHOROUS	(0.02)	NA	NF	(0.1)	NF	NA	NA	(5)	
SULFUR	(0.02)	NA	NF	(0.1)	NF	NA	NA	(5)	
ALUMINUM	10	NA	NF	2	NF	NA	NA	NA	
VANADIUM	NA	NA	(0.05)	NF	NF	NA	NA	35	
MANGANESE	(10.0)	NA	(1.0)	NF	NF	(10.0)	NA	(500)	(1.0)

8.2	Ventilation & Engineering Controls:	Use industrial hygiene monitoring equipment to ensure that exposure does not exceed threshold limit values. Use with adequate ventilation (e.g., open doors and windows, local exhaust ventilation). Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station). Use in a chemical fume hood when working with large quantities of product and provide adequate ventilation (e.g., local exhaust ventilation, fans).	
8.3	Respiratory Protection:	Keep the exposure within legal limits. In the worker's breathing zone and the general area, the fumes and gases must be kept below the TLVs and the equivalent exposure must compute to less than one. Keep exposure as low as possible. Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the TLV. Where respiratory protection is necessary, NIOSH approved respiratory protection should be used. The selection of the appropriate respiratory protection (dust respirator, etc.) should be based on the actual or potential airborne contaminants and their concentrations present. However, at least a NIOSH approved type TC-21-C dust mask is recommended.	
8.4	Eye Protection:	Wear helmet or use face shield with filter lens according to ANSI Z87.1. Provide protective screens and flash goggles, if necessary, to shield others. Wear safety glasses with UV protective side shields or goggles. Wear contact lenses in combination with safety eyewear, except where the contact lenses create a likelihood of injury from intense heat, highly particulate atmosphere, or where their use is prohibited.	
8.5	Hand Protection:	Wear head, hand and body protection that help to prevent injury from hot metal, sparks, slag, infrared radiation, UV radiation, abrasions, contusions and heat stress. Protective clothing will not generally prevent shock except for leather if kept dry. Gloves made of leather with inside seams (or those that give equal performance) are preferred.	
8.6	Body Protection:	Wear head, hand and body protection that help to prevent injury from radiation, sparks and electrical shock. Wear flame resistant ear plugs to keep sparks out of ears. See ANSI Z-49.1. The clothing may include heat/fire resistant gloves, overalls, aprons, sleeves, footwear, welder's spats and head cover. Wear garments made of leather, heavyweight tightly woven wool or cotton. Keep clothing clean (free of oil, grease or solvents) and in good repair. Do not wear clothing with frayed edges, tears or holes. Do not roll up sleeves or trousers (pants should not be cuffed).	

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Appearance:	Powder, silver-grey color
9.2	Odor:	Odorless
9.3	Odor Threshold:	NA
9.4	pH:	NA
9.5	Melting Point/Freezing Point:	NA
9.6	Initial Boiling Point/Boiling Range:	NA
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:	4.5-4.5
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 normal conditions of use (See Section 7).
10.2	Hazardous Decomposition Products:	Irritating vapors and toxic gases (e.g., carbon monoxide and carbon dioxide) when involved in fire.
10.3	Hazardous Polymerization:	Will not occur.
10.4	Conditions to Avoid:	Use or storage near incompatible substances.
10.5	Incompatible Substances:	Strong oxidizing agents, strong acids and bases.

11. TOXICOLOGICAL INFORMATION

11.1	Routes of Entry:	Inhalation:	YES	Absorption:	NO	Ingestion:	NO
11.2	Toxicity Data:	This product has not been tested on animals to obtain toxicological data. (*) Carbon in a pure dust form can be a health hazard. Long term exposure to carbon dust can cause pneumoconiosis. However, their presence in this alloy is not believed to present a health hazard due to their relatively low concentration and chemical form. (#) Chromium and its compounds are listed in the current annual report on carcinogens (prepared by the National Toxicology Program). Their presence in this alloy is not believed to present a carcinogenic or any other health hazard due to their relatively low concentration and chemical form.					
11.3	Acute Toxicity:	See Section 4.4					
11.4	Chronic Toxicity:	See Section 4.5					
11.5	Suspected Carcinogen:	Chromium, in some forms (e.g., hexavalent chromium) is considered carcinogenic. However, this alloy does not contain any hexavalent chromium. Therefore, this alloy is not believed to present a carcinogenic or any other health hazard due to their relatively low concentration and chemical form. Nickel is listed: IARC Group 2B; ACGIH: A4 Carbon is listed as IARC Group 2B (Possibly carcinogenic to humans). Vanadium is listed as IARC Group 2B (Possibly carcinogenic to humans). Welding Fumes are listed as IARC Group 2B (Possibly carcinogenic to humans). 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.					
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 produce teratogenic effects in humans.					
	Reproductive Toxicity:	This product is not reported to produce reproductive effects in humans.					
11.7	Irritancy of Product:	General Nuisance Dusts: Many of the metal oxides generated as components of welding fumes, are considered nuisance dusts (e.g., oxides of manganese and silicon), which are essentially nontoxic and chemically non-irritating. Skin contact has shown no problems other than possible drying and mechanical irritation. Eye contact can produce particulate irritation. Excessive inhalation can produce mild pulmonary irritation and possible non-disabling slight fibrosis of the lungs.					
11.8	Biological Exposure Indices:	NE					
11.9	Physician Recommendations:	Treat symptomatically.					

12. ECOLOGICAL INFORMATION

12.1	Environmental Stability:	This product will slowly corrode in soil.
12.2	Effects on Plants & Animals:	There are no specific data available for this product.
12.3	Effects on Aquatic Life:	Releases of large volumes of this product are not expected to be harmful or fatal to overexposed aquatic life.

13. DISPOSAL CONSIDERATIONS

13.1	Waste Disposal:	Dispose of in accordance with federal, state, provincial or local regulations.
13.2	Special Considerations:	NA

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:	The following chemicals are listed on the SARA Title III (EPCRA 313 Toxic Chemical List): Chromium, Copper and Manganese.
15.2	SARA TPQ:	There are no specific Threshold Planning Quantities for the components of this product.
15.3	TSCA Inventory Status:	All chemical substances of this product are listed on the TSCA inventory or are otherwise exempt from inventory status.
15.4	CERCLA Reportable Quantity:	Chromium: 5,000 lbs (2,270 kgs); Nickel: 100 lbs (45.4 kg); Copper: 5,000 lbs (2,270 kg); Sulfur: 0.454 kg (1 lbs)
15.5	Other Federal Requirements:	NA
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. The following chemicals are listed on the Ingredient Disclosure List: Chromium, Copper and Manganese, WHMIS Classification: D2A
15.7	State Regulatory Information:	Chromium is found on the following state criteria lists: 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), and Washington Permissible Exposures List (WA). Nickel is found on the following state criteria list: FL, MA, MI, MN, NJ, PA and WA. Copper is found on the following state criteria list: FL, MA, MI, MN, NJ, PA, and WA. Silicon is found on the following state criteria lists: MA, MN, PA, and WA. Nitrogen is found on the following state criteria list: MA, MN, PA and RI. Phosphorous is found on the following state criteria lists: FL, MA, MN, NJ, PA and WA 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). **NOTE**: 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.
15.8	Other Requirements:	NA

16. OTHER INFORMATION

16.1	Other Information:	**WARNING! CAUSES SERIOUS EYE IRRITATION. MAY CAUSE RESPIRATORY IRRITATION.** Wear suitable protective equipment. Fumes and gases generated during welding can be harmful to your health and noise generated during welding, can damage hearing. This material is used in the shot peening process. Consult applicable Federal, state, provincial and local health and safety laws before using this product. Use engineering and administrative controls, personal protective equipment (PPE), including respiratory protection, and training to protect workers involved in abrasive blasting activities. Engineering controls, such as substitution, isolation, containment, and ventilation are the primary means of preventing or reducing exposures to airborne hazards during abrasive blasting operations. Administrative controls, including the use of good work and personal hygiene practices can also reduce exposure. Local ventilation should be used during handling. Good housekeeping and personal hygiene are recommended. Some individuals may show sensitivity to exposure. Failure to observe proper practices may be hazardous to health. Use only in well-ventilated areas. Harmful by inhalation. Avoid contact with skin and eyes. Do not breathe gas, fumes, vapor or spray. Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation wear suitable respiratory protective equipment. Avoid overexposure to metal dust. **NOTE**: 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
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 & Formetrix™, 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 edition.
16.4	Prepared for:	**Formetrix™, Inc.** 171 Forbes BLVD, Suite 2000 Mansfield, MA. 02048 Tel: +1 (774) 719-2358
16.5	Prepared by:	**ShipMate, Inc.** P.O. Box 787 Sisters, Oregon 97759-0787 USA Tel: +1 (310) 370-3600 Fax: +1 (310) 370-5700 http://www.shipmate.com

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

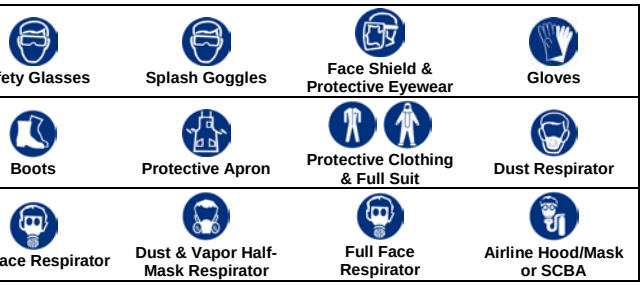
HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

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



OTHER STANDARD ABBREVIATIONS:

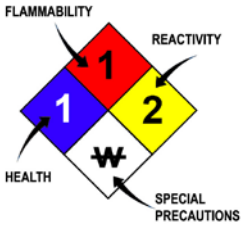
Carc	Carcinogenic
Irrit	Irritant
NA	Not Available
NR	No Results
ND	Not Determined
NE	Not Established
NF	Not Found
SCBA	Self-Contained Breathing Apparatus
Sens	Sensitization
STOT RE	Specific Target Organ Toxicity – Repeat Exposure
STOT SE	Specific Target Organ Toxicity – Single Exposure

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



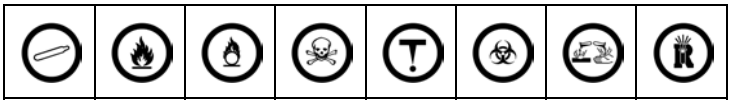
TOXICOLOGICAL INFORMATION:

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_{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:

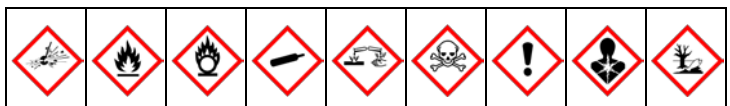
WHMIS	Canadian Workplace Hazardous Material Information System
DOT	U.S. Department of Transportation
TC	Transport Canada
EPA	U.S. Environmental Protection Agency
DSL	Canadian Domestic Substance List
NDSL	Canadian Non-Domestic Substance List
PSL	Canadian Priority Substances List
TSCA	U.S. Toxic Substance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