



MATERIAL SAFETY DATA SHEET

Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS & 2001/58/EC Standards | MSDS Revision: 1.0 | MSDS Revision Date: 03/10/2011

1. PRODUCT IDENTIFICATION			CHEMICAL RESPONSE CARD: 81			
1.1	Product Name:	VALVE REGULATED LEAD-ACID BATTERY	RESPONSE TEAM PPE:			
1.2	Chemical Name:	Acid/Corrosive	WHMIS:			
1.3	Synonyms:	AGM Battery, Valve-Regulated Non-Spillable Battery	HEALTH:	3		
1.4	Trade Names:	Battery	FLAMMABILITY:	0		
1.5	Product Use:	Automotive Battery	REACTIVITY:	2		
1.6	Manufacturer's Name:	Braille Battery, Inc.	PERSONAL PROTECTION:	X		
1.7	Manufacturer's Address:	6935 15th Street E., Suite 115, Sarasota, FL 34243 USA				
1.8	Business Phone:	+1 (941) 312-5047				
1.9	Emergency Phone:	CHEMTREC +1 (800) 424-9300/+1 (703) 527-3887				

2. IDENTIFICATION OF RISKS

2.1	<p>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). May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant women exposed to internal components may experience reproductive/developmental effects.</p>						
2.2	Routes of Entry:	Inhalation:	YES	Absorption:	YES	Ingestion:	YES
2.3	<p>Effects of Exposure: EYES: Severe irritation, corneal damage, and possible blindness will result in direct contact. SKIN: Severe irritation, burns, ulcerations, and contact dermatitis can result from direct contact. INGESTION: Severe irritation of the mouth, throat, esophagus, and stomach. Acute ingestion of lead may cause abdominal distress, which can rapidly lead to systemic toxicity. INHALATION: Severe respiratory irritation (from vapors or mists) is possible. Inhalation of lead fumes can cause upper respiratory tract and lung irritation.</p>						
2.4	<p>Symptoms of Exposure: EYES: Stinging or burning sensation, watering, and redness. SKIN: Stinging or burning, redness, and dermatitis (rash). INGESTION: Severe irritation of the mouth, throat, esophagus, and stomach. Gastrointestinal discomfort, nausea, vomiting, cramping, and diarrhea. INHALATION: Upper respiratory irritation, headache, irritability, and an inability to sleep.</p>						
2.5	<p>Acute Health Effects: EYES: Severe irritation, corneal damage, and possibly blindness will result in direct contact. SKIN: Severe irritation, burns, ulcerations, and contact dermatitis can result from direct contact. INGESTION: Severe irritation of the mouth, throat, esophagus, and stomach. INHALATION: Severe respiratory irritation (from vapors or mists) is possible.</p>						
2.6	<p>Chronic Health Effects: EYES: Possible corneal scarring. SKIN: No chronic health effects are reported by the manufacturer. INGESTION: No chronic health effects reported by the manufacturer. INHALATION: Respiratory dermatitis, chronic bronchitis, and tooth enamel erosion.</p>						
2.7	<p>Target Organs: Eyes, skin, and respiratory system.</p>						
2.8	<p>Toxicological Properties: None reported by the manufacturer.</p>						

NA = Not Available; ND = Not Determined; NE = Not Established; NF = Not Found; 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.



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3. COMPOSITION & INGREDIENT INFORMATION

CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	EXPOSURE LIMITS IN AIR (mg/m ³)									
					ACGIH		NOHSC			OSHA			OTHER	
					ppm		ppm			ppm				
					TLV	STEL	ES-TWA	ES-STEL	ES-PEAK	TLV	STEL	IDLH		
INORGANIC COMPOUNDS OF:														
LEAD	7439-92-1	OF7525000	231-100-4	≤ 75.0	0.05	NA	0.15	NF	NF	NF	0.05	NA	100	Pb
SULFURIC ACID	7664-93-9	WS5600000	231-639-5	≤ 15.0	0.02	1.0	1.0	3.0	NF	NF	1.0	1.0	15	FRAC
POLYPROPYLENE (CASE)	9003-07-0	TR500000	204-062-1	≤ 10.0	10	NA	NF	NF	NF	NF	15	NA	NA	DUST
ANTINOMY	7440-36-0	CC4025000	231-146-5	≤ 0.10	0.5	NA	0.5	NF	NF	NF	0.5	0.5	50	
TIN	7440-31-5	XP7320000	231-141-8	≤ 0.10	2.0	NA	0.1	NF	NF	NF	2	NA	100	Sn
ARSENIC	7440-38-2	CG0525000	231-148-6	≤ 0.10	0.01	NA	0.05	NF	NF	NF	0.01	NA	NA	

4. FIRST AID

4.1	<p>First Aid:</p> <p>EYES: Flush eyes thoroughly with copious amounts of water for at least 15 minutes, holding eyelids open to ensure complete flushing. Seek immediate medical attention.</p> <p>SKIN: Remove contaminated clothing and flush affected areas with water or an aqueous solution of boric acid. Seek immediate medical attention. Launder clothing before reuse.</p> <p>INGESTION: If the victim is conscious, give 1-2 glasses of water or milk to dilute. Do NOT induce vomiting. Call a physician or poison control center for assistance and instructions. Seek immediate medical attention. If vomiting occurs spontaneously, keep victim's head lowered (forward) to reduce the risk of aspiration.</p> <p>INHALATION: Remove victim to fresh air at once. If breathing is difficult, provide supplemental oxygen. If breathing has stopped, provide artificial respiration. Seek immediate medical attention. Provide supportive treatment, keeping victim warm and quiet.</p>
4.2	<p>Medical Conditions Aggravated by Exposure:</p> <p>Pre-existing skin and respiratory disorders.</p>

5. FIRE & EXPLOSION HAZARDS

5.1	Flashpoint & Method: NA
5.2	Autoignition Temperature: NA
5.3	Flammability Limits: Lower Explosive Limit (LEL): 4.0% H₂ Upper Explosive Limit (UEL): 74.0% H₂
5.4	<p>Fire & Explosion Hazards:</p> <p>Batteries evolve flammable hydrogen gas during charging and may increase fire risk in poorly ventilated areas near sparks, excessive heat or open flames. Thermal shock may cause battery case to crack open. Containers may explode when heated.</p>
5.5	<p>Extinguishing Methods:</p> <p>Carbon Dioxide, foam, dry chemical. Do not use water on live electrical circuits.</p>
5.6	<p>Firefighting Procedures:</p> <p>Use appropriate media for surrounding fire. Do not use carbon dioxide directly on cells. 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. Avoid breathing vapors. Firefighters should wear full-face, self-contained breathing apparatus (MSHA/NIOSH approved or the equivalent) and impervious clothing. HAZCHEM CODE 2[R].</p>



6. SPILLS & LEAKS

6.1	<p>Spills:</p> <p>Secure spill area, remove or minimize all sources of ignition, and maximize ventilation. Stop spill or leak at source if safely possible. Deny entry to all unprotected individuals. Individuals involved in the cleanup must wear acid resistant personal protective equipment. Dilute acid with water and neutralize with sodium carbonate (soda ash) or sodium bicarbonate (baking soda) or very dilute sodium hydroxide solutions. Add neutralizer/absorbent to spill area. Sweep or shovel spilled material and absorbent and place in approved container. Do not allow undiluted material to get into any drain, sewer, or waterway. Dispose of any non-recyclable materials in accordance with local, state, provincial or federal regulations.</p>
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7. STORAGE & HANDLING

7.1	Work & Hygiene Practices: Avoid direct contact with this material. Wash hands thoroughly after using this product and before eating, drinking or smoking.
7.2	Storage & Handling: Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Do not handle near heat, sparks, or open flames. Protect containers from physical damage to avoid leaks and spills. Place cardboard between layers of stacked batteries to avoid damage and short circuits. Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire. Do not store in unmarked containers or storage devices. Protect units from damage. Do not overcharge battery. Do not short terminals with metal tools.
7.3	Special Precautions: Do not allow metal objects to rest against or near terminal posts. Readily available emergency fire, first aid, and spill response equipment and/or measures are highly recommended.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

8.1	Ventilation & Engineering Controls: Not normally required since the batteries are sealed units. Charge in areas with adequate ventilation. General mechanical ventilation should be sufficient.
8.2	Respiratory Protection: Not required for normal conditions of use. However, a respiratory protection program that meets OSHA's 29CFR1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirators use.
8.3	Eye Protection: Safety glasses with side shields should be mandated for use with this product. If splashing is anticipated, splash goggles and/or a face-shield are strongly recommended.
8.4	Hand Protection: None required under normal-use conditions for gel/absorbed electrolyte-type batteries. Wash hands thoroughly with soap and warm water after handling.
8.5	Body Protection: None required under normal-use conditions for gel/absorbed electrolyte-type batteries.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1	Density:	1.277 – 1.33 (water=1)
9.2	Boiling Point:	235 °F – 240 °F (113 °C – 216 °C)
9.3	Melting Point:	NA
9.4	Evaporation Rate:	< 1.0 (BuAc=1)
9.5	Vapor Pressure @ 20 °C:	10 mmHg @ 77 °F
9.6	Molecular Weight:	NA
9.7	Appearance & Color:	Sulfuric acid – gelatinous. Lead – solid.
9.8	Odor Threshold:	Odorless.
9.9	Solubility:	100% (sulfuric acid)
9.10	pH:	< 1.0
9.11	Viscosity:	NA
9.12	Coefficient Oil/Water Distribution:	NA
9.13	Additional Information:	NA

10. STABILITY & REACTIVITY

10.1	Stability: Stable, when used as intended.
10.2	Hazardous Decomposition Products: Highly toxic sulfuric oxides, hydrogen sulfide, carbon monoxide, and possibly arsine gas.
10.3	Hazardous Polymerization: Will not occur.
10.4	Conditions to Avoid: Open flames, sparks, high heat, and proximity to incompatible substances, ignition sources and heavily trafficked areas.
10.5	Incompatible Substances: Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water, iron, powdered metals, zinc, and steel.



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MSDS Revision: 1.0

MSDS Revision Date: 03/10/2011

11. TOXICOLOGICAL INFORMATION

11.1 Toxicity Data:
Sulfuric Acid: LD₅₀, Rat: 2140 mg/kg. LC₅₀, Guinea pig: 510 mg/m³. No data available for elemental lead.

11.2 Acute Toxicity:
See section 2.5

11.3 Chronic Toxicity:
Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood-lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

11.4 Suspected Carcinogen:
Yes. Strong inorganic acid mist containing sulfuric acid is classified as a Group 1 Human Carcinogen by the IARC. However, this classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions in a battery. This mist can only be produced by misuse, such as overcharging. Lead is listed by IARC as a 2B carcinogen: possible carcinogen in humans. Arsenic is listed by IARC, ACGIH, and NTP as a carcinogen, based on studies with high doses over long periods of time. The other ingredients in this product, present at equal to or greater than 0.1% of the product, are not listed by OSHA, NTP, or IARC as suspect carcinogens. The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

11.5	Reproductive Toxicity:	
	Mutagenicity:	This product is not expected to cause mutagenic effects in humans.
	Embryotoxicity:	This product is not expected to cause embryotoxic effects in humans.
	Teratogenicity:	This product is not expected to cause teratogenic effects in humans.
	Reproductive Toxicity:	This product is not expected to cause reproductive harm in humans.

11.6 Irritancy of Product:
NA

11.7 Biological Exposure Indices:
NA

11.8 Medical Recommendations:
Treat symptomatically.

12. ECOLOGICAL INFORMATION

12.1 Environmental Stability:
Lead is very persistent in soils and sediments. No data available on biodegradation. Mobility of metallic lead between ecological compartments is low. No known effects on stratospheric ozone depletion.

12.2 Effect on Plants & Animals:
Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain. Most studies have included lead compounds, not solid inorganic lead.

12.3 Effect on Aquatic Life:
**Sulfuric Acid: 24-hour LC50, fresh water fish (*Brachydanio rerio*): 82 mg/L; 96-hour LOEC, fresh water fish (*Cyprinus carpio*): 22 mg/L (lowest observable effect concentration)
Lead (metal): no data available.**

13. DISPOSAL CONSIDERATIONS

13.1 Waste Disposal:
**Lead acid batteries are recyclable when sent to a secondary lead smelter. Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.
Undamaged valve-regulated lead-acid batteries may be classified as Universal Waste in some U.S. states.**

13.2 Special Considerations:
If the material is unsuitable for recycling or reclamation, enclosed-controlled incineration is recommended unless otherwise prohibited by local ordinance.



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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): EXCEPTED FROM REGULATION PER 49 C FR 173.159a. *	
14.2	IATA (AIR): EXCEPTED FROM REGULATION PER ICAO, § 3.4, SPECIAL PROVISION A67	
14.3	IMDG (OCN): EXCEPTED FROM REGULATION PER IMDG CODE, § 3.3, SPECIAL PROVISION 238	
14.4	TDGR (Canadian GND): EXCEPTED FROM REGULATION PER TDGR, SCHEDULE 2,, SPECIAL PROVISION 39	
14.5	ADR/RID (EU): EXCEPTED FROM REGULATION PER ADR, CH. 3.3, SPECIAL PROVISION 238	
14.6	SCT (MEXICO): EXCEPTED FROM REGULATION PER NOM-02-2003, TABLE 3, SPECIAL PROVISION 238	
14.7	ADGR (AUS): EXCEPTED FROM REGULATION PER ADR, § 3.3.2, SPECIAL PROVISION 238	

*** Note:** Each battery and the outer packaging must be plainly and durably marked "Non-spillable" or "Non-spillable Battery."
Non-spillable Battery complies with the provisions listed in 49 CFR 173.159a; therefore, must not be marked with an identification number or hazardous label and is not subject to hazardous shipping paper requirements. Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.

15. REGULATORY INFORMATION

15.1	SARA Reporting Requirements: This product contains Lead, Antimony, Arsenic and Sulfuric acid, substances with SARA section 313 and 40 CFR part 373 reporting requirements. Further, this product contains sulfuric acid solution, a substance with SARA section 304 reporting requirements	
15.2	SARA Threshold Planning Quantity: Sulfuric Acid (solution) 454 kg; 1000 lbs.	
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	U.S. EPA CERCLA Reportable Quantity (RQ): Lead 4.5 kg; 10 LB. Antimony 2275 KG; 5,000 LB. Arsenic .45 kg; 1 lb. Sulfuric acid (solution) 454 kg ; 1,000 lbs.	
15.5	Other U.S. Federal Requirements: Lead and Antimony are listed as a priority pollutant under the Clean Water Act (CWA). Lead and Antimony are listed as a toxic pollutant under the CWA. Sulfuric acid is listed as a Hazardous Substance under the CWA.	
15.6	Other Canadian Regulations All chemical substances of this product are listed on the CEPA DSL/NDSL or are exempt from list requirements. This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.	
15.7	State & Other Regulatory Information: Lead can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts. Antimony can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts. Tin can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, and Massachusetts. Sulfuric acid can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, and Massachusetts. <u>California Proposition 65</u> The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm: Lead, Arsenic, Strong inorganic acid mists including sulfuric acid. <u>RoHS</u> This product may be subject to Restriction of Hazardous Substances (RoHS) regulations in Europe and China, or may be regulated under additional regulations and laws not identified above, such as for uses other than described or as-designed/as intended by the manufacturer, or for distribution into specific domestic destinations.	



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15. REGULATORY INFORMATION – cont'd

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

The primary components of this product are listed in Annex I of EU Directive 67/548/EEC.

HAZCHEM CODE 2[R]

Lead: Toxic, (T)

R: 20/22-33-62-50/53 Harmful by inhalation and if swallowed. Danger of cumulative effects. Possible risk of impaired fertility. Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.

S: 45-53-60 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid exposure – obtain special instructions before use. This material and its container must be disposed of as hazardous waste.

Antimony: Harmful, (XN)

R: 20/22-51-53 Harmful by inhalation and if swallowed. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S: 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

Arsenic: Toxic (T)

R: 25-45 Very toxic if swallowed. May cause cancer.

S: 1/2-35-45 Keep locked up and out of the reach of children. This material and its container must be disposed of in a safe way. In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

Sulfuric Acid: Corrosive (C)

R: 35 Causes severe burns

S: 26-30-45 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Never add water to this product. 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:
Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2). Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

16.2 Terms & Definitions:
Please see last page of this MSDS.

16.3 Disclaimer:
This Material Safety Data Sheet complies with Health Canada's Workplace Hazardous Materials Information System (WHMIS) & U.S. OSHA's Hazard Communication Standard, 29 CFR §1910.1200. To the best of ShipMate's or Braille Battery'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. Contact the manufacturer for additional information.

16.4 Prepared for:
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Tel: +1 (941) 312-5047
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16.5 Prepared by:
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DEFINITIONS 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
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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.
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HAZARDOUS MATERIALS IDENTIFICATION SYSTEM: HMIS

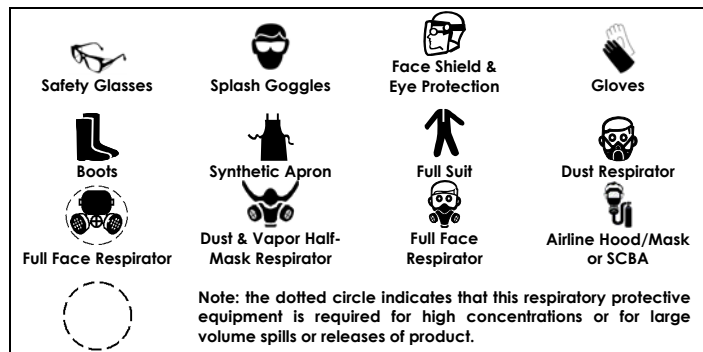
HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

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



PERSONAL PROTECTION RATINGS:

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



OTHER STANDARD ABBREVIATIONS:

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

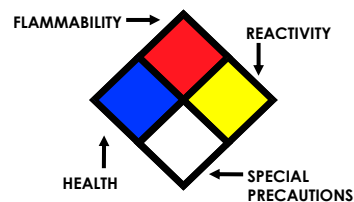
NATIONAL FIRE PROTECTION ASSOCIATION: NFPA

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:

BCF	Bioconcentration Factor
IARC	International Agency for Research on Cancer
LC₅₀	Lethal concentration (gases) which kills 50% of the exposed animal
LD₅₀	Lethal Dose (solids & liquids) which kills 50% of the exposed animals
log K_{ow} or log K_{oc}	Coefficient of Oil/Water Distribution
NTP	National Toxicology Program
ppm	Concentration expressed in parts of material per million parts
RTECS	Registry of Toxic Effects of Chemical Substances
TCLo	Lowest concentration to cause a symptom
TD_{lo}	Lowest dose to cause a symptom
TD_{lo}, LD_{lo}, & LD₅₀ or TC, TC_o, LC_{lo}, & LC₅₀	Lowest dose (or concentration) to cause lethal or toxic effects
TL_m	Median threshold limit

REGULATORY INFORMATION:

DOT	U.S. Department of Transportation
DSL	Canadian Domestic Substance List
EPA	U.S. Environmental Protection Agency
EU	European Union (European Union Directive 67/548/EEC)
NDSL	Canadian Non-Domestic Substance List
NOHSC	National Occupational Health & Safety Code (Australia)
PST	Canadian Priority Substances List
TC	Transport Canada
TSCA	U.S. Toxic Substance Control Act
WHMIS	Canadian Workplace Hazardous Material Information System

EC INFORMATION:

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