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Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards SDS Revision: 1.0 SDS Revision Date: 4/30/2015

	1. PRODUCT & COMPANY IDENTIFICATION				
1.1	Product Name:	AA HEAVY DUTY BATTERY			
1.2	Chemical Name:	Zinc Chloride Battery			
1.3	Synonyms:	P/N 61675			
1.4	Trade Names:	Thunderbolt Magnum			
1.5	Product Uses & Restrictions:	Electric Storage Battery			
1.6	Distributor's Name:	Harbor Freight Tools USA, Inc.			
1.7	Distributor's Address:	26541 Agoura Road, Calabasas, CA 91302 USA			
1.8	Emergency Phone:	CHEMTREC: +1 (703) 527-3887 / +1 (800) 424-9300 (CCN 676687)			
1.9	Business Phone / Fax:	+1 (805) 388-1000			

### 2. HAZARDS 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).

WARNING! HARMFUL IF SWALLOWED. TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS.

<u>Hazard Statements</u> (H): H302 – Harmful if swallowed. H411 – Toxic to aquatic life with long lasting effects.

<u>Precautionary Statements</u> (P): P264 – Wash hands and exposed skin areas with soap and warm water thoroughly after handling. P270 – Do not eat, drink or smoke while sing this product. P273 – Avoid release to the environment. P280 – Wear protective gloves/eye protection. P301+P312 – IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. P330 – Rinse mouth. P391 – Collect spillage. P501 – Dispose of contents/container to licenses treatment, storage and disposal facility (TSDF).

<u>IF INGESTED</u>: Call the NATIONAL BATTERY INGESTION HOTLINE at +1 (202) 625-3333 collect, day or night. In Canada, call +1 (416) 813-5900.



## 3. COMPOSITION & INGREDIENT INFORMATION

					EXPOSURE LIMITS IN AIR (mg/m³)								
					AC	GIH	NOHSC		OSHA				
					pp	om		ppm			ppm		
CHEMICAL NAME(S)	CAS No.	RTECS No.	EINECS No.	%	TLV	STEL	ES- TWA	ES- STEL	ES- PEAK	PEL	STEL	IDLH	OTHER
ZINC	7440-66-6	ZG8600000	231-175-3	15-40	NA	NA	NF	NF	NF	NA	NA	NA	
INC	Aquatic Acute	1; Aquatic Chro	nic 1; H400, H410	)									
MANGANESE DIOXIDE	1313-13-9	OP0350000	215-202-6	15-40	(5)	NA	(5)	NF	NF	(5)	NA	NA	
WANGANESE DIOXIDE	Acute Tox. O	ral 4; Acute Tox.	Inh. 4; H302, H33	32									
WATER	7732-18-5	ZC0110000	231-791-2	10-20	NA	NA	NF	NF	NF	NA	NA	NA	
WATER													
GRAPHITE	7782-42-5	MD9659600	231-955-3	5-10	(2.0)	NA	(2.0)	NF	NF	(5)*	NA	NA	RESP FRAC
GRAPHILE													
ZINC CHLORIDE	7646-85-7	ZH1400000	231-592-0	5-10	(1)	NA	(1)	NF	5	(1)	NA	50	FUME
ZINC CHLORIDE	Acute Tox. 4 *; Skin Corr. 1B; Aquatic Acute 1; Aquatic Chronic 1; H302, H314, H400, H410												
CARRON DI ACK	1333-86-4	FF5800000	215-609-9	3-7	(3.5)	NA	(3.5)	NF	NF	(3.5)	NA	NA	
CARBON BLACK													
IDON	7439-89-6	NO4565500	231-096-4	1-5	(5)	NA	NF	NF	NF	(10)	NA	NA	0.5 - NIOSH
RON													
DETROLEUM ACRUALT	8052-42-4	CI9900000	232-490-9	1-5	0.5	NA	NF	NF	NF	0.5	NA	NA	FUME
PETROLEUM ASPHALT													
AAAAAAAHII IAA CI II ODIDE	12125-02-9	BP4550000	235-186-4	0.5-1.5	(10)	NA	(10)	(20)	NF	(10)	NA	NA	
AMMONIUM CHLORIDE	Acute Tox. 4,	Eye Irrit. 2; H302	2, H319										
EAD	7439-92-1	OF7525000	231-100-4	0-0.1	(0.05)	NA	NF	(0.15)	NF	NA	100	NA	
LEAD	Acute Tox. 4;	Acute Tox. 4; Re	epr. 1A; STOT RE	2; Aquatio	Acute	1; Aqua	atic Chro	onic 1; F	1302, F	1332, H	360, H3	373, H4	00, H410
O A DA ALL IA A	7440-43-9	NA	231-152-8	0-0.1	(0.01)	NA	NF	NF	NF	(0.1)	0.3	(9)	(0.02) RESP I
CADMIUM	Acute Tox. 2:	Muta. 2: Carc. 1	B; Repr. 2; STOT	SE 1: Aa.	Acute 1	: Aa. C	hronic 1	: H330	H341.	H350.	H361fd	. H372	H400, H410



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			4. FIRST	AID MEASURES	S					
4.1	First Aid:	Ingestion:	unconscious person. Co assistance and instructi victim's head lowered (f	of water, but do NOT in contact the nearest Poison ions. Seek immediate me orward) to reduce the risk yes, flush eyes thoroughly	Control Center edical attention of aspiration.	or local emerg	ency telephone r ccurs spontaneo	number for usly, keep		
		Eyes:	holding eyelid(s) open to use, consult a physician	o ensure complete flushing or emergency room imme	ig. If the eyes of ediately.	or face become	swollen during o	r following		
		Skin:	discomfort persists and	Remove contaminated clod/or the skin reaction wo notil after it has been properties.	orsens, contac					
		Inhalation:	Remove victim to fres respiration. Seek imme	h air at once. Under eduction.	extreme conditi	ons, if breathir	ng stops, perfori	n artificial		
4.2	Effects of Exposure:	Ingestion:	compounds may cause	itation of mouth, throat, abdominal pain, nausea, v	vomiting, diarrh	iea, and severe	cramping.	n of zinc		
		Eyes:		cornea damage, blindness						
		Skin:		and ulceration if open bat	•					
		Inhalation:		or fumes may cause irritation						
4.3	Symptoms of Overexposure:	Ingestion:	permanent tissue destru	usea, vomiting and head uction of the esophagus ar	nd digestive tra	ct.	•			
Ì		Eyes:	May cause irreversible eye injury. Contact with eyes may cause severe irritation, and possible eye bu Severe irritation, redness, and watering. Severe skin irritation, red, itching skin, burns and ulceration, if open battery cell comes into contact							
		Skin:	skin.	a, itching skin, burns and	id uiceration, if	open battery c	ell comes into c	ontact with		
		Inhalation:		luish discoloration of skin	duo to doficio	at ovugonation	of the blood) Irri	itation may		
		Inhalation:	lead to chemical pneur which is characterized I	monitis and pulmonary ed by flu-like symptoms with	dema. Inhalatio metallic taste,	n of fumes ma fever, chills, co	y cause metal fough, weakness,	ume fever, chest pain		
4.4	Acute Health Effects:	muscle pain and increased white blood cell count. Causes respiratory tract irritation with possible burns.  Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor, or fume.								
4.5	Chronic Health Effects:	Chronic exp	sure may cause effects s	similar to those of acute ex	xposure.					
4.6	Target Organs:	Skin, Respir	atory System, Central Ner	vous System (CNS)						
4.7	Medical Conditions	NA			HEA	LTH		1		
	Aggravated by Exposure:				FLA	MMABILITY		0		
					РНУ	SICAL HAZA	RDS	0		
								X		
						TECTIVE EQ				
					EYE	S SKIN	LUNGS			
			5 EIDEEIC	LITING MEASUE	DEC					
5.1	Fire & Explosion Hazards:	This motoris		HTING MEASUR eadily ignite. However, if		fire this produ	ot may			
5.1	Tile & Explosion Hazards.			rm toxic gases (e.g., CO,			ct may			
5.2	Extinguishing Methods:			y Chemical. Use water sp						
5.3	Firefighting Procedures:						incido			
0.0	Transgrang Trooccures.	containers. I	For small fires, use dry charbon dioxide, alcohol-re	ropriate for the surround emical, carbon dioxide, or sistant foam, or water s	or water spray. I spray. Cool co	For large fires, on tainers with f	use dry looding	0		
		sewers, dra	ns, drinking water supply	is out. Prevent runoff fror	ay. Firefighters	must use full	bunker			
		against pote	ntial hazardous combustion	on or decomposition produ	ucts and oxyge	n deficiencies.				
	T =	_		L RELEASE MEA						
6.1	Spills:	Equipment, chemical-res	including protective glov istant apron may be requ	ndividuals involved in sp es and eyewear. Plasti ired for clean-up of large s	ic or rubber gl spills.	oves, respirato	r, eye/face prot	ection and		
		material suc	n as vermiculite or sand to	ctive equipment including b soak up the product and	I place into a co	ntainer for later	disposal.			
		immediate h	azard area and keep una appropriate protective e	aterials away from spill. uthorized personnel out of quipment including respir	f area. Stop sp	ill or release if	it can be done w	ith minima		
			-							



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		7. HANDLIN	G & S	TOR/	AGE IN	<b>FORM</b>	ATION				
7.1	Work & Hygiene Practices:	Do not eat, drink or smoke whe									
7.2	Storage & Handling:	sunlight. Keep away from inc									
7.3	Special Precautions:	cases. Inadvertent charging c will not seriously affect the ba safety release vent to open. S	This battery is not designed for recharging. Recharging can cause battery leakage or high pressure rupture, in some ases. Inadvertent charging can happen if a battery is installed backwards. Accidental short circuit for a few seconds will not seriously affect the battery. But prolonged short circuit will cause the battery to lose energy, and can cause the afety release vent to open. Sources of short circuit include jumbled batteries in bulk containers, metal jewelry, metal overed tables or metal belts used for assembly of batteries in devices.								
		8. EXPOSURE CON	NTROL	_S &	<b>PERS</b> (	DNAL F	PROTE	CTIO	N		
8.1	Exposure Limits:		ACC	GIH		NOHSC			OSHA		OTHER
	ppm (mg/m <sup>3</sup> )	CHEMICAL NAME(S)	TLV	STEL	ES-TWA	ES-STEL	ES-PEAK	PEL	STEL	IDLH	
		MANGANESE DIOXIDE	(5)	NA	(5)	NF	NF	(5)	NA	NA	
		GRAPHITE	(2.0)	NA	(2.0)	NF	NF	(5)*	NA	NA	RESP FRAC
		ZINC CHLORIDE	(1)	NA	(1)	NF	5	(1)	NA	50	FUME
l		CARBON BLACK	(3.5)	NA	(3.5)	NF	NF	(3.5)	NA	NA	
1		IRON	(5)	NA	NF	NF	NF	(10)	NA	NA	0.5 – NIOSH
		PETROLEUM ASPHALT	0.5	NA	NF	NF	NF	0.5	NA	NA	
		AMMONIUM CHLORIDE	(10)	NA	(10)	(20)	NF	(10)	NA	NA	
		LEAD	(0.05)	NA	NF	(0.15)	NF	NA (2.4)	100	NA (2)	(0.00) DEOD EDA 0
8.2	Markitation O. Francisco	CADMIUM	(0.01)	NA	NF	NF	NF	(0.1)	0.3	(9)	(0.02) RESP FRAC
0.2	Ventilation & Engineering Controls:	General mechanical (e.g., fan exhaust ventilation to effective	ely remov	e and	prevent bu	uildup of v	apors or	mist gen	nerated	from th	e handling of this
8.3	Respiratory Protection:	product. Ensure appropriate decontamination equipment is available (e.g., sink, safety shower, eye-wash station).  No special respiratory protection is required under typical circumstances of use or handling. In instances where mist or vapors of this product are generated, and respiratory protection is needed, use only protection authorized by 29 CFR §1910.134, applicable U.S. State regulations, or the Canadian CAS Standard Z94.4-93 and applicable standards of Canadian Provinces, EC member									
8.4	Eye Protection:	States, or Australia.  Wear protective eyewear (e.g., safety glasses with side-shield) at all times when handling this product. Always use protective eyewear when cleaning spills or leaks. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).									
8.5	Hand Protection:	Where contact is likely, imperv When handling large quantities									
8.6	Body Protection:	No apron required when hand	When handling large quantities of fluid (e.g., ≥ 1 gallon (3.8 L)), wear corrosion-resistant gloves.  No apron required when handling sealed undamaged battery. Where contact is likely, corrosion-resistant apron, clothing and boots should be worn. Eye wash stations and deluge showers should be available.								
		9. PHYSICA	L & C	HEM	ICAL P	ROPE	RTIES				
9.1	Appearance:	Cylindrical battery									
9.2	Odor:	No apparent odor (sealed). Ma	nganese	dioxide/	zinc powd	er is black	grey (brok	en).			
9.3	Odor Threshold:	NA	3		,50		5 7 (2. 51)	/-			
9.4	pH:	NA									
9.5	Melting Point/Freezing Point:	NA									
9.6	Initial Boiling Point/Boiling Range:	NA 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:	0.990-1.040 (at 25 °C)									
9.12	Solubility:	Sealed electric battery: Insolub	le								
9.13	Partition Coefficient (log P <sub>ow</sub> ):	NA									
9.14	Autoignition Temperature:	NA NA									
9.15	Decomposition Temperature:	NA									
9.16	Viscosity:	NA									
9.17	Other Information:	NA									



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Prepared to OSHA, ACC, ANSI, NOHSC, WHMIS, 2001/58 & 1272/2008/EC Standards SDS Revision Date: 4/30/2015 10. STABILITY & REACTIVITY 10.1 Stability Stable under normal conditions; unstable with heat or contamination. 10.2 Hazardous Decomposition Oxides of carbon (CO, CO<sub>2</sub>). Products: 10.3 Hazardous Polymerization: Will not occur. 10 4 Conditions to Avoid Open flames, sparks, high heat, incompatible substances and direct sunlight. 10.5 Incompatible Substances: Avoid extreme heat and ignition sources. Store away from oxidizers. Do not exceed heat, crush, disassemble, shortcircuit or recharge 11. TOXICOLOGICAL INFORMATION Routes of Entry Ingestion: YES 11.1 11.2 Toxicity Data: This product has NOT been tested on animals to obtain toxicology data. Toxicology data, found in scientific literature, is available for some of the components of the product and is presented below: Zinc Chloride: LD<sub>50</sub> (oral, rat): 350 mg/kg; Manganese Dioxide: LD<sub>50</sub> (oral, rat): 3,478 mg/kg 11.3 Acute Toxicity See section 4.4 Chronic Toxicity 11.4 See section 4.5 Carbon Black is listed as IARC Group 2B (Possibly carcinogenic to humans); CA65 (cancer). 11.5 Suspected Carcinogen: Lead is listed as ACGIH Group A3 (Confirmed animal carcinogen with unknown relevance to human); IARC Group 2B (Possibly carcinogenic to humans); NTP13 Group 2 (Reasonably Anticipated to be a Human Carcinogen); CA65 (cancer). Cadmium is listed as ACGIH Group A2 (Suspected human carcinogen); IARC Group 1 (Carcinogenic to humans); NTP13 Group 1 (Known human carcinogen); CA65 (cancer). 11.6 Reproductive Toxicity: This product contains Lead, which is suspected of causing reproductive toxicity in humans. Mutagenicity: This product is not reported to produce mutagenic effects in humans. Embryotoxicity This product is not reported to produce embryotoxic effects in humans. Teratogenicity: This product is not reported to cause teratogenic effects in humans. Reproductive Toxicity: This product contains Lead, which is suspected of causing reproductive toxicity in humans 11.7 Irritancy of Product: The product can cause allergic skin reactions (e.g., rashes, welts, dermatitis) upon prolonged or repeated exposure. 11.8 Biological Exposure Indices NA 11.9 Physician Recommendations: Treat symptomatically and supportively. 12. ECOLOGICAL INFORMATION 12.1 Environmental Stability: There are no specific data available for this product. Effects on Plants & Animals: 12.2 There are no specific data available for this product. Effects on Aquatic Life 12.3 There are no specific data available for this product. 13. DISPOSAL CONSIDERATIONS 13.1 Waste Disposal: Dispose of in accordance with federal, state, provincial and local regulations. Special Considerations: 13.2 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** IATA (AIR): NOT REGULATED 14 2 IMDG (OCN): 14.3 **NOT REGULATED** TDGR (Canadian GND): 144 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 This product contains Lead and Zinc, substances subject to SARA Title III, section 313 reporting requirements. Requirements 15.2 SARA Threshold Planning There are no specific Threshold Planning Quantities for the components of this product. Quantity: 15.3 TSCA Inventory Status: The components of this product are listed on the TSCA Inventory or are otherwise exempt. 15.4 CERCLA Reportable Quantity Zinc: 454 kg (1,000 lbs); 15.5 Other Federal Requirements: Lead and Cadmium are listed as Hazardous Air Pollutants (HAPs). Lead and Cadmium are listed as Toxic Pollutants under the Clean Water Act (CWA). Zinc, Lead and Cadmium are listed as Priority Pollutants under the CWA. This product does not contain any Class 1 or Class 2 ozone depletors



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	T	15. REGULATORY INFO					
15.6	Other Canadian Regulations:	Sheet contains all of the information required by listed on the DSL/NDSL. None of the compon Substances List. WHMIS D2B (Other Toxic Effect	,				
15.7	State Regulatory Information:	Lead can be found on the following state criteria list: California Proposition 65 (CA65), 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).  Graphite is found on the following state criteria lists: FL, MA, MN, PA, WA.  Manganese Dioxide is found on the following state criteria lists: IL, MA, PA, and RI.  Zinc is found on the following state criteria lists: California Proposition 65 (CA65), MA, MN, NJ, and PA.  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), Illinois Hazardous Substances List (IL), 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), Rhode Island Hazardous Substances List (RI), Washington Permissible Exposures List (WA), Wisconsin Hazardous Substances List (WI).  WARNING: This product contains a substance(s) known to the State of California to cause cancer, birth defects or other reproductive harm. California law requires this warning be given to customers in the State of California.					
15.8	Other Requirements:	The primary component of this product is listed in Annex I of EU Directive 67/548/EEC:  Zinc Chloride: Corrosive (C); Environmental Danger (N). Risk Phrases (R): 22-34-50/53 – Harmful if swallowed. Causes burns. Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment. Safety Phrases (S): 1/2-26-36/37/39-45-60-61 – Keep locked up and out of reach of children. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing/ gloves and eye/face protection. In case of accident or if you feel unwell seek medical advice immediately (show label where possible). This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/SDS.					
		16. OTHER INFO	DRMATION				
16.1	Other Information:						
10.1		WARNING! HARMFUL IF SWALLOWED. TOXIC TO AQUATIC LIFE WITH LONG LASTING EFFECTS.  Wash hands and exposed skin areas with soap and warm water thoroughly after handling. Do not eat, drink or smoke while sing this product. Avoid release to the environment. Wear protective gloves/eye protection. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. Collect spillage.  IF INGESTED: Call the NATIONAL BATTERY INGESTION HOTLINE at +1 (202) 625-3333 collect, day or night. In Canada, call +1 (416) 813-5900. KEEP OUT OF REACH OF CHILDREN.  WARNING: This product contains a substance(s) known to the State of California to cause cancer, birth defects or other reproductive harm.					
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 & Harbor Freight Tools USA, 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:	Harbor Freight Tools USA, Inc. 26541 Agoura Road Calabasas, CA 91302 USA Tel: +1 (805) 388-1000 http://www.harborfreight.com/	HARBOR FREIGHT TOOLS Quality Tools at Ridiculously Low Prices				
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					

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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		
EXPOSURE LIMITS IN AIR:			
ACGIH	American Conference on Governmental Industrial Hygienists		
С	Ceiling Limit		
ES	Exposure Standard (Australia)		
IDLH	Immediately Dangerous to Life and Health		
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.

#### HMIS-III HEALTH, FLAMMABILITY & REACTIVITY RATINGS:

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



### PERSONAL PROTECTION RATINGS:

	 -	
Α		
В		
С		
D		
E		
F		





Splash Goggle









Dust Respirator

Full Face Respirator

Dust & Vapor Half-Mask Respirator

Full Face Respirator

Airline Hood/Mask or SCBA

# OTHER STANDARD ABBREVIATIONS:

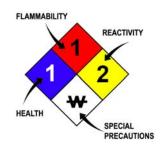
ML	Maximum Limit	
mg/m3	mg/m3 milligrams per cubic meter	
NA Not Available		
ND	Not Determined	
NE	Not Established	
NF	Not Found	
NR	No Results	
ppm	parts per million	
SCBA	Self-Contained Breathing Apparatus	

### 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		
₩	Use No Water		
ох	Oxidizer		
TREFOIL	Radioactive		



#### TOXICOLOGICAL INFORMATION:

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

#### REGULATORY INFORMATION:

WHMIS	U.S. Department of Transportation Transport Canada					
DOT						
TC						
EPA						
DSL	DSL Canadian Domestic Substance List					
NOHSC	NOHSC National Occupational Health and Safety Commission (Australia)					
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)					
HMIS-III	National Paint & Coatings Association Hazardous Materials Identification System					

#### WORKPLACE HAZARDOUS MATERIALS IDENTIFICATION (WHMIS) SYSTEM:

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			(3)	$\odot$	(18)		R		
Class A	Class B	Class C	Class D1	Class D2	Class D3	Class E	Class F		
Compressed	Flammable	Oxidizing	Toxic	Irritation	Infectious	Corrosive	Reactive		

#### EC (67/548/EEC) INFORMATION:

The Table	變		*			×	X	
С	E	F	N	0	Т	Xi	Xn	
Corrosive	Explosive	Flammable	Harmful	Oxidizing	Toxic	Irritant	Harmful	

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

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