

MATERIAL SAFETY DATA SHEET

SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION	
<b>PRODUCT IDENTITY:</b> Sealed, Lead-Acid Battery  <b>CDID:</b> MSE Valve Regulated Lead Acid Battery Series	<b>MANUFACTURER NAME:</b> C & D Technologies, Inc  <b>ADDRESS:</b> 1400 Union Meeting Road P. O. Box 3053 Blue Bell, PA 19422-0858 <b>TELEPHONE:</b> (215) 619-2700 <b>EMERGENCY: (610) 828-9309</b>
<b>24 HOUR EMERGENCY TELEPHONE: (CHEM TEL) 1-800-255-3924</b>	

SECTION II: COMPOSITION / INFORMATION ON INGREDIENTS				
<b>NOTE:</b> The C&D MSE Lead Acid batteries are a sealed non-spillable design. Under normal use and handling the customer has no contact with the internal components of the battery or the chemical hazards. Under normal use and handling these batteries do not emit regulated or hazardous substances.				
HAZARDOUS COMPONENT	CAS#	OSHA PEL	ACGIH TLV	% BY WEIGHT
^Lead & Lead Components	7439-92-1	0.05mg/m3	0.15mg/m3	72-73%
^Sulfuric Acid	7664-93-9	1.0mg/m3	1.0mg/ m3	7-8%
Tin	7440-31-5	2.0mg/m3	2.0mg/m3	< .01%
Non-Hazardous Contents				18-21%
Percentages of compounds are dependent upon the model of the battery and the state of charge/discharge.				
^ SECTION 311, 312 and 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) (40 CFR 372) LISTED TOXIC CHEMICALS.				

SECTION III: HAZARDS IDENTIFICATION				
<b>HMIS III Rating</b>	Health: 3	Flammability: 0	Reactivity: 2	Other: 0
<b>NFPA RATING:</b>	Health: 3	Flammability: 0	Reactivity: 2	Other:
Sulfuric acid is water reactive if concentrated.				
<b>TARGET ORGANS:</b> Skin, Eyes, Upper Respiratory Tract		<b>ROUTES OF ENTRY:</b> Inhalation X Skin X Ingestion X		
<b>HEALTH HAZARDS (ACUTE AND CHRONIC):</b>				
<b>ACUTE: ACID /Battery Electrolyte:</b> Tissue destruction on contact with acid. May cause 2nd and 3rd degree burns or blindness with prolonged contact. Ingestion will cause corrosive burns on contact. May be fatal if swallowed.				
<b>CHRONIC:</b> Inhalation of acid mists may cause upper respiratory irritation.				
<b>SIGNS AND SYMPTOMS:</b> Irritation and burning of exposed tissues.				
<b>MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:</b> Respiratory disorders may be aggravated by prolonged inhalation of acid mists.				
<i>California Proposition 65 Warning - Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands thoroughly after handling batteries and before eating, drinking or smoking.</i>				

SECTION IV: FIRST AID MEASURES
<b>EMERGENCY AND FIRST AID PROCEDURES:</b>

SKIN / EYES	INGESTION	INHALATION
<ul style="list-style-type: none"> <li>• Flush with water for 15 minutes</li> <li>• Remove contaminated clothing</li> <li>• If irritation continues, seek medical attention</li> </ul>	<ul style="list-style-type: none"> <li>• If conscious, drink large quantities of milk or water</li> <li>• Do not induce vomiting</li> <li>• Give CPR if breathing has stopped</li> <li>• Seek medical attention immediately</li> </ul>	<ul style="list-style-type: none"> <li>• Remove to fresh air</li> <li>• Give oxygen or artificial respiration if needed</li> <li>• Get immediate medical attention</li> </ul>

## SECTION V: FIREFIGHTING MEASURES

FIRE AND EXPLOSIVE PROPERTIES:			
Flash Point: N/A	Flammable Limits:	LEL: 4.10%	UEL: 74.20%
<b>UNUSUAL FIRE AND EXPLOSION HAZARDS:</b> Hydrogen and oxygen gases are generated in cells during normal battery operation or when on charge. (Hydrogen is flammable and oxygen supports combustion). These gases enter the air through the vent caps. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both the positive and negative terminals of batteries. Ventilate area well.			
<b>EXTINGUISHING MEDIA:</b> Dry Chemical, foam, Halon, or Carbon Dioxide			
<b>SPECIAL FIREFIGHTING PROCEDURES:</b> If batteries are on charge, turn off power. Use positive pressure, self-contained breathing apparatus (SCBA) in fighting fire. Water applied to electrolyte generates heat and causes it to splatter. Ventilate the area well. Acid protective clothing is recommended.			

## SECTION VI: ACCIDENTAL RELEASE MEASURES

**STEPS TO BE TAKEN IF BATTERY IS BROKEN:** Neutralize exposed battery parts with soda ash (sodium bicarbonate) until fizzing stops. The pH should be neutral at 6-8. Collect residue in a suitable container. Residue may be hazardous waste. Place the broken battery in a heavy gauge plastic bag or other non-metallic container. Provide adequate ventilation, hydrogen gas may be given off during neutralization.

## SECTION VII: HANDLING AND STORAGE

Store in a cool, dry area away from combustibles. DO NOT store or charge in sealed, unventilated areas. Avoid over-heating and overcharging. Do not use organic solvents or other than recommended chemical cleaners on the batteries.

## SECTION VIII: EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** General room ventilation is sufficient during normal use and handling. DO NOT install these batteries in a sealed, unventilated area. Recommend 2-3 room air changes per hour to prevent hydrogen gas buildup.

**PERSONAL PROTECTIVE EQUIPMENT (IN THE EVENT OF BATTERY BREAKAGE):**

**Eye Protection** = chemical goggles or safety glasses with sideshields and a full-face shield.

**Protective Gloves** = rubber or neoprene

**Respiratory Protection** = NIOSH approved acid mist respirator, if OSHA PEL is exceeded or respiratory irritation occurs.

**Other Protective Equipment** = acid resistant boots, apron or clothes.

**WORK PRACTICES:** DO NOT wear metallic jewelry when working with batteries. Use non-conductive tools only. Discharge static electricity prior to working on a battery by touching a grounded surface in the vicinity of the batteries, but away from cells. Batteries are heavy. Serious injury can result from improper lifting or installation. DO NOT lift, carry, install or remove cells by lifting or pulling the terminal posts for safety reasons and because terminal posts and post seals may be damaged. DO NOT use nylon cloths or wear nylon overalls when working with batteries as these can create static electricity. Maintain an eyewash, fire extinguisher and emergency communication device in the work area. Wash hands thoroughly after handling.

## SECTION IX: PHYSICAL AND CHEMICAL PROPERTIES

**ACID:** Appearance / Odor: At normal temperatures: colorless, oily fluid / acrid odor when hot.

Boiling Point: Electrolyte 110° C – 112° C

Vapor Pressure: Electrolyte 11.7 mm Hg. At 20° C

Vapor Density (air = 1): Electrolyte 3.4

Melting Point: N/A

Evaporation Rate (water = 1): N/A	Solubility in water: Lead, Lead Oxide and Lead Sulfate Acid insoluble in water, Sulfuric Acid is 100% soluble in water.
Specific Gravity (contained in battery): Electrolyte 1.300+/- .010	

### SECTION X: STABILITY AND REACTIVITY

**STABILITY:** This battery and contents are stable under normal conditions.

**CONDITIONS TO AVOID:** Overheating or overcharging may result in acid mist / Hydrogen generation.

**INCOMPATIBILITY (MATERIALS TO AVOID):** Strong alkaline materials, conductive metals, organic solvents, sparks or open flame.

**HAZARDOUS DECOMPOSITION OR BYPRODUCTS:** Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. In fire may emit CO, CO<sub>2</sub> and Sulfur Oxides.

**HAZARDOUS POLYMERIZATION WILL NOT OCCUR.**

### SECTION XI: TOXICOLOGICAL INFORMATION - SULFURIC ACID

The "MSE Series" batteries are a sealed, recombinant design. Under normal use and handling the customer has no contact with the internal components of the battery or the chemical hazards. Under normal use and handling these batteries do not emit regulated or hazardous substances.

**LD 50:** Administration Route: Oral Dose: **2140mg/kg** Test Animal: **Rat**

**LDLo:** Administration Route: **Unreported** Dose: **135mg/kg** Test Animal: **Man**

**LC50:** Administration Route: **Inhalation** Dose: **510mg/m<sup>3</sup>** Test Animal: **Rat**

**CARCINOGENICITY:** The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mists containing sulfuric acid" as a category 1 carcinogen (inhalation), a substance that is carcinogenic to humans. The National Toxicology Program (NTP) has designated strong inorganic sulfuric mists as a "Known Human Carcinogen." This classification does not apply to the liquid forms of sulfuric acid contained within the battery. Misuse of the product, such as overcharging, may result in the generation of sulfuric acid mist at high levels.

### SECTION XII: ECOLOGICAL INFORMATION

Lead and its compounds can pose a threat if released to the environment. See waste disposal method in Section XIII.

### SECTION XIII: DISPOSAL CONSIDERATIONS

**WASTE DISPOSAL METHOD:** This battery is recyclable. It is illegal to dispose of lead-acid batteries by any means other than recycling. C&D provides an environmentally responsible lead acid battery collection and recycling program. Contact your local C&D sales representative for more information.

**HAZARDOUS WASTE CODES: D002, D008**

### SECTION XIV: TRANSPORTATION INFORMATION

**ALL DOMESTIC SHIPMENTS:**

BATTERIES – WET, NON-SPILLABLE, ELECTRIC STORAGE, NON-REGULATED

**FOR WATER EXPORT AND CANADIAN SHIPMENTS:**

FOR AIR: NON-SPILLABLE, NOT REGULATED. UNITS MEET A67 SPECIAL PROVISION OF IATA

IMO = UNREGULATED

UN OR NA IDENTIFICATION: UN-2800

PROPER DOT SHIPPING NAME: Batteries, Wet, Non-spillable, Electric Storage

HAZARD CLASS: 8

PACKING GROUP: III

LABEL: Corrosive (NOT REQUIRED FOR CANADA)

NO PLACARDS OR LABELS REQUIRED.

### SECTION XV: OTHER INFORMATION

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge, accurate and reliable as of the date compiled. No representation, warranty (expressed or implied) or guarantee is made to the accuracy, completeness or reliability of the information contained herein.