

## NICKEL METAL HYDRIDE BATTERY MATERIAL SAFETY DATA SHEET (MSDS)

### SECTION I - MANUFACTURER INFORMATION

**Manufactured for:**  
 Lenmar Enterprises, Inc.  
 4035 Via Pescador  
 Camarillo, CA 93012

**Contact Information:**  
 805.384.9600  
 800.424.2703 (US)  
 Lenmar.com

### SECTION II - HAZARDOUS INGREDIENTS

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	%/wt.
Aluminum (CAS# 7429-90-5)	15 mg/m <sup>3</sup> TWA (total dust) 5 mg/m <sup>3</sup> TWA (respirable fraction)	10 mg/m <sup>3</sup> TWA	< 2
Cobalt as cobalt metal (CAS# 7440-48-4) as cobalt oxide (CAS# 1307-96-6) as cobalt hydroxide (CAS# 21041-93-0)	0.1 mg/m <sup>3</sup> TWA (as Co)	0.02 mg/m <sup>3</sup> TWA (as Co)	2.5-6.0
Lithium Hydroxide (CAS# 1310-65-2)	None established	None established	0-4
Manganese (CAS# 7439-96-5)	5 mg/m <sup>3</sup> Ceiling	0.2 mg/m <sup>3</sup> TWA (as Mn)	< 3
Mischmetal including: Lanthanum (CAS# 7439-91-0) Cerium (CAS# 7440-45-1) Neodymium (CAS# 7440-00-8) Praseodymium (CAS# 7440-10-0)	15 mg/m <sup>3</sup> TWA (particulates not otherwise regulated-total dust) 5 mg/m <sup>3</sup> TWA (particulates not otherwise regulated-respirable fraction)	10 mg/m <sup>3</sup> TWA (particulates not otherwise classified-inhalable) 3 mg/m <sup>3</sup> TWA (particulates not otherwise classified-respirable)	< 13
Nickel as nickel hydroxide (CAS# 12054-48-7) as nickel oxide (CAS# 1313-99-1) as nickel powder (CAS# 7440-02-0)	1 mg/m <sup>3</sup> TWA (as Ni)	1.5 mg/m <sup>3</sup> TWA (as Inhalable Ni) 0.2 mg/m <sup>3</sup> TWA (as inhalable Ni, insoluble compounds) [changed 3 format to be consistent with rest of the numbers]	30-50
Potassium Hydroxide (CAS# 1310-58-3)	None established	2 mg/m <sup>3</sup> Ceiling	< 7
Sodium Hydroxide (CAS# 1310-73-2)	2 mg/m <sup>3</sup> TWA	2 mg/m <sup>3</sup> Ceiling	0-4
Zinc as zinc metal (CAS# 7440-66-6) as zinc oxide (CAS# 1314-13-2) as zinc hydroxide (CAS# 20427-58-1)	15 mg/m <sup>3</sup> TWA (total dust: zinc oxide) 5 mg/m <sup>3</sup> TWA (respirable fraction: zinc oxide)	10 mg/m <sup>3</sup> TWA (total dust: zinc oxide)	< 3

**IMPORTANT NOTE:** The battery should not be opened or incinerated. Exposure to the ingredients contained within or their combustion products could be harmful.

### SECTION III - FIRE AND EXPLOSION HAZARD DATA

- If fire or explosion occurs when batteries are on charge, shut off power to charger.
- In case of fire where nickel metal hydride batteries are present, apply a smothering agent such as METL-X, sand, dry ground dolomite, or soda ash, or flood the area with water. A smothering agent will extinguish burning nickel metal hydride batteries. Water may not extinguish burning batteries but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Virtually all fires involving nickel metal hydride batteries can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended.
- Fire fighters should wear self-contained breathing apparatus. Burning nickel metal hydride batteries can produce toxic fumes including oxides of nickel, cobalt, aluminum, manganese, lanthanum, cerium, neodymium, and praseodymium.

## SECTION IV - HEALTH HAZARD DATA

Under normal conditions of use, the battery is hermetically sealed.

### **Ingestion:**

Swallowing a battery may be harmful.

The contents of a battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.

If battery or contents of the battery are ingested, do not induce vomiting or give food or drink. Seek medical attention immediately and call the NATIONAL BATTERY INGESTION HOTLINE (202-625-3333) for treatment information.

### **Inhalation:**

Contents of an open battery can cause respiratory irritation. Hypersensitivity to nickel can cause allergic pulmonary asthma. Provide fresh air and seek medical attention.

### **Skin Contact:**

Contents of an open battery can cause skin irritation and/or chemical burns. Nickel, nickel compounds, cobalt, and cobalt compounds can cause skin sensitization and an allergic contact dermatitis. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.

### **Eye Contact:**

Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

**Note:** Nickel, nickel compounds, cobalt, and cobalt compounds are listed as possible carcinogens by International Agency for Research on Cancer (IARC) or National Toxicology Program (NTP).

## SECTION V - PRECAUTIONS FOR SAFE HANDLING AND USE

### **Storage:**

Store in a cool, well ventilated area. Elevated temperatures can result in shortened battery life.

### **Mechanical Containment:**

Never seal or encapsulate nickel metal hydride batteries.

Do not obstruct safety release vents on batteries. Encapsulation (potting) of batteries which will not allow cell venting can cause high pressure rupture.

### **Handling:**

Accidental short circuit for a few seconds will not seriously affect the battery. However, this battery is capable of delivering very high short circuit currents. Prolonged short circuits will cause high cell temperatures which can cause skin burns. Sources of short circuits include jumbled batteries in bulk containers, metal jewelry, and metal covered tables or metal belts used for assembly of batteries into devices.

If soldering or welding to the battery is required, use of tabbed batteries is recommended. Soldering directly to the cell can damage the battery safety seal, cause internal damage or short circuit the cell.

Do not open battery. The negative electrode material may be pyrophoric. Should an individual cell from a battery become disassembled, spontaneous combustion of the negative electrode is possible. This is much more likely to happen if the electrode is removed from its metal container. There can be a delay between exposure to air and spontaneous combustion.

### **Charging:**

This battery is made to be charged many times. Because it gradually loses its charge over a few months, it is good practice to charge battery before use. Use recommended charger. Improper charging can cause heat damage or even high pressure rupture. Observe proper charging polarity.

## SECTION V - PRECAUTIONS FOR SAFE HANDLING AND USE - (Continued)

### Labeling:

If the label or package warnings are not visible, it is important to provide a package and/or device label stating:

WARNING: CHARGE ONLY WITH SPECIFIED CHARGERS ACCORDING TO DEVICE MANUFACTURER'S INSTRUCTIONS. DO NOT OPEN BATTERY, DISPOSE OF IN FIRE OR SHORT CIRCUIT - MAY IGNITE, EXPLODE, LEAK OR GET HOT CAUSING PERSONAL INJURY.

Where accidental ingestion of small batteries is possible, the label should state:

WARNING: (1) KEEP AWAY FROM SMALL CHILDREN. IF SWALLOWED, PROMPTLY SEE DOCTOR: HAVE DOCTOR PHONE (202) 625- 3333 COLLECT. (2) CHARGE ONLY WITH SPECIFIED CHARGERS ACCORDING TO DEVICE MANUFACTURER'S INSTRUCTIONS. DO NOT OPEN BATTERY, DISPOSE OF IN FIRE OR SHORT CIRCUIT - MAY IGNITE, EXPLODE, LEAK OR GET HOT CAUSING PERSONAL INJURY.

### Disposal:

Dispose in accordance with all applicable federal, state, and local regulations.

## SECTION VI - SPECIAL PROTECTION INFORMATION

### Ventilation Requirements:

Not necessary under normal conditions.

### Respiratory Protection:

Not necessary under normal conditions.

### Eye Protection:

Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.

### Gloves:

Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery.

### Open Battery Storage:

Battery should not be opened. Should a cell become disassembled, the electrode should be stored in a fireproof cabinet, away from combustibles.

## SECTION VII – REGULATORY INFORMATION

The transportation of the dry cell batteries described in this document is not regulated by the U.S. Department of Transportation or the major international regulatory bodies.

SARA/TITLE III - As an article, this battery and its contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know Act.

### This Material Safety Data Sheet is applicable for the following product numbers:

CB0103, CB0104, CB0105, CB0107, CB0217, CB02419, CB0315, CB0389, CB0390, CB0392, CB0399, CB0440, CB0511, CB0513, CB0980, CB0BT3, CBA2400, CBA320, CBA337, CBB350, CBBT1008, CBC1002, CBC206, CBC301, CBC305, CBC316, CBC318, CBC399, CBC446, CBC904, CBC909, CBD312, CBD8003, CBD958, CBI209, CBJ312V, CBP11, CBZ300V, CBZ302V, CBZ303CL, CBZ304SH, CBZ318A, CBZ321NR, CBZ324V, CLM5292, DMC50, DMCE3, DMKA2, DMNEN4, EGG-01, EGG-02, GP302OS, LBARNO300M, LBARNO730M, LBAS805GM, LBCQ25H, LBCQ5000HI, LBCQP1200H, LBCTX700, LBCTX700E, LBCTX700V, LBDHN51M, LBDR15M, LBDR31, LBDR35HS, LBDR36, LBEPANM, LBG72100, LBHPO4KM, LBHPOXEM, LBI350H, LBI360H, LBI365H, LBI380H, LBI720H, LBIBTPI, LBIT755CDM, LBIT11200M, LBMC170, LBMC180H, LBMC500, LBMC5300HI, LBOLECHOS, LBT2100H, LBT4700H, LBTS1600, LBTS1700, LBTST45KM, LBWN100, LIZ303FV, MBV96, NBK252, NCP729, NMG17, NMG98, NMH12, NMH1U, NMH20, NMH2000, NMH22, NMH22U, NMH32U, NMH38, NMH55, NMH72, NMH82, NMH962, NMH99, NMP17, NMP41, PPU3A, PTB011, PTB021, PTB026, PTB030, PTB032, PTB037, PTB045, PTB883, PTC2708, PTD9057, PTD9062, PTD9072, PTD9094, PTD9095, PTM1220, PTM1233, PTM1420, PTM1433, PTM2417, PTM7000, PTM9033G, PTM9133, PTMW2230, PTMW2230X, PTZ300MA, R2G02, R2G2C, R2G802U, R2G804U, R2G808U, R2GAA4, R2GAA8, R2GAAA4, R2GAAA8, R2GE04, RBFABP, RBM8133C, RBM9008M, RBMT5000, RBUBP38, RBZ301M, RBZ302MI, RBZ303MI, RBZ304M, RBZ308M, WR-3278P1-M, WR-4007AR-M, WR-5293P2-M, WR-ACC201-M, WR-BCSM-M, WR-BKB203-M, WR-BP0513-M, WR-BP210-M, WR-BPMP1-M, WR-K0105E-M, WR-KNB15A-M, WR-KNB26N, WR-N4593A-M, WR-N4595A-M, WR-N5521A-M, WR-N7144A-M, WR-N9858A-M, WS-000552-M, WS-30000F-M, WS-503002-M, WS-790001-M, WS-861000-M

The information contained in this document is provided for information only. The batteries described in this document are articles pursuant to 29 CFR 1910.1200 and, as such, are not subject to the OSHA Hazard Communication Standard requirement for preparation of a material safety data sheet. The information and recommendations in this document are made in good faith and are believed to be accurate as of the date of preparation. However, LENMAR ENTERPRISES, INC., MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON IT.

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