

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name:** Lithium Metal Manganese Battery
- **Article number:** CR-P2
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application of the substance / the mixture** Lithium-based battery product.
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
American Standard Brands
1 Centennial Avenue
Piscataway, NJ 08855
Phone: 1-800-322-5546
- **1.4 Emergency telephone number:**
ChemTel Inc.
(800)255-3924, +1 (813)248-0585

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).



flame

Water-react. 2 H261 In contact with water releases flammable gases.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



F; Highly flammable

R14/15: Reacts violently with water, liberating extremely flammable gases.

- **Hazard description:**

Note: The hazards listed in this document reference only the contents of cells and/or batteries that are leaking and/or ruptured. Undamaged cells and/or batteries possess no expected health or physical hazards during normal use. Intentional abuse of cells or batteries increases the risk of harm or damage to the product, to the user, and to surrounding materials and personnel. Do not attempt to open sealed cells or batteries. Do not intentionally short-circuit cells or batteries. Do not expose these products to temperatures exceeding the maximum manufacturers rating. Do not dispose of cells/batteries in landfills. Please follow all manufacturer guidelines in the use, storage, and disposal of these products. Consult manufacturer in cases of questions involving specific product usage.

Information references exposures to battery contents, and not exposures to whole units. Exposures to whole units are unlikely to produce health hazards.

(Contd. on page 2)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 1)

· **Information concerning particular hazards for human and environment:**

Do not short circuit, recharge, puncture, incinerate, crush, force discharge or expose to temperatures above the specified range. Upon severe mechanical, electrical or thermal abuse, the cell may vent with the expulsion of some of the content.

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

· **Classification system:**

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

· **2.2 Label elements**

· **Labelling according to Regulation (EC) No 1272/2008**

The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).

The product is classified and labelled according to the CLP regulation.

· **Hazard pictograms**



GHS02

· **Signal word** Danger

· **Hazard-determining components of labelling:**

lithium

· **Hazard statements**

H261 In contact with water releases flammable gases.

· **Precautionary statements**

P280 Wear protective gloves / eye protection.

P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.

P402+P404 Store in a dry place. Store in a closed container.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Additional information:**

Information references exposures to battery contents, and not exposures to whole units. Exposures to whole units are unlikely to produce health hazards.

EUH014 Reacts violently with water.

· **Hazard description:**

· **WHMIS-symbols:**

B6 - Reactive flammable material



(Contd. on page 3)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 2)

· **NFPA ratings (scale 0 - 4)**

Health = 0
Fire = 0
Reactivity = 2

The substance demonstrates unusual reactivity with water.

· **HMIS-ratings (scale 0 - 4)**

Health = 0
Fire = 0
Reactivity = 2

· **HMIS Long Term Health Hazard Substances**

7440-02-0 | nickel

· **2.3 Other hazards**· **Results of PBT and vPvB assessment**· **PBT:** Not applicable.· **vPvB:** Not applicable.

SECTION 3: Composition/information on ingredients

· **3.2 Mixtures**· **Description:** Mixture of substances listed below with nonhazardous additions.· **Dangerous components:**

CAS: 1313-13-9 EINECS: 215-202-6 Index number: 025-001-00-3	manganese dioxide Xn R22-48/20 STOT RE 2, H373 Acute Tox. 4, H302; Acute Tox. 4, H332	20-35%
CAS: 7439-89-6 EINECS: 231-096-4	iron substance with a Community workplace exposure limit	20-30%
CAS: 7429-90-5	Aluminum metal F R15 Water-react. 1, H260	4-5%
CAS: 7439-93-2 EINECS: 231-102-5 Index number: 003-001-00-4	lithium C R34; F R14/15 Water-react. 1, H260 Skin Corr. 1B, H314	1-3%
CAS: 1333-86-4 EINECS: 215-609-9	Carbon black Xn R40 Carc. Cat. 3 Carc. 2, H351	2-3%
CAS: 9002-86-2 EINECS: 206-625-7	polyvinyl chloride substance with a Community workplace exposure limit	2-3%

(Contd. on page 4)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 3)		
CAS: 7782-42-5 EINECS: 231-955-3	Graphite substance with a Community workplace exposure limit	0,5-2%
CAS: 7440-02-0 EINECS: 231-111-4 Index number: 028-002-00-7	nickel  T R48/23;  Xn R40;  Xi R43 Carc. Cat. 3  Carc. 2, H351; STOT RE 1, H372  Skin Sens. 1, H317	0,1-0,2%
· Additional information: For the wording of the listed risk phrases refer to section 16.		

SECTION 4: First aid measures

· 4.1 Description of first aid measures

· **General information:**

Information references exposures to battery contents, and not exposures to whole units. Exposures to whole units are unlikely to produce health hazards.

Immediately remove any clothing soiled by the product.

Take affected persons out into the fresh air.

· **After inhalation:**

Unlikely route of exposure.

Supply fresh air; consult doctor in case of complaints.

· **After skin contact:**

Unlikely route of exposure.

Immediately rinse with water.

If skin irritation continues, consult a doctor.

Seek immediate medical help for blistering or open wounds.

· **After eye contact:**

Unlikely route of exposure.

Protect unharmed eye.

Immediately remove contact lenses if possible.

Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:** Do not induce vomiting; call for medical help immediately.

· 4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

· **Hazards** Danger of gastric perforation.

· 4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

· 5.1 Extinguishing media

· **Suitable extinguishing agents:**

Fire-extinguishing powder

Sand

Water in flooding quantities.

· **For safety reasons unsuitable extinguishing agents:** None.

(Contd. on page 5)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 4)

- **5.2 Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
- **5.3 Advice for firefighters**
- **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.
- **Additional information** Cool endangered receptacles with water in flooding quantites.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
If containers are leaking, use respiratory protective device against the effects of fumes/dust/aerosol.
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
- **6.2 Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
- **6.3 Methods and material for containment and cleaning up:**
Use inert material (clay, sawdust, kaolin) to absorb material and sweep up. Prevent spilled material from entering sewers, drains, bodies of water.
Pick up mechanically.
Send for recovery or disposal in suitable receptacles.
Dispose contaminated material as waste according to item 13.
- **6.4 Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
Information is only applicable to product contents, and not to product as normally supplied. This information is applicable to damaged, leaking, or spilled product as contact with contents is possible under these conditions.
Keep away from open flames or temperatures exceeding manufacturer ratings. DO NOT ATTEMPT TO OPEN SEALED CELLS OR BATTERIES – BATTERY CONTENTS MAY PRESENT SERIOUS SAFETY AND HEALTH HAZARDS. SHORT-CIRCUITING THE TERMINALS OF A DEVICE MAY RESULT IN DAMAGE TO DEVICE AND ANY NEARBY OBJECTS OR PERSONNEL.
- **Information about fire - and explosion protection:**
Prevent impact and friction.
Substance/product is ignitable under certain conditions.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Store in a dry, well-ventilated place.
Do not use or store near open flame.
Avoid extreme temperatures; battery may rupture and release contents.
Do not store and transport with incompatible materials.
Store individual batteries or cells only in approved packaging in order to avoid inadvertent short circuits, as

(Contd. on page 6)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 5)

this may result in damage to device, nearby objects, personnel, or all of the above.

· **Information about storage in one common storage facility:**

Store away from foodstuffs.

Store away from water.

Do not store together with acids.

· **Further information about storage conditions:**

Store in dry conditions.

Protect from humidity and water.

· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical facilities:** No further data; see item 7.

· **8.1 Control parameters**

· **Ingredients with limit values that require monitoring at the workplace:**

1313-13-9 manganese dioxide

PEL (USA)	Ceiling limit: 5 mg/m ³ as Mn
REL (USA)	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³ as Mn
TLV (USA)	Long-term value: 0,02* 0,1* mg/m ³ as Mn; *respirable **inhalable fraction
EL (Canada)	Long-term value: 0,2 mg/m ³ as Mn; R

7439-89-6 iron

EV (Canada)	Long-term value: 1* 5** mg/m ³ as iron; *salts, water-soluble; **welding fume
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7429-90-5 Aluminum metal

PEL (USA)	Long-term value: 15*; 15** mg/m ³ *Total dust; ** Respirable fraction
REL (USA)	Long-term value: 10* 5** mg/m ³ as Al*Total dust**Respirable/pyro powd./welding f.
TLV (USA)	Long-term value: 1* mg/m ³ as Al; *as respirable fraction
EL (Canada)	Long-term value: 1,0 mg/m ³ respirable, as Al
EV (Canada)	Long-term value: 5 mg/m ³ aluminium-containing (as aluminium)

1333-86-4 Carbon black

PEL (USA)	Long-term value: 3,5 mg/m ³
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(Contd. on page 7)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 6)

REL (USA)	Long-term value: 3,5* mg/m ³ *0,1 in presence of PAHs; See Pocket Guide Apps.A+C
TLV (USA)	Long-term value: 3* mg/m ³ *inhalable fraction
EL (Canada)	Long-term value: 3 mg/m ³ IARC 2B
EV (Canada)	Long-term value: 3,5 mg/m ³
9002-86-2 polyvinyl chloride	
TLV (USA)	Long-term value: 1* mg/m ³ *as respirable fraction
EL (Canada)	Long-term value: 1 mg/m ³
7782-42-5 Graphite	
PEL (USA)	Long-term value: 15 mppcf* mg/m ³ *impinger samples counted by light field techn.
REL (USA)	Long-term value: 2,5* mg/m ³ *respirable dust
TLV (USA)	Long-term value: 2* mg/m ³ all forms except graphite fibers; *resp. fraction
EL (Canada)	Long-term value: 2 mg/m ³ respirable
EV (Canada)	Long-term value: 2 mg/m ³ respirable
7440-02-0 nickel	
PEL (USA)	Long-term value: 1 mg/m ³
REL (USA)	Long-term value: 0,015 mg/m ³ as Ni; See Pocket Guide App. A
TLV (USA)	Long-term value: 1,5* mg/m ³ elemental, *inhalable fraction
EL (Canada)	Long-term value: 0,05 mg/m ³ ACGIH A1, IARC 2B
EV (Canada)	Long-term value: 1* 0,2** 0,1*** mg/m ³ inh.; *metal; **insol. compds.; ***soluble compds.

- **DNELs** No further relevant information available.
- **PNECs** No further relevant information available.
- **Additional information:** The lists valid during the making were used as basis.

· 8.2 Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Do not inhale gases / fumes / aerosols.

(Contd. on page 8)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 7)

Avoid contact with the eyes and skin.

Information is only applicable to product contents, and not to product as normally supplied. This information is applicable to damaged, leaking, or spilled product as contact with contents is possible under these conditions.

· **Respiratory protection:**

Not required under normal conditions of use.

For spills, respiratory protection may be advisable.

· **Protection of hands:**

Not required under normal conditions of use.

Wear protective gloves to handle contents of damaged or leaking units.

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Safety glasses

· **Body protection:**

Not required under normal conditions of use.

Protection may be required for spills.

· **Limitation and supervision of exposure into the environment**

No further relevant information available.

· **Risk management measures**

See Section 7 for additional information.

No further relevant information available.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form:

Impermeable container containing liquid and solid contents plus inert carrier materials.

Colour:

Black

Blue

· **Odour:**

Odourless

· **Odour threshold:**

Not determined.

· **pH-value:**

Not determined.

(Contd. on page 9)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 8)

- **Change in condition**
 - Melting point/Melting range:** Not Determined.
 - Boiling point/Boiling range:** Undetermined.
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Not applicable.
- **Auto/Self-ignition temperature:** Not determined.
- **Decomposition temperature:** Not determined.
- **Self-igniting:** Product is not self-igniting.
- **Danger of explosion:** Product does not represent an explosion hazard during normal use. Leaking contents may react with water to produce explosive or flammable gas.
- **Explosion limits:**
 - Lower:** Not determined.
 - Upper:** Not determined.
- **Vapour pressure:** Not determined.
- **Density:** Not determined.
- **Relative density** Not determined.
- **Vapour density** Not determined.
- **Evaporation rate** Not determined.
- **Solubility in / Miscibility with water:** Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
 - Dynamic:** Not determined.
 - Kinematic:** Not determined.
- **9.2 Other information** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
- **10.3 Possibility of hazardous reactions**
Hazardous reactions generally occur with contents of leaking batteries only.
Strong exothermic reaction with acids.
Toxic fumes may be released if heated above the decomposition point.
Reacts violently with water.
Contact with water will cause spontaneous hydrolysis (Can be explosive!).
- **10.4 Conditions to avoid** Keep away from heat and direct sunlight.

(Contd. on page 10)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 9)

- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Carbon monoxide and carbon dioxide
Contact with decomposition products does not normally occur; information is applicable only to damaged devices.
Flammable gases/vapours
Toxic metal oxide smoke
Chlorine
Chlorine compounds

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects

· Acute toxicity:

· LD/LC50 values relevant for classification:

1333-86-4 Carbon black

Oral	LD50	10000 mg/kg (rat)
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· Primary irritant effect:

· **on the skin:** Strong caustic effect in case of contact with electrolyte only.

· **on the eye:** Strong caustic effect in case of contact with electrolyte only.

· **Sensitisation:** No sensitising effects known.

· Additional toxicological information:

Information references exposures to battery contents, and not exposures to whole units. Exposures to whole units are unlikely to produce health hazards.

SECTION 12: Ecological information

· 12.1 Toxicity

· **Aquatic toxicity:** The product contains materials that are harmful to the environment.

· **12.2 Persistence and degradability** Not easily biodegradable

· **12.3 Bioaccumulative potential** No further relevant information available.

· **12.4 Mobility in soil** No further relevant information available.

· Additional ecological information:

· General notes:

This statement was deduced from the properties of the single components.

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

· 12.5 Results of PBT and vPvB assessment

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **12.6 Other adverse effects** No further relevant information available.

(Contd. on page 11)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 10)

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation

Must not be disposed together with household garbage. Do not allow product to reach sewage system. Contact waste processors for recycling information.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

· Uncleaned packaging:

· **Recommendation:** Disposal must be made according to official regulations.

SECTION 14: Transport information

· 14.1 UN-Number

· DOT, ADR, IMDG, IATA

UN3090

· 14.2 UN proper shipping name

· DOT, IATA

Lithium metal batteries

· ADR

3090 LITHIUM METAL BATTERIES

· IMDG

LITHIUM METAL BATTERIES

· 14.3 Transport hazard class(es)

· DOT, IMDG, IATA



· Class

9 Miscellaneous dangerous substances and articles.

· Label

9

· ADR



· Class

9 (M4) Miscellaneous dangerous substances and articles.

· Label

9

· 14.4 Packing group

· DOT, ADR, IMDG, IATA

II

· 14.5 Environmental hazards:

· Marine pollutant:

No

· Special marking (IATA):

Prohibited from Transport in Passenger Aircraft.

(Contd. on page 12)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 11)



Cargo Aircraft Only.

- | | |
|---|--|
| <ul style="list-style-type: none"> · 14.6 Special precautions for user · EMS Number: · 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code · Transport/Additional information: | <p>Warning: Miscellaneous dangerous substances and articles.
F-A,S-I</p> <p>Not applicable.</p> <p>Battery Specifications:
Contains 1.0 g lithium
1450 mAh, 6.0 volts
(8.7 watt-hours)</p> |
| <ul style="list-style-type: none"> · ADR · Limited quantities (LQ) · Excepted quantities (EQ) · Transport category · Tunnel restriction code · Remarks: | <p>0</p> <p>Code: E0</p> <p>Not permitted as Excepted Quantity</p> <p>2</p> <p>E</p> <p>Per Special Provision 188: Packages containing 1 or 2 batteries are exempt from classification as dangerous goods. The package must be marked in accordance with Special Provision 188(f) and accompanied with a document in accordance with Special Provision 188(g).</p> |
| <ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) · Remarks: | <p>0</p> <p>Code: E0</p> <p>Not permitted as Excepted Quantity</p> <p>Per Special Provision 188: Packages containing 1 or 2 batteries are exempt from classification as dangerous goods. The package must be marked in accordance with Special Provision 188.6 and accompanied with a document in accordance with Special Provision 188.7.</p> |
| <ul style="list-style-type: none"> · IATA · Remarks: | <p>Per Packing Instruction 968, Section II: Packages containing 1 or 2 batteries are exempt from classification as dangerous goods. Use of the Lithium Batteries Label (Figure 7.4.H) is required. The product must be accompanied by a document stating the following:</p> <ul style="list-style-type: none"> -the package contains lithium ion cells or batteries; -the package must be handled with care and that a flammability hazard exists if the package is damaged; -special procedures must be followed in the event the package is damaged, to include inspection and repacking if necessary; and -a telephone number for additional information. |

(Contd. on page 13)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 12)

- DOT
- Remarks:

Per Packing Instruction 968, Section IB: Packages containing 3 or more batteries must be assigned to Class 9 and are subject to all of the applicable provisions. UN specification packaging is not required. Use of the Lithium Batteries Label (Figure 7.4.H) is required. The product must be accompanied by a document as described in Section II.

Per 173.185(c): Packages containing 1 or 2 batteries are exempt from classification as dangerous goods. The outer package that contains lithium metal cells or batteries must be marked: "LITHIUM METAL BATTERIES-FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT." The package must be marked in accordance with 173.85(c)(3)(i) and accompanied with a document in accordance with 173.85(c)(3)(ii).
- UN "Model Regulation":

UN3090, LITHIUM METAL BATTERIES, 9, II

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- United States (USA)
- SARA

· Section 355 (extremely hazardous substances):

None of the ingredients are listed.

· Section 313 (Specific toxic chemical listings):

Substance / component not listed individually, but listed under family group as Nickel salts.

1313-13-9 manganese dioxide

7429-90-5 Aluminum metal

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65 (California):

Exposure to contents is unlikely. Listings are present to ensure compliance with the Proposition 65 notification requirement.

· Chemicals known to cause cancer:

1333-86-4 Carbon black

7440-02-0 nickel

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients are listed.

· Chemicals known to cause reproductive toxicity for males:

None of the ingredients are listed.

(Contd. on page 14)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and
OSHA GHS

Printing date 06.01.2015

Revision: 06.01.2015

Trade name: Lithium Metal Manganese Battery

(Contd. of page 13)

· **Chemicals known to cause developmental toxicity:**

None of the ingredients are listed.

· **Carcinogenic Categories**

· **EPA (Environmental Protection Agency)**

1313-13-9 manganese dioxide

D

· **IARC (International Agency for Research on Cancer)**

1333-86-4 Carbon black

2B

9002-86-2 polyvinyl chloride

3

9002-84-0 Polytetrafluoroethylene

3

7440-02-0 nickel

1

· **TLV (Threshold Limit Value established by ACGIH)**

7429-90-5 Aluminum metal

A4

1333-86-4 Carbon black

A4

9002-86-2 polyvinyl chloride

A4

7440-02-0 nickel

A5

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

1333-86-4 Carbon black

7440-02-0 nickel

· **Canada**

· **Canadian Domestic Substances List (DSL)**

All ingredients are listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

7440-02-0 nickel

· **Canadian Ingredient Disclosure list (limit 1%)**

7429-90-5 Aluminum metal

1333-86-4 Carbon black

· **Other regulations, limitations and prohibitive regulations**

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

· **Substances of very high concern (SVHC) according to REACH, Article 57**

None of the ingredients are listed.

· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H260 In contact with water releases flammable gases which may ignite spontaneously.

H302 Harmful if swallowed.

(Contd. on page 15)

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA GHS

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Trade name: Lithium Metal Manganese Battery

(Contd. of page 14)

- H314 Causes severe skin burns and eye damage.
 H317 May cause an allergic skin reaction.
 H332 Harmful if inhaled.
 H351 Suspected of causing cancer.
 H372 Causes damage to organs through prolonged or repeated exposure.
 H373 May cause damage to organs through prolonged or repeated exposure.
 R14/15 Reacts violently with water, liberating extremely flammable gases.
 R15 Contact with water liberates extremely flammable gases.
 R22 Harmful if swallowed.
 R34 Causes burns.
 R40 Limited evidence of a carcinogenic effect.
 R43 May cause sensitisation by skin contact.
 R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.
 R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 GHS: Globally Harmonised System of Classification and Labelling of Chemicals
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 WHMIS: Workplace Hazardous Materials Information System (Canada)
 DNEL: Derived No-Effect Level (REACH)
 PNEC: Predicted No-Effect Concentration (REACH)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 Water-react. 1: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 1

Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2

Acute Tox. 4: Acute toxicity, Hazard Category 4
 Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
 Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
 Carc. 2: Carcinogenicity, Hazard Category 2
 STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1
 STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2

Sources

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