

MATERIAL SAFETY DATA SHEET

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BB-2590/U

(BT-70791A)

Effective Date: 01 Dec 2009

1. Product Identification

Product Name: Lithium Ion Battery

Chemical System: Lithium-Ion (Carbon/Lithiated Metal Oxide)

NSN: 6140-01-490-4316

Nominal Weight: 3.2 lbs., (1.45 kg)

Nominal Voltage: 28.8 V, (two 14.4V sections)

2. Composition/Information on Ingredients

Although the chemical composition of the various cell manufacturers is proprietary, the following is typical of the chemistry.

Hazardous Components (Specific Chemical Identity; Common Name(s))	%	CAS Number	LD ₅₀ (mg/kg) (oral-rat)	LC (mg/L)
Aluminum foil	0.1-1 w/w	7429-90-5	N/AV	A/AV
Biphenyl (BP)	0 -0.3 w/w	92-52-4	2400	N/AV
Copper foil	0.1 -0.3 w/w	7440-50-8	3.5(ipr-mouse)	N/AV
Dioxathiolane 2,2-Dioxide (DTD)	0 -3 w/w	1072-53-3	1600	N/AV
Linear and Cyclic Carbonic Solvents (See other information)	5 -17 w/w	N/APP	≈11000 (weighted avg)	N/AV
Graphite Powder	10-30 w/w	7440-44-0	440 (ivn-mouse)	N/AV
Lithium Carbonate	0 -0.3 w/w	554-13-2	525	N/APP
Lithium cobaltite (LiCoO ₂)	01-3- w/w	12190-79-3	N/AV	N/AV
Lithium hexafluorophosphate (LiPF ₆)	1-5 w/w	21324-40-3	1702	Rat: >20
Poly (vinylidene fluoride) (PVDF)	0.1 -1 w/w	24937-79-9	N/AV	N/AV
Propane Sultone (PS)	0-3 w/w	1120-71-4	100	N/AV
Steel, nickel and inert polymer	Balance	N/APP	N/APP	N/APP

These chemicals and metals are contained in a sealed can.

3. Hazards Identification

Routes of Entry:

Inhalation?	Not anticipated. Respiratory (and eye) irritation may occur if fumes are released due to heat or an abundance of leaking batteries.
Skin?	Yes
Ingestion?	Yes

Potential Health Effects:

These chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused. The most likely risk is acute exposure when a cell vents. Propylene Carbonate is mildly irritating upon eye and skin contact. Contact of electrolyte and extruded lithium with skin and eyes should be avoided. Inhalation or ingestion of lithium trifluoromethane sulfonate may be harmful.

Signs/Symptoms of Exposure:

Skin and eye irritation may occur following exposure to a leaking battery.

Medical Conditions Generally Aggravated by Exposure:

An acute exposure will not generally aggravate any medical condition.

4. First Aid Measures

Emergency & First Aid Procedures:

If battery is leaking and material contacts eyes, flush with copious amounts of clear, tepid water for thirty (30) minutes, exposed skin for at least fifteen (15) minutes. Contact Physician at once. Leaking contents may be irritating to respiratory passages. Remove to fresh air. Contact physician if irritation persists. If ingested, rinse mouth and surrounding area with clear, tepid water for at least fifteen (15) minutes. Consult physician immediately for treatment and to rule out involvement of the esophagus and other tissues.

5. Fire Fighting Measures

Extinguishing Media:

Water spray, Carbon Dioxide, dry chemical powder or appropriate foam. Use agent appropriate for surrounding materials

Special Fire Fighting Procedures:

If large quantities are burning, wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual Fire and Explosion Hazards:

Organic components will burn if cell incinerated. Combustion of cell contents will cause evolution of extremely corrosive Hydrogen Fluoride gas.

6. Accidental Release Measures

Ventilation:

None under normal use conditions.

Protective Gloves:

None under normal use conditions. Use butyl gloves when handling leaking batteries.

Eye Protection:

None under normal use conditions. Wear safety glasses when handling leaking batteries.

7. Handling and Storage

Precautions to be Taken in Handling and Storage:

Store batteries in a cool (below 70° F), dry area that is subject to little temperature changes. Do not place near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.

Other Precautions:

Do not disassemble battery or battery pack. Do not puncture, crush or dispose of in fire.

8. Exposure Controls/Personal Protection

Steps to be Taken in Case Material is Released or Spilled:

Notify safety personnel of large spills. Evacuate the area and allow vapors to dissipate. Increase ventilation. Avoid eye or skin contact. **DO NOT** inhale vapors. Clean up personnel should wear appropriate protective gear. Remove spilled liquid with absorbent and contain for disposal.

Transport containers outdoors. Hold burned cells and fire cleanup solids for disposal as potential hazardous waste. Unburned cells are not hazardous waste. A fire with over 100 kg of cells burnt will likely require reporting to environmental offices. Always consult and obey all international, federal and local environmental laws.

9. Physical and Chemical Properties

Appearance:

Rectangular box shape

10. Stability and Reactivity

Stability:

Stable

Conditions to Avoid:

Do not heat, crush, disassemble, short-circuit.

Hazardous Decomposition or By-products:

Thermal degradation may produce hazardous fumes of manganese and lithium; hydrofluoric acid; oxides of carbon and sulfur and other toxic by-products.

Hazardous Polymerization:

Will not occur.

Incompatible Materials:

Contents incompatible with strong oxidizing agents.

11. Toxicological Information

Carcinogenicity:	NTP?	IARC Monograph?	OSHA Regulated?
	No	No	No

12. Ecological Information

N/A

13. Disposal Considerations

Batteries must be completely discharged prior to disposal and/or the terminals must be taped or capped to prevent short circuit.

Disposal of large quantities of batteries containing lithium cells may be subject to Federal, State or local regulations.

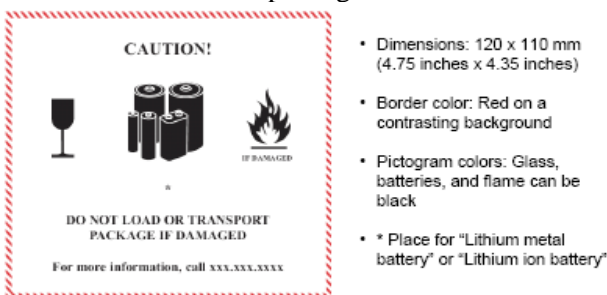
14. Transport Information

Transportation: Equivalent Lithium Content, (ELC), per battery is 17.28g. The Watt-hour rating is 208 Wh. The battery and component cells have been tested and found to conform to UN T1-T8 test requirements. The battery must be transported according to the following regulations:

Domestic Transportation within the U.S./ 49 CFR Section 173.185:

Via ground only (motor vehicle, rail):

Excepted battery, no special packaging required other than: For quantities 13 and larger in one box, use label "LITHIUM ION BATTERY" on the box (shown below). Waybill document to also indicate that procedures should be followed if package is damaged. Maximum gross weight of the package is 30kg (66lbs) and the package must be capable of being dropped 1.2 meters in any orientation without causing battery short circuits and without release of package contents.



The box is to carry additional label: "LITHIUM BATTERIES - FORBIDDEN FOR TRANSPORT ABOARD AIRCRAFT AND VESSEL" (with letters 0.5" ht minimum).

Via air or cargo vessel:

Batteries must be shipped as Class 9 Dangerous Goods with required UN specification packaging, labels, marking, shipper's declaration for dangerous goods, and emergency response information. Batteries conform to UN T1-T8 test requirements. Proper shipping classification is UN 3480, Lithium Ion Batteries, Class 9, Packing Group II.. Maximum gross weight of the package is 35kg (77lbs) for air transport; no limit for vessel. Classification for batteries packed with or packed in equipment is UN 3481

International Transportation: ADR, IMDG Code, IATA Dangerous Goods Regulations:

Batteries must be shipped as Class 9 Dangerous Goods with required UN specification packaging, labels, marking, shipper's declaration for dangerous goods, and emergency response information. Batteries conform to UN T1-T8 test requirements. Proper shipping classification is UN 3480, Lithium Ion Batteries, Class 9, Packing Group II. Maximum gross weight of the package is 35kg (77lbs) for air transport; no limit for vessel. Classification for batteries packed with or packed in equipment is UN 3481. Any person preparing or offering batteries for transport must receive adequate instructions commensurate with their responsibilities.

15. Regulatory Information

Batteries are considered to be "articles" and thus are exempt from TSCA regulation.

16. Other Information

Avoid mechanical or electrical abuse. **DO NOT** short circuit or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged incorrectly or exposed to high temperatures. Install batteries in accordance with equipment instructions.

This information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. Bren-Tronics Inc. makes no warranty, expressed or implied, regarding the accuracy of the data or the results to be obtained from the use thereof.