



EPSILOR
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Material Safety Data Sheet (MSDS)

1. Identification of the Product and Supplier		
Product:		
LITHIUM-ION RECHARGEABLE BATTERY		
Trade name and model:	LITHIUM-ION RECHARGEABLE BATTERY	
Model:	ELI-2416	
Cells model:	ICR18650-26C (24 cells)	
Battery Wh:	202 Wh	
Supplier:		
EPSILOR ELECTRONIC INDUSTRIES LTD Temed Science Park M.P. Arava 86800, ISRAEL Phone: +972-8-6556280 Fax: +972-8-6555960		
2. Composition & Information on Ingredients		
INGREDIENTS	%	CAS NUMBER
Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	20-50	Confidential
Polyvinylidene Fluoride (PVDF)	<5	24937-79-9
Styrene Butadiene	<5	9003-55-8
Rubber(SBR)		
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7440-44-0
Electrolyte (proprietary)	10-20	Confidential
Aluminum and inert materials	Remainder	N/A
3. Hazards Identification		
<p>The rechargeable Lithium-Ion batteries described in this Material Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer and as long as their integrity is maintained.</p> <p>Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion.</p> <p>Under normal conditions of use, the electrode materials and electrolyte they contain are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery containers. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow,</p>		



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depending upon the circumstances.

4. First Aid Measures

In case of battery rupture or explosion, evacuate personnel from contaminated area and provide maximum ventilation to clear out fumes/gases.

If it occurs, by accident, seek medical attention and the following measures must be taken:

Inhalation	Not anticipated under normal use. Remove from exposure, Remove to fresh air, rest and keep warm. In severe cases obtain medical attention.
Skin Contact	Not anticipated under normal use. Wash off skin thoroughly with water. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.
Eye Contact	Not anticipated under normal use. Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.
Ingestion	Not anticipated under normal use. Wash out mouth thoroughly with water and give plenty of water to drink.
Further Treatment	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapors should be seen by a doctor.

5. Fire Fighting Measures

CO₂ extinguishers or copious quantities of water or water-based foam can be used to cool down burning Li-Ion cells and batteries. During water application, caution should be exercised as burning pieces of the flammable particle may be ejected from the fire.

In case of fire, it is recommended to wear self-contained breathing apparatus, to avoid contact with irritant fumes. Evacuate all persons from immediate area of fire.

Extinguishing Media	Use CO ₂ extinguishers or copious quantities of water or water-based foam Do not use type D extinguishers
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6. Accidental Release Measures

In case of electrolyte leakage from a cell or battery, do not inhale the gas as possible. Remove personnel from area.





If the skin has come into contact with the electrolyte it should be washed thoroughly with water.

Using protective glasses and gloves, sand or earth should be used to absorb any exuded material.



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Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.	
7. Handling and Storage	
Handling	<p>Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire.</p> <p>Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.</p> <p>Do not disassemble, mutilate or mechanically abuse cells and batteries.</p>
Storage	<p>Store in a cool (preferably below 30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 70°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.</p>
Other	<p>Follow Manufacturer's recommendations regarding maximum recommended currents and operating temperature range. Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation. Do not immerse in water. Connecting to inappropriate power supplies can result in fire or explosion.</p>

8. Exposure Controls & Personal Protection		
Occupational exposure standard	See section 2	
	Respiratory protection	In all fire situations, use self-contained breathing apparatus.
	Hand protection	In the event of leakage wear gloves.
	Eye protection	Safety glasses are recommended In case of leaking or rupture cells.
	Other	In the event of leakage wear chemical apron.



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9. Physical and Chemical Properties	
Appearance	Small prismatic cylindrical shape, hermetically sealed and fitted with an external plastic sleeving.
Odor	Odourless
pH	Not applicable
Flash Point	Not applicable
Flammability	Not applicable
Relative Density	> 2% g/cm ³
Solubility (water)	Not applicable (unless inner components exposed)
Solubility (other)	Not applicable
10. Stability and Reactivity	
Product is stable under conditions described in Section 7.	
Conditions to avoid	Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Short circuit. Expose over a long period to humid conditions.
Materials to avoid	NA
Hazardous decomposition products	HF, CO, CO ₂
11. Toxicological Information	
Signs & symptoms	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
Inhalation	Lung irritant.
Skin contact	Skin irritant
Eye contact	Eye irritant.
Ingestion	Tissue damage to throat and gastro/respiratory tract if swallowed.
Medical conditions generally aggravated by exposure	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.
12. Ecological Information	
Mammalian effects	None known if used/disposed of correctly.
Eco-toxicity	None known if used/disposed of correctly.
Bioaccumulation potential	None known if used/disposed of correctly.
Environmental fate	None known if used/disposed of correctly.



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13. Disposal Considerations	
Do not incinerate, or subject cells to temperatures in excess of 70°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations	
14. Transport Information	
Label for conveyance	Class 9 Label
UN Number	UN3480
Shipping Name	Lithium Ion Batteries
Hazard Classification	Class 9 – subjected to dangerous goods regulations.
Packing Instruction	IATA, PI 965 section I.
Documentation	Each consignment must be accompanied with DGD document.

15. Regulatory Information
Regulations specifically applicable: -ACGIH and OSHA: see exposure limits of internal ingredients of the battery in section 8 -IATA/ICAO (air transportation) UN 3480 or UN 3481 -IMDG (sea transportation) : UN 3480 or UN 3481 -Transportation within the US-DOT, 49 Code of Federal Regulations
16. Other Information
<p>This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.</p> <p>This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.</p> <p>Epsilon does not accept liability for any loss damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information. Epsilon does not offer warranty against patent infringement. Additional information is available by calling the telephone number above.</p>