

## Technical Notice

### Safety data sheet lithium batteries

#### 1. Identification

- 1.1** Product Name: Tadiran High Energy Lithium Battery, or  
Sonnenschein Lithium Inorganic Lithium Battery
- Voltage: 3.6 Volts
- Chemistry System: Lithium thionyl chloride
- Anode: Lithium metal
- Cathode: Liquid, thionyl chloride
- 1.2** Company: Tadiran Batteries GmbH  
Industriestr. 22  
D-63654 Büdingen
- 1.3** Emergency Telephone Number: +49(0)6042/954-599

**Note:** This safety data sheets refers to cells and batteries assembled from them

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#### 2. Composition/Information on Ingredients

Substance	CAS No.	Approximate percent of total weight	Hazard symbol	R-phrases
Lithium Metal	7439-93-2	2 - 6	F, C	14/15-34
Thionyl Chloride	7719-09-7	18 - 47	C	14-34-37
Aluminium Chloride	7446-70-0	2 - 5		
Lithium Chloride	7447-41-8	1 - 2		
Carbon	7440-44-0	2 - 5		
Steel, Nickel plated	----	35 - 73		
Glass	----	0 - 2		
PVC	9002-86-2	0 - 1		
PMMA	9011-14-7	0 - 1		
PTFE	9002-84-0	0 - 1		

Hazard Symbols: C Corrosive  
F Highly flammable

R-Phrases: R 14 Reacts violently with water  
R 14/15 Reacts violently with water liberating extremely flammable gases  
R 34 Causes burns  
R 37 Irritating to respiratory system

**Important Note:** The material in this section may only represent a hazard if the integrity of the battery is compromised, or if the battery is physically or electrically abused.



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## 5. **Fire - fighting measures**

### A. **Extinguishing Media**

- During a fire with lithium batteries, copious amounts of cold water is an effective medium to prevent expansion of the fire. Do not use warm water or hot water.
- Lith-X (Class D extinguishing media) is effective on fires involving only a few lithium batteries.
- Do not use CO<sub>2</sub> or Halon type extinguishers.
- Dry chemical type extinguishers have limited extinguishing potential

### B. **Fire Fighting Procedures**

- Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire.
- Full protective clothing is necessary.
- During water application caution is advised as burning pieces of lithium may be ejected from the fire.
- Where the cells or batteries are not at the centre of the fire copious amounts of water may be supplied to the cells using a diffuser type nozzle so that the cells remain cool during the containment and extinguishing of the fire. A sprinkler system should be sufficient for this purpose the critical factor being that the lithium cells do not experience temperatures above the melting point of lithium.
- Small amounts of water should never be used such as the volumes contained within portable fire extinguishers. Standard dry powder extinguishers are ineffective. Halon extinguishers must not be used when fighting lithium fires as toxic gases may be generated during fire fighting. It should be noted that a hazard of hydrogen formation exists whenever hot lithium metal comes into contact with water.

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## 6. **Accidental release measures**

When the battery housing is damaged, small amounts of electrolyte may leak. Seal battery air tight in a plastic bag, adding some chalk (CaCO<sub>3</sub>) or lime (CaO) powder or Vermiculite. Electrolyte traces may be wiped off dryly using household paper. Rinse with water afterwards.

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## 7. **Handling and Storage**

- Do not allow terminals to short-circuit.
  - Storage preferably in a cool (below 21 °C), dry area that is subject to little temperature change.
  - Do not place near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in reduced battery service life.
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## 8. **Exposure controls / personal protection**

Not applicable

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**9. Physical and chemical properties**

Not applicable

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**10. Stability and reactivity**

May rupture violently when heated above 150 °C or when charged.

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**11. Toxicological information**

Not applicable

Refer to information under item 2.

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**12. Ecological information**

The batteries do not contain mercury, cadmium or other heavy metals.

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**13. Disposal Considerations**

- Dispose by incineration or burial at permitted waste treatment and/or disposal sites unless suitable recycling possibilities exist.
- Batteries do not contain hazardous materials according to EC directives 91/157/EEC and 93/86/EEC.
- EC battery directive 2006/66/EC is currently being implemented by EC member states.
- A disposal service is offered upon request by Tadiran Batteries.

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**14. Transport information**

Class 9

UN 3090: LITHIUM METAL BATTERIES

UN 3091: LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT, or  
LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT

Packing group: II

Special provisions and packing instructions:

ADR, RID: 188, 230, 310, 636, P903, P903a, P903b

IATA: A88, A99, A154, A164, P968, P969, P970

IMDG-Code: 188, 230, 310, P903

EmS: F-A, S-I

Storage and segregation: Category A

For more information see [www.tadiranbatteries.de](http://www.tadiranbatteries.de) > products > Transport Regulations

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**15. Regulatory information**

Not applicable

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## **16. Other information**

- Tadiran Lithium Batteries are registered by Underwriters Laboratories, Northbrook, U.S.A. under file MH 12827.
- Further information is given in
  - Tadiran Lithium Battery Product Data Catalogue
  - Tadiran Lithium Battery Technical Brochure.
- For lithium batteries in general, Safety standard IEC 60086-4 applies. It contains detailed recommendations for manufacturers of equipment and users.
- Visit our web site under [www.tadiranbatteries.de](http://www.tadiranbatteries.de).
- Battery packs

The design and assembly of battery packs require special skills, expertise and experience. Therefore it is not recommended that the end user attempt to self-assemble battery packs. It is preferable that any battery using lithium cells be fabricated by TADIRAN to ensure proper battery design and construction. A full battery assembly service is available from TADIRAN who can be contacted for further information. If for any reason, this is not possible, TADIRAN can review the pack design in confidence to ensure that the design is safe (in assembly and use) and capable of meeting stated performance requirements.

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*The information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers.*