

## Technical Notice

### Transport Regulations for Lithium Metal Batteries

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## 1. Exemptions

Lithium metal batteries are dangerous goods, UN No. 3090. Therefore, they are generally subject to transport regulations, depending on the transport mode. However, most Tadiran Lithium Batteries listed in the product data catalogue are exempted from the regulations if the following conditions are given:

- The batteries have not more than 2 g aggregate lithium content, each cell not more than 1 g lithium content (see table 1).
- Hybrid batteries containing not more than 1,5 g aggregate lithium content and a Wh rating of the rechargeable part (HLC) of less than 10 Wh.
- The batteries have passed the UN tests (Table 1).
- The batteries shall be packed in inner packagings that completely enclose them. They shall be protected to prevent short circuits.
- The gross mass does not exceed 30 kg per package (ADR / RID /IMDG-Code).
- The net mass does not exceed 2.5 kg per package (IATA DGR).
- Lithium metal cells / batteries as air-cargo containing more than 0.3 g but less than 1 g / 2 g lithium content are restricted (please refer to packaging instruction 968 part IB and II).
- The „Cargo Aircraft Only“-handling label and the “Lithium Battery Mark” (IB und II) together with Class 9 hazard label must be attached on the package (IATA DGR).
- The packaging shall be strong and capable of withstanding a 1.2 m drop test.
- For more details see special provision 188 (ADR/RID/IMDG-Code) and section II of packing instructions 968 - 970 (IATA DGR).

## 2. Classification of lithium metal batteries

Table 1 shows Tadiran Lithium Metal Batteries and which of them are exempted from the dangerous goods regulations and which are not. The regulations for not exempted batteries are summarized in table 2.

System	Size	Type				Exempted <sup>1)</sup>	Lithium content	UN Test passed	UN Number
Lithium thionylchloride (LTC)	1/10C		TLH-2450	TL-2450		Yes	0,18 g	Yes	3090/91
	1/6D			SL-786	SL-886	Yes	0,5 g	Yes	3090/91
	1/10D			SL-789	SL-889	Yes <sup>2)</sup>	0,3 g	Yes	3090/91
	1/2AA	SL-350	SL-550	SL-750	SL-850	Yes <sup>2)</sup>	0,35 g	Yes	3090/91
	2/3AA	SL-361	SL-561	SL-761	SL-861	Yes <sup>2)</sup>	0,5 g	Yes	3090/91
	AA	SL-360	SL-560	SL-760	SL-860	Yes <sup>2)</sup>	0,65 g	Yes	3090/91
	C			SL-2770	SL-2870	No	2,5 g	Yes	3090/91
	D			SL-2780	SL2880	No	5 g	Yes	3090/91
	DD			SL-2790		No	10 g	Yes	3090/91
Hybrid Layer Capacitors (HLC)	AAA	HLC-1020 (3,7 V)				Yes	0,07 Wh	Yes	3090/91
	1/2AA	HLC-1520 (3,7 V)				Yes	0,22 Wh	Yes	3090/91
	2/3AA	HLC-1530 (3,7 V)				Yes	0,4 Wh	Yes	3090/91
	AA	HLC-1550 (3,7 V)				Yes	0,86 Wh	Yes	3090/91
Tadiran Lithium metal oxide (TLM)	1/2AA	TLM-1520HPM				Yes	0,04 g	Yes	3090/91
	2/3AA	TLM-1530HPM				Yes	0,1 g	Yes	3090/91
	AA	TLM-1550HPM				Yes	0,4 g	Yes	3090/91

*1) if conditions mentioned in the text are fulfilled*  
*2) see also IATA DGR under UN 3090 / PI 968 / Table 968-II*

**Table 1**

Classification of Tadiran Lithium Metal Batteries

### 3. UN tests

Table 1 also shows the status of UN-tests for Tadiran Lithium Metal Batteries according to the UN Manual of Tests and Criteria, part III, sub-section 38.3. Regarding Tadiran Lithium Batteries not listed in table 1, please apply to Tadiran Batteries for a confirmation.

According to ADR 1.6.1.29 and IATA-DGR 3.9.2.6 (a) lithium cells and batteries manufactured according to a type meeting the requirements of sub-section 38.3 of the Manual of Test and Criteria, Revision 3, Amendment 1 or any subsequent revision and amendment applicable at the date of the type testing may continue to be carried.

### 4. Overview dangerous goods by transport mode

Transport regulations for lithium metal batteries					
UN-No. and class	Limitations and instructions	Passenger aircraft IATA DGR	Cargo aircraft IATA DGR	Road/Railway transport ADR/RID	Sea transport IMDG Code
<b>Lithium metal batteries</b>					
UN 3090 Class 9	Maximum net mass per package	Forbidden as of 2015	35 kg	according to packaging approval	
	Packing group		See LTN-065-71 page 5 ff.	II according to P903	II according to P903
	Packing instruction		968	P 903 (1, 2), LP 903	
	Marking		Class 9 hazard label for lithium batteries and handling label "Cargo Aircraft Only"	Class 9A hazard label for lithium batteries	
<b>Lithium metal batteries contained in equipment / packed with equipment</b>					
UN 3091 Class 9	Max. Qty. of batteries per piece of equipment	5 kg / -	35 kg / -		
	Max. Qty. of batteries per package, excluding equipment	- / 5 kg	- / 35 kg		
	Packing group	not assigned			
	Packing instruction	P 970 / 969	P 970 / 969	P 903 (3, 4), LP 903	P 903
	Marking	Lithium Battery Mark	Class 9 hazard label for lithium batteries and handling label "Cargo Aircraft Only"	Class 9A hazard label for lithium batteries	
Further instructions		see packing instructions		see special provision 230	

**Table 2**

Transport regulations for fully regulated lithium metal cells / batteries with more than 1 g / 2 g lithium content. Hybrid batteries with more than 1,5 g or 10 Wh.

It is necessary to refer to the listed regulations and instructions for detailed information. They are revised on a regular basis. The tables are based on the revisions effective in December 2019.

The applicable documents are:

- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road,
- IATA DGR: International Air Transport Association, Dangerous Goods Regulations,
- ICAO: International Civil Aviation Organization, Technical Instructions for the Safe Transport of Dangerous Goods by Air,
- IMDG Code: International Maritime Dangerous Goods Code,
- RID: International Statutory Order on the Conveyance of Dangerous Goods by Rail,
- UN: United Nations Recommendations on the Transport of Dangerous Goods.

## 5. Shipping of defect cells

Tadiran must be contacted prior to the shipping of defective cells in order to agree on the procedure.

## 6. Markings



Class 9(A) Hazard Label for lithium batteries

*reduced size  
black on white*

Name: Lithium battery  
Cargo IMP Code: RBI, RBM, RLI, RLM  
Minimum dimensions: 100 x 100 mm

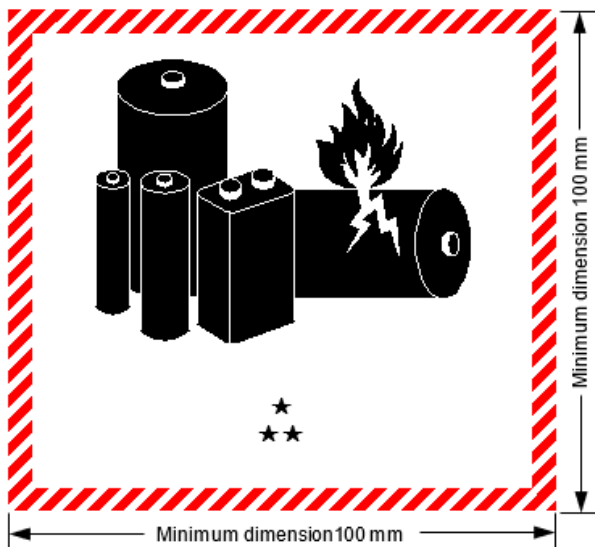
Symbol (seven vertical black stripes in upper half; battery group, one broken and emitting flame in lower half); black  
Background: White



Handling Label Cargo Aircraft Only

*reduced size,  
black on orange (Pantone colour no. 151U)*

Name: Cargo Aircraft Only  
Cargo IMP Code: CAO  
Minimum dimensions: 120 x 110 mm



Lithium Battery Mark

*reduced size,  
black on white,  
red boarder with diagonal hatchings (min 5 mm)*

\* Place for UN number(s) (rec. 12 mm high)  
\*\* Place for telephone number for additional information