



TECHNICAL NOTICE

Number One Choice in Lithium

LTN 2005H

Date: July 2007

Guidelines for shipping Lithium Batteries

1. Scope

This document is about the UN regulations for transportation of lithium cells and batteries as detailed in the Model Regulations on the Transport of Dangerous Goods Ref ST/SG/AC.10-38a2e, Fifth Revised Edition (UN 3090). The regulations also cover the IATA, ICAO, and ARD requirements.

The following guidelines impart an immediate, basic working knowledge for shipping Tadiran Lithium Batteries and Cells safely and legally. This information should be viewed only as a guide to existing regulations and not a regulation in and of itself.

2. Shipping Methods

The shipping method is determined by the amount of lithium in a cell or a battery. The shipping regulations define two groups.

○ Non-Restricted

○ Class 9

2.1 Non-Restricted

○ UN 3090 defined as non-restricted, all cells that have less than one gram of lithium and all batteries that have less than two grams of lithium. Provided that each cell and each battery passed successfully the tests per UN specification (Recommendations on the Transport of Dangerous Goods, UN Manual of Tests and Criteria, Fifth Revised Edition, Section 38.3, "Lithium metal and lithium ion batteries").

A list of Tadiran products with the amount of lithium in each product is presented in Appendix # 1.

Shipping of non-restricted articles requires the cells and the batteries to be separated in such a way to prevent short circuit, and they must be packed in strong packaging, except when installed in equipment.



TECHNICAL NOTICE

Number One Choice in Lithium

Except when installed in equipment, or for packages that contain more than 24 lithium cells or 12 lithium batteries they should comply with the following addition requirements:

2.1.1 Each package must be marked indicating that it contains lithium batteries and that special procedures should be followed in the event that the package is damaged. See Appendix # 2.

2.1.2 Each shipment must be accompanied with a document indicating that the packages contain lithium batteries and that special procedures should be followed in the event a package is damaged. See Appendix # 3

2.1.3 Each package is capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (cell to cell) contact and without release of contents.

2.1.6 Except in the case of lithium batteries packed in equipment, packages may not exceed 30Kg gross mass in all transportation modes air, sea and ground.

2.2 Class 9

Class 9 (Restricted), are all cells that have more than one gram of lithium and all batteries that have more then two grams of lithium, provided that each cell and each battery passed successfully the tests per UN specification: (Recommendation on the Transport of Dangerous Goods, Manual of Test and Criteria, paragraph 38.3).

A list of Tadiran products with the amount of lithium in each product is presented in Appendix # 1.

Following are the requirements for shipping of Class 9 articles.

2.2.1 The maximum gross weight per a single package that carry Class 9 (Restricted) articles is detailed below.

Modes of Transportation	Gross Weight in Kg
Passenger Airplane	5
Cargo Airplane	35
Sea	Over 35
Ground	Over 35

2.2.2 The completion of RESTRICTED ARTICALES CERTIFICATION from (Shippers Declaration for Dangerous Goods Form) in according with detailed instructions of 8.1.A IATA manual. This document must be carefully typewritten with



TECHNICAL NOTICE

Number One Choice in Lithium

no mistake, abbreviation or corrections, and can only be signed by legally certified person.

2.2.3 Enclosing an International Airway Bill.

2.2.4 Enclosing three copies of commercial invoice.

2.2.5 Proper packaging: The outer packaging must be Group II package such as fiberboard box (specified number is 4G) with proper UN specs marks on the carton (sturdy shipping cartons meeting UN Performance specification testing).

2.2.6 Labels:

- Class 9 label
- "Cargo Aircraft Only" label when shipped by cargo aircraft.
- Label stating company name, address
- The following statement, must appear on the carton:

Lithium Batteries
UN NBR 3090 CLASS 9
Pkg. Inst. 903 II
S.T.C
Gross weight in -----Kg
PACK NO.-----OF-----

Note: For shipment to USA/CANADA a 24hour phone number available to call in event of an emergency, must be included in the shipping documents.

4. Over pack

Over pack: An enclosure used to provide protection or convenience in handling of a package or to consolidate two or more packages. The package being over packed must be eligible to be transported by itself, and properly prepared for shipment with proper marking and labeling. The marking and labeling on each of the packages being over packed must be reproduced on the outside of the over pack unless visible from outside of the over pack.



TECHNICAL NOTICE

Number One Choice in Lithium

Package: The end result of the packaging process, which includes all the hazardous content, and all of the packaging properly closed and prepared for proper marking and labeling.

5. Training

USA employees involved in packaging or shipment of Class 9 batteries must complete a CFR 49 certified hazardous material shipping training course. The certification should be renewed every three years. In face of the new revision, it is strongly recommended that the employees also complete the IATA training course

6. Violations of shipping regulation rules

Violation of the US DOT HMR (Hazardous Material Regulation) is subject to a fine of up to \$27,500. Multiple fines may be imposed for a single shipment for each type of violation (e.g., packaging, testing, labeling etc.)



TECHNICAL NOTICE

Number One Choice in Lithium

Appendix # 1, Quantity of lithium metal in Tadiran cells and Batteries

GENERIC P/N	CLASS 9 (UN)	MAXIMUM WEIGHT OF LITHIUM (gr.)	SIZE
TL-2100		0.66	AA
TL-2134		0.3	1/10 D
TL-2135		0.5	1/6 D
TL-2150		0.3	1/2AA
TL-2155		0.5	2/3AA
TL-2186		0.13	BEL
TL-2200	Class 9	2.5	C
TL-2300	Class 9	4.95	D
TL-2450		0.18	C/10
TL-4902		0.3	1/2AA
TL-4903		0.66	AA
TL-4934		0.3	1/10D
TL-4935			
TL-4955		0.5	2/3AA
TL-4920	Class 9	2.5	C
TL-4930	Class 9	4.95	D
TL-4940	Class 9	4.95	D
TL-4986		0.13	BEL
TL-5101		0.3	1/2AA
TL-5104		0.66	AA
TL-5134		0.3	1/10 D
TL-5135		0.5	1/6 D
TL-5137	Class 9	11.5	DD
TL-5155		0.5	2/3AA
TL-5186		0.13	BEL
TL-5242		0.66	AA
TL-5276		0.3	1/2AA
TL-5902		0.3	1/2AA
TL-5903		0.66	AA
TL-5920	Class 9	2.5	C
TL-5930	Class 9	4.95	D
TL-5937	Class 9	11.5	DD
TL-5955		0.5	2/3AA
TL-6526	Class 9	2.5	
TL-6902		0.3	1/2AA
TL-6903		0.66	AA



TECHNICAL NOTICE

Number One Choice in Lithium

GENERIC P/N	CLASS 9 (UN)	MAXIMUM WEIGHT OF LITHIUM (gr.)	SIZE
TL-6920	Class 9	2.5	C
TL-6930	Class 9	4.95	D
TL-6937	Class 9	11.5	D
TLL-5902		0.3	1/2AA
TLL-5903		0.66	AA
TLL-5955		0.5	2/3AA
TLH-2450		0.18	C/10
TLH-4902		0.3	1/2AA
TLH-4951		0.3	1/2AA
TLH-4986		0.13	BEL
TLH-5902		0.3	1/2AA
TLH-5903		0.66	AA

GENERIC P/N	CLASS 9 (UN)	MAXIMUM WEIGHT OF LITHIUM (gr.)	SIZE
HLC-1020/L 3.7V		0.01	
HLC-1020, 3.7V		0.01	
HLC-1030, 3.7V		0.01	
HLC-1520, 3.7V		0.01	
HLC-1530, 3.7V		0.03	
HLC-1550, 3.7V		0.06	
HLC-1550N, 3.7V		0.07	
HLC-1520, 3.9V		0.02	
HLC-1530, 3.9V		0.04	
HLC-1550, 3.9V		0.10	
HLC-1550N, 3.9V		0.13	
TLM-1020/HP			
TLM-1030/HP			
TLM-1050/HP			
TLM-1520/HP		0.04	
TLM-1530/HP		0.08	
TLM-1550/HP		0.18	
TLM-1020/MP		0.02	
TLM-1030/MP		0.03	
TLM-1520/MP		0.07	
TLM-1530/MP		0.11	
TLM-1550/MP		0.25	



TECHNICAL NOTICE

Number One Choice in Lithium

GENERIC P/N	CLASS 9 (UN)	MAXIMUM WEIGHT OF LITHIUM (gr.)	SIZE
TLM-1550M		0.16	
TLM1520HE		0.11	
TLM1530HE		0.20	
TLM1550HE		0.44	

Appendix# 2, label for package with non-restricted cells or batteries





IF DAMAGED

CAUTION !

**Lithium Batteries inside
 Flammable if damaged**

Handle with care

**if package is damaged,
 batteries must be quarantined,
 inspected and repacked.**

**For emergency information, call:
 1-800-424-9300**



P.O. BOX 1
KIRYAT EKRON
ISRAEL 70500
TEL: (972-8) 9444503
FAX: (972-8) 9413079



See us on the web: www.tadiranbat.com

TECHNICAL NOTICE

Number One Choice in Lithium



TECHNICAL NOTICE

Number One Choice in Lithium

Appendix # 3, example of shipping document for non-hazardous cargo

Shipper's Certification for Non-Hazardous Cargo

AWB No.	Airport of Dep.	Airport of Dest.	INVOICE NO.
---------	-----------------	------------------	-------------

This is to certify that the articles/substances of this shipment are properly described by name, that they are not listed in the current edition of IATA Dangerous Goods Regulations (DGR), Alphabetical List of Dangerous Goods, nor do they correspond to any of the hazard classes appearing in the DGR, Section 3, classification of Dangerous Goods and that they are known to be not dangerous, i.e. not restricted. Furthermore the Shipper confirms that the goods are in proper condition for transportation on passenger carrying aircraft.

Marks and Number of Packages	Proper Description of Goods (Trade Names not Permitted) Specify each article separately	Net quantity per package
Name and Address of Shipper		Signature

To be completed in duplicate:

Distribution: One copy to accompany the AWB
" " to be filed at airport of departure (with AWB-copy)

Form.3254 Version 1993



TECHNICAL NOTICE

Number One Choice in Lithium

Appendix # 4, shipper declaration for Dangerous Goods, (Class 9)

SHIPPER'S DECLARATION FOR DANGEROUS GOODS							
Shipper 1				Air Waybill No. 3			
Consignee 2				Page of Pages			
Two completed and signed copies of this Declaration must be handed to the operator.				Shipper's Reference Number (optional)			
TRANSPORT DETAILS 4 This shipment is within the limitations prescribed for: (delete non-applicable) <input type="checkbox"/> PASSENGER AND CARGO AIRCRAFT <input type="checkbox"/> CARGO AIRCRAFT ONLY Airport of Departure:				WARNING Failure to comply in all respects with the applicable Dangerous Goods Regulations may be in breach of the applicable law, subject to legal penalties. This Declaration must not, in any circumstances, be completed and/or signed by a consolidator, a forwarder or an IATA cargo agent.			
Airport of Destination:							
				Shipment type: (delete non-applicable) 5 <input type="checkbox"/> NON-RADIOACTIVE <input type="checkbox"/> RADIOACTIVE			
NATURE AND QUANTITY OF DANGEROUS GOODS							
Dangerous Goods Identification							
Proper Shipping Name	Class or Division	UN or ID No.	Packing Group	Subsidiary Risk	Quantity and type of packing	Packing Inst.	Authorization
6	7	8	9		10	11	
Additional Handling Information 12 13							
I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.					Name/Title of Signatory 14 Place and Date Signature (see warning above)		