

**TRANSPORT
OF RECHARGEABLE
(i.e. from secondary cells / batteries)
LITHIUM ION
BATTERIES* (BATTERY PACKS) CELLS* (secondary CELLS)**

UN3480 LITHIUM-ION BATTERIES
(English shipping name)

Dangerous goods class 9

Note: UN38.3 SUMMARY SUMMARY SINCE 01.01.2020 OBLIGATIONAL
(An example of the test summary can be found on the last page)

Road transport **ADR**
Rail transport **RID**
Maritime transport **IMDG**
Air transport **IATA-ICAO**



AccuPower Research, Development and Distribution Company Ltd.
Pirchaeckerstrasse 27, A-8053 Graz, AUSTRIAT
Phone.: +43 (0) 316 26 29 11-10
E-mail: info@accupower.a
Web: www.accupower.at

* Please note the explanation of terms on page 9!

TRANSPORT BY ROAD ADR / RAIL RID

**1) Battery packs (secondary batteries) up to 100 Wh / cells (secondary cells) up to 20 Wh
(Wh = watt hours)**

packaging:

Inner and outer packaging according to SP 188 (SP = special provision)*

Max. Gross mass per package: 30.00 kg

The cells or battery packs must be protected against short circuit.

labelling:



Sticker: "Lithium batteries" shown in a reduced size,
Black on white, red border with diagonal lines

Minimum width of red hatching 5mm.

If the package allows/allows it, the dimensions,
line width

may be reduced to up to 105mm in width and 74mm in height.

* UN 3480

** telephone number for additional information

documents:

No transport document required

***SP: 188 (special provision 188 ADR/RID)**

Cells and batteries must be packed in inner packagings that completely enclose them, they must be protected in such a way as to prevent short circuits, including protection against contact with conductive materials inside the packaging that could cause a short circuit. The inner packagings must be packed in strong outer packagings and the package must withstand a drop test from a height of 1.2m.

Please note that the cells or batteries must be already tested according to UN38.3, i.e. no prototypes may be transported under this SP.

2) Battery packs (secondary batteries) over 100 Wh / cells (secondary cells) over 20 Wh (Wh = watt hours)

packaging:

Inner and outer packaging according to VA 903 (VA = packaging instructions)

Drums and cases of packing group II

> than 12 kg: Resistant outer packaging, protective enclosures or pallets

The cells or battery packs must be protected against short circuits.

labelling:



Dimensions:
minimum 100x100mm,
Inner line **at about** 5mm distance from the outer edge

Danger label class 9 model 9A,
shown reduced, black on white

the UN 3480 must also be clearly visible on the outside of the package and be at least 12 mm in size.

documents:

The goods must be accompanied by a transport document which must contain the following information:

UN 3480 Lithium-ion batteries, 9, (E)

Transport of exempted quantities according to ADR 1.1.3.6

Transport category 2:

According to this regulation of the ADR, Li-ion battery packs (secondary batteries) or cells (secondary cells) can be transported up to a maximum net weight of 333 kg as Excepted Quantity.

This has the advantage that the vehicle does not have to be marked as a transport of dangerous goods (full transport) and the driver does not have to have an ADR certificate. As long as the dangerous goods loaded do not exceed 1000 points!

Sum of dangerous goods points = net weight x 3

TRANSPORT BY SEA FREIGHT IMDG

3) Battery packs (secondary batteries) up to 100 Wh / cells (secondary cells) up to 20 Wh (Wh = watt hours)

packaging:

Inner and outer packaging according to SP 188 (SP = special provision)*

Max. gross mass per package: 30,00 kg

The cells or battery packs must be protected against short circuits.

labelling:



Sticker: "Lithium batteries" shown in a reduced size,
Black on white, red border with diagonal lines

Minimum width of red hatching 5mm.
If the package allows/allows it, the dimensions,
line width
may be reduced to up to 105mm in width and 74mm in height.

* UN 3480

** telephone number for additional information

documents:

No transport document required

*SP: 188 (special provision 188 IMDG)

Cells and batteries must be packed in inner packagings that completely enclose them, they must be protected in such a way as to prevent short circuits, including protection against contact with conductive materials inside the packaging that could cause a short circuit. The inner packagings must be packed in strong outer packagings and the package must withstand a drop test from a height of 1.2m.

Please note that the cells or batteries must be already tested according to UN38.3, i.e. no prototypes may be transported under this SV.

4) Battery packs (secondary batteries) over 100 Wh / cells (secondary cells) over 20 Wh (Wh = watt hours)

packaging:

Inner and outer packaging according to VA 903 (VA = packaging instructions)

Drums and cases of packing group II

> than 12 kg: Resistant outer packaging, protective enclosures or pallets

The cells or battery packs must be protected against short circuits.

labelling:



Dimensions:
min. 100x100mm,
inner line **at about** 5mm from the outer edge

Danger label class 9, model 9A,
shown reduced, black on white

UN 3480 must also be clearly visible on the outside of the package and be at least 12 mm in size and bear the marking "Lithium ion batteries"

documents:

The goods must be accompanied by an IMO declaration which must contain the following information:

UN 3480 Lithium ion batteries, 9, F-A, S-I

UN-Nr. UN-No.	Inhalt (richtiger technischer Name) * Proper Shipping Name (Correct technical name) *	Klasse/Unter- Klasse nach IMO IMO-Class	Verpackungs- gruppe Packings group	Markierung der Versandstücke Falls zutreffend, Identifikations-Nummer oder sonst. Kennzeichen Marks & Nos, if applicable, identification or registration number(s) of the Unit.	Anzahl und Verp.-Art No. and kind of packages
UN3480	Lithium ion batteries	9			1 Fibre Board Box (4G)
<small>Großmenge (Volumen/Masse) Gross quantity (volume/mass) Netto-/Bruttomenge (Net quantity/volume/mass) Netto-/Explosionsstoffmenge: ** - - - - - Net explosive mass: ***</small>		<small>Merkblatt-Nr. für Unfall-Maßnahmen SDS No.</small>	<small>Eigenschaften / Properties Flammpunkt / Flashpoint ** MARINE POLLUTANT ** Kontroll- und Notfalltemperatur: ** Control- and emergency temperature **</small>		<small>Goods delivered as:</small> <input type="checkbox"/> Stückgut/Breakbulk cargo <input type="checkbox"/> Ladungseinheiten (Unit Loads) Unitized cargo <input type="checkbox"/> Bulkverpackungen/Bulk packages
4.5 kg net quantity 7.0 kg gross quantity		F-A S-I			<small>Art der Einheit (Container, Anhänger, Tank, Fahrzeug usw.) Type of unit (container, trailer, tank, vehicle etc.)</small>

Example IMO:

TRANSPORT BY AIR FREIGHT - IATA DGR

ATTENTION:

From 1 April 2016 secondary Li-ion batteries / cells may only be offered for transport by air freight with a state of charge of 30% of the design capacity and may only be transported on cargo aircraft, therefore all air freight goods must additionally be provided with the "CAO" (Cargo Aircraft only) sticker!

1) Battery packs (secondary batteries) / cells (secondary cells)

a.) less than or equal to 2.7 Wh per cell/battery pack and max. 2.5kg net

b.) greater than 2.7 Wh and not exceeding 20 Wh per cell/battery pack and not more than 8 cells

or 2 battery packs in not more than one package

packaging:

According to IATA DGR packaging instruction VA:965, part II

labelling:



Minimum width of red hatching 5mm.



Dimensions:
min. 120 x 110mm

* UN 3480

** telephone number for additional information

documents:

the air waybill must include the sentence

"Lithium ion batteries in compliance with Section II of PI965" und "CAO"

must be noted.

DGD (Dangerous Goods Declaration) is not required.

ATTENTION:

From 1 April 2016, only one package per consignment prepared in accordance with PI965 Part II may be offered for air transport, and outer packages may not contain more than one package in accordance with PI965 Part II.

If more than 1 package according to PI965 II per shipment or more than 1 package in an outer packaging is to be shipped, these packages must be prepared for shipment according to PI965 IB! (see below)

2) Battery packs (secondary batteries) / cells (secondary cells)

- a.) less than or equal to 2.7 Wh per cell/battery pack but more than 2.5 kg net per package
- b.) more than 2.7 Wh up to 20 Wh / 100 Wh per cell/battery pack and more than 8 cells or 2 battery packs

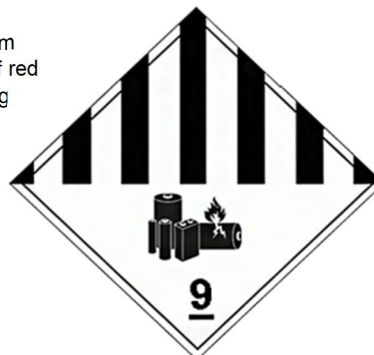
packaging:

According to IATA DGR packaging instruction VA:965, part IB
 Max. Net quantity per package: Cargo aircraft only: 10 kg

labelling:



Minimum width of red hatching 5mm.



Dimensions: min. 100x100mm, inner line at about 5mm from the outer edge

Dimensions: min. 120 x 110mm



In addition, we must:

- Sender and recipient
- UN 3480 min. 12mm + "Lithium-Ion batteries".
- Net weight, if applicable
- be clearly marked on the package

documents:

the air waybill must include the sentence
"Dangerous Goods as per attached Shippers Declaration" und "CAO"
 must be noted.

A DGD (Dangerous Goods Declaration) with the following information on the dangerous goods is also mandatory

UN3480, Lithium ion batteries, 9, 965 IB

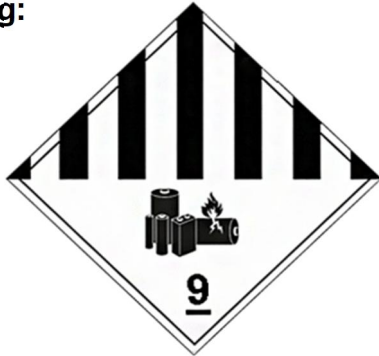
3) Battery packs (secondary batteries) with more than 100 Wh / cells (secondary cells) with more than 20 Wh

packaging:

According to IATA DGR packaging instruction VA:965, part IA
 Max. net quantity per package: cargo aircraft only: 35 kg

labelling:

Dimensions:
 min.
 100x100mm,
 inner line at
 about 5mm
 from the outer
 edge



Dimensions:
 min. 120 x 110mm

In addition, we must:

Sender and recipient
 UN 3480 min. 12mm + "Lithium-Ion batteries
 Net weight, if applicable
 be clearly marked on the package

documents:

the air waybill must contain the sentence
"Dangerous Goods as per attached Shippers Declaration" und "CAO"
 must be noted.

A DGD (Dangerous Goods Declaration) with the following information on the dangerous goods is also mandatory:

UN 3480, Lithium ion batteries, 9, 965

Example DGD:

Airport of Destination: JOHN F. KENNEDY				Shipment type: <i>(delete non-applicable)</i>		
				NON-RADIOACTIVE	RADIOACTIVE	
NATURE AND QUANTITY OF DANGEROUS GOODS						
Dangerous Goods Identification						
UN or ID No.	Proper Shipping Name	Class or Division (Subsidiary Risk)	Pack- ing Group	Quantity and type of packing	Packing Inst.	Authorization
UN3480	Lithium ion batteries	9		4 fibreboard boxes x 1,6 kg Overpack used x 4 #1 #2 #3 #4 Total quantity Per overpack: 6,4 kg	965	

DEFINITION OF TERMS

In dangerous goods law, a distinction is made between the UN number: 3480 of:

LITHIUM BATTERY (secondary battery = battery pack):

"Battery" means two or more cells which are electrically connected and equipped with devices necessary for its use, e.g: battery cases, battery terminals, marking and protection devices. The battery shall be tested in accordance with the requirements of subsection 38.3 of the UN Manual of Tests and Criteria.



LITHIUM cells (secondary cell):

A lithium single cell battery is considered a "cell" and must be tested in accordance with the test requirements for a "cell" for the purposes of these Regulations and the requirements of subsection 38.3 of the UN Manual of Tests and Criteria.



Secondary means: Rechargeable

GENERAL INFORMATION:

Since many carriers and forwarding agents have their own requirements for the transport of dangerous goods or do not accept dangerous goods, it is recommended to give the following details when placing the transport order:

Lithium-ion batteries / watt hours
UN 3480 / Class 9
Number and weight of packages

As well as the Material Safety Data Sheet (MSDS) or the Safety Data Sheet (SDS).

In the case of outer packaging, the labels or marks and the UN number (min. 12mm in size) must be reproduced on the packaging and the word: OVERPACK / UMVERPACK in at least 12mm character height.

UN38.3 TEST (test summary mandatory since 01.01.2020)

Basically all lithium cells and battery packs must be tested according to UN Manual 38.3 UN. In the course of this UN-test you will also receive the MSDS (Material Safety Datasheet), which basically checks all carriers in advance whether they accept these goods for transport. The transport of prototypes and pre-series is in principle also possible without UN38.3 testing under special conditions but is not dealt with in this guide.

An example of the test summary, which has been mandatory since 01.01.2020, can be found on the last page.

IMPORTANT NOTE:

Instruction of the involved employees/participants according to their tasks and responsibilities. (e.g.: Consignor - Instruction on his duties or training)

Transport documents / IMO declaration / DGD / may only be issued by instructed persons who have successfully completed the corresponding training.



Important notes:

This information has been prepared and compiled according to the latest state of the art, with care and consideration. All information has been given to the best of our knowledge and belief. Nevertheless, no liability can be assumed for this, as this information can be updated or changed at any time.


The representations make no claim to completeness. With this edition all older editions lose their validity; typographical and printing errors excepted.

Applicable laws and regulations must be observed by the distributors and users of the product on their own responsibility.

Example test summary

UN38.3 TEST SUMMARY

IN ACCORDANCE WITH SUB-SECTION 38.3.5 OF UN MANUAL OF TESTS AND CRITERIA

Model: APAVL7S10P																											
Type: Lithium-Ion battery 7S10P ICR18650 25.9V / 751Wh / 29Ah																											
1	Manufacturer AccuPower Forschungs-, Entwicklungs- und Vertriebsgesellschaft mbH Pirchäckerstraße 27, 8053 Graz, AUSTRIA Tel.: +43 (316) 26 29 11-0 Mail: info@accupower.at Web: www.accupower.at																										
2	UN38.3 Test lab PONY HQ Building Add: Bldg1, Court 66, Jindai Road, Zhongguancun Environmental Protection Park, Haidian District, Beijing, CHINA / Tel.: +86-10-83055000/82618116 Email: pony@ponytest.com Web: www.ponytest.com																										
3	Test report number: MZIPBAQA88798721																										
4	Date of test report: 09-10-2015																										
5	Description of cell or battery Lithium-Ion battery 7S10P ICR18650 25.9V / 751Wh / 29Ah in shrinking tube with cable, interface and connector, LxBxH: 230 x 120 x 80mm +/- 1mm / 3.660kg +/- 0,050kg, AccuPower Product Model: APAVL7S10P 																										
6	UN38.3 Tests performed and successfully passed <table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr> <th>Performed test</th> <th>Result</th> </tr> </thead> <tbody> <tr><td>38.3.4.1 / T1</td><td>Altitude Simulation</td><td>Passed</td></tr> <tr><td>38.3.4.2 / T2</td><td>Thermal Test</td><td>Passed</td></tr> <tr><td>38.3.4.3 / T3</td><td>Vibration</td><td>Passed</td></tr> <tr><td>38.3.4.4 / T4</td><td>Shock</td><td>Passed</td></tr> <tr><td>38.3.4.5 / T5</td><td>External Short Circuit</td><td>Passed</td></tr> <tr><td>38.3.4.6 / T6</td><td>Impact / Crush</td><td>Passed</td></tr> <tr><td>38.3.4.7 / T7</td><td>Overcharge</td><td>Passed</td></tr> <tr><td>38.3.4.8 / T8</td><td>Forced Discharge</td><td>Passed</td></tr> </tbody> </table>  <div style="display: inline-block; vertical-align: top;"> Transportation Safety Test passed for: <input checked="" type="checkbox"/> Cargo Aircraft only <input checked="" type="checkbox"/> Sea  <input checked="" type="checkbox"/> Road   </div>	Performed test	Result	38.3.4.1 / T1	Altitude Simulation	Passed	38.3.4.2 / T2	Thermal Test	Passed	38.3.4.3 / T3	Vibration	Passed	38.3.4.4 / T4	Shock	Passed	38.3.4.5 / T5	External Short Circuit	Passed	38.3.4.6 / T6	Impact / Crush	Passed	38.3.4.7 / T7	Overcharge	Passed	38.3.4.8 / T8	Forced Discharge	Passed
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7	Edition of UN Manual of used test and criteria: Rev.5 Amend. 1 & 2																										
8	Assembled Battery Testing Requirements: not applicable																										
9	Name and title of signatory/ company stamp  ACCU POWER Forschungs-, Entwicklungs- und Vertriebsgesellschaft mbH. Pirchäckerstraße 27, A-8053 Graz, AUSTRIA Tel: +43 (0)316 - 262911 10, Fax: 262911 36 info@accupower.at, www.accupower.at Ing. Issam Al-Abassy / Application Engineering Manager																										