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1. Introduction

Transport of lithium ion batteries is in the scope of Dangerous Goods Transport Regulations. Therefore many specific requirements have to be respected for their transport. The safe carriage of dangerous goods is important to shippers and transport companies and not least for every party involved in the chain of lithium ion battery transport.

The following notes, based on recommendations, have been produced to provide initial practical guidance to the regulations for the carriage of lithium ion batteries and lithium ion batteries in/with equipment.

In any case it is necessary to consult the regulations themselves for details. The applicable regulations are listed below.

They must be fulfilled by the shipper for every commercial shipment of lithium ion batteries.

Especially the energy content and diverse conditions classify which dangerous goods regulations must be taken into account for the transport of lithium ion batteries. Due to exemption regulations, simplified requirements apply for instance to lithium ion batteries with a nominal energy up to maximum 100 Wh.

Whereas lithium ion batteries with a nominal energy of more than 100 Wh are always to be treated as fully regulated Class 9 Dangerous Goods.

This guidance refers to the commercial transport by:

- road/rail: ADR/RID
- sea freight: IMDG Code
- air freight: IATA DGR.

The regulations are subject to change on an annual or biennial basis.

Lithium ion batteries are classified as follows:

- UN 3480 Lithium ion batteries
- UN 3481 Lithium ion batteries contained in equipment
- UN 3481 Lithium ion batteries packed with equipment

In individual cases, a dangerous goods expert should be consulted.

Local authorities are responsible for the interpretation and implementation of the relevant regulations. They can, at their discretion, make decisions differing from this guideline.

Despite the greatest possible care during the revision and composition, no liability can be assumed for the content and the completeness of this document.

2. Provisions for Lithium Batteries carried by Passengers on Aircrafts

Certain restrictions apply to the carriage of lithium metal and lithium ion batteries even when carried by passengers as baggage. Only batteries that have successfully passed the Tests outlined in Part III, Sub Section 38.3 of the UN Manual of tests and criteria may be carried.

IATA Table 2.3.A Provisions for Dangerous Goods Carried by Passengers or Crew (Subsection 2.3):

The pilot-in-command must be informed of the location				
Permitted in or as carry-on baggage				
Permitted in or as checked baggage				
The approval of the operator is required				
Insulated packagings containing refrigerated liquid nitrogen (dry shipper), fully absorbed in a porous material containing only non-dangerous goods.	NO	YES	YES	NO
Internal combustion or fuel cell engines, must meet A70 (see 2.3.5.12 for details).	NO	YES	NO	NO
Lithium Batteries: Portable electronic devices (PED) containing lithium metal or lithium ion cells or batteries , including medical devices such as portable oxygen concentrators (POC) and consumer electronics such as cameras, mobile phones, laptops and tablets (see 2.3.5.8). For lithium metal batteries the lithium metal content must not exceed 2 g and for lithium ion batteries the Watt-hour rating must not exceed 100 Wh. Devices in checked baggage must be completely switched off and must be protected from damage. Each person is limited to a maximum of 15 PED. *The operator may approve the carriage of more than 15 PED.	NO*	YES	YES	NO
Lithium batteries, spare/loose, including power banks, see Batteries, spare/loose				
Lithium battery-powered electronic devices. Lithium ion batteries for portable (including medical) electronic devices, a Wh rating exceeding 100 Wh but not exceeding 160 Wh. For portable medical electronic devices only, lithium metal batteries with a lithium metal content exceeding 2 g but not exceeding 8 g. Devices in checked baggage must be completely switched off and must be protected from damage.	YES	YES	YES	NO
Lithium batteries, spare/loose with a Watt-hour rating exceeding 100 Wh but not exceeding 160 Wh for consumer electronic devices and PMED or with a lithium metal content exceeding 2 g but not exceeding 8 g for PMED only. Maximum of two spare batteries in carry-on baggage only. These batteries must be individually protected to prevent short circuits.	YES	NO	YES	NO

3. Transport regulations for Dangerous Goods

Please refer to the listed regulations for further and detailed information:

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road,

49 CFR: Code of Federal Regulations, DOT, PHMSA is responsible for regulating movement of hazardous materials by all modes of transportation within the US.

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

4. UN Transportation Testing (UN DOT 38.3) for Lithium Batteries



















Nearly all lithium batteries are required to pass section 38.3 of the UN Manual of Tests and Criteria (UN Transportation Testing) with the following procedure:

- T1 – Altitude Simulation (Primary and Secondary Cells and Batteries)
- T2 – Thermal Test (Primary and Secondary Cells and Batteries)
- T3 – Vibration (Primary and Secondary Cells and Batteries)
- T4 – Shock (Primary and Secondary Cells and Batteries)
- T5 – External Short Circuit (Primary and Secondary Cells and Batteries)
- T6 – Impact (Primary and Secondary Cells)
- T7 – Overcharge (Secondary Batteries)
- T8 – Forced Discharge (Primary and Secondary Cells)

5. Shipping Guidelines

5.1. Shipment of Lithium Ion Batteries ≤ 100 Wh by Truck / Rail (ADR/RID), Sea Freight (IMDG)

A passed transportation test according section 38.3 of the UN Manual of Tests and Criteria is required!

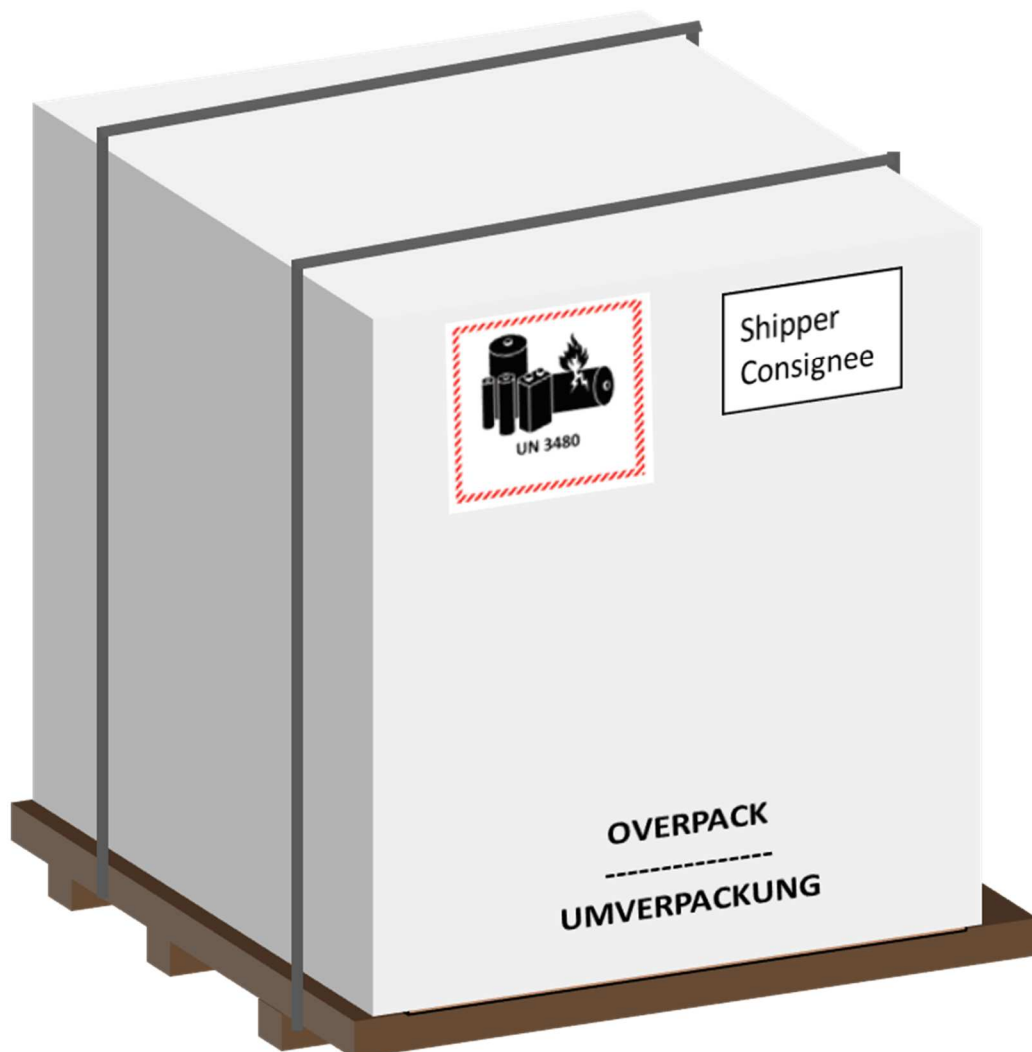
Truck / Rail (ADR/RID), Sea Freight (IMDG)							
	<p>For lithium ion cell the Watt-hour rating is not more than 20 Wh. For lithium ion battery the Watt-hour rating is not more than 100 Wh. Lithium ion batteries subject to this provision shall be marked with the Watt-hour rating on the outside case, except those manufactured before 1 January 2009</p>						
Packing Instructions	ADR/RID SP188, IMDG SP188						
Transportation Mode	<table border="1"> <tr> <td>Batteries (without equipment)</td> <td>Batteries packed with equipment</td> <td>Batteries contained in equipment</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </table>	Batteries (without equipment)	Batteries packed with equipment	Batteries contained in equipment			
Batteries (without equipment)	Batteries packed with equipment	Batteries contained in equipment					
							
Max. Quantity	none						
Weight Limit	30 kg gross weight per packaging						
Packaging	<p>Batteries must be placed in inner packagings that completely enclose the battery, batteries must be protected so as to prevent short circuits.</p> <p>Strong outer packaging, e.g. fibreboard box (drop test passed: content shall not be damaged or shifted).</p>						
Marking	<table border="1"> <tr> <td> <p>Minimum dimensions: 120 x 110 mm (100 mm x 70 mm for small parcels)</p>  </td> <td> <p>Minimum dimensions: 120 x 110 mm (100 mm x 70 mm for small parcels)</p>  </td> <td> <p>not applicable if no more than two batteries are installed and if there are no more than two packages in the consignment Minimum dimensions: 120 x 110 mm (100 mm x 70 mm for small parcels)</p>  </td> </tr> </table>	<p>Minimum dimensions: 120 x 110 mm (100 mm x 70 mm for small parcels)</p> 	<p>Minimum dimensions: 120 x 110 mm (100 mm x 70 mm for small parcels)</p> 	<p>not applicable if no more than two batteries are installed and if there are no more than two packages in the consignment Minimum dimensions: 120 x 110 mm (100 mm x 70 mm for small parcels)</p> 			
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Sea Freight Container-Marking	none						
Transport Document	none						
Miscellaneous	Work instruction of involved staff						

5.1.1. Example: Packaging containing batteries ≤ 100 Wh, SP188









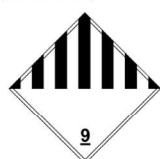
Max. content: 30 Kg G (G = gross weight) per packaging

5.1.2. Example: Packaging containing batteries ≤ 100 Wh, SP188, overpack used

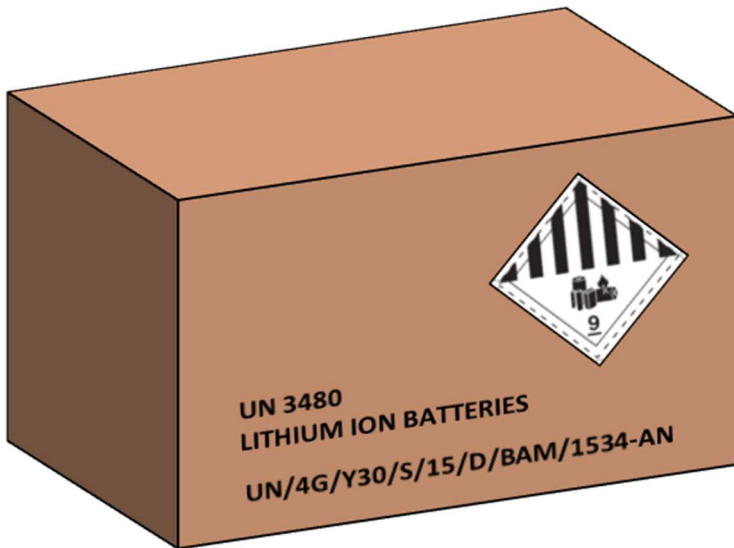


5.2. Shipment of Lithium Ion Batteries > 100 Wh by Truck / Rail (ADR/RID), Sea Freight (IMDG)

A passed transportation test according section 38.3 of the UN Manual of Tests and Criteria is required!

Truck / Rail (ADR/RID), Sea Freight (IMDG)			
For lithium ion cell the Watt-hour rating is more than 20 Wh. For lithium ion battery the Watt-hour rating is more than 100 Wh.			
Packing Instructions	ADR/RID P903 IMDG P903		
Transportation Mode	Batteries (without equipment)	Batteries packed with equipment	Batteries contained in equipment
			
Max. Quantity	none		
Weight Limit	ADR 1.1.3.6: max. 333 kg / per transport unit (truck incl. trailer) If exceeding weight limit, additional requirements to the carrier required		
Packaging	Batteries must be placed in inner packagings that completely enclose the battery, batteries must be protected to prevent short circuits. Batteries must be secured against movement within the outer packaging. UN approved packaging (Packing Group II: e.g. UN/4G/Y30/...)		strong outer packaging protection against unintentional activation short circuit protection
In addition for cells or batteries with a gross mass of 12 kg or more employing a strong, impact resistant outer casing, and assemblies of such cells or batteries: (a) Strong outer packagings; (b) Protective enclosures (e.g. in fully enclosed or wooden slatted crates); or (c) Pallets or other handling devices. Cells or batteries shall be secured to prevent inadvertent movement, and the terminals shall not support the weight of other superimposed elements.			
Marking	Label (10x10 cm)  ADR: UN 3480 IMDG: UN 3480 LITHIUM ION BATTERIES	Label (10x10 cm)  ADR: UN 3481 IMDG: UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT	Label (10x10 cm)  ADR: UN 3481 IMDG: UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT
Sea Freight Container-Marking	CONTAINER-PLACARDS (min. 25x25 cm) 		
Transport Document	UN 3480 LITHIUM ION BATTERIES, 9, (E) Number of packages and packaging type (e.g. 1 Fibreboard box) weight (e.g. xx kg) Shipper's & consignee's address Sea freight (IMDG Code): (language English) IMO-DANGEROUS GOODS DECLARATION (SOLAS 74, KAP. VII, REG 5, MARPOL 73/79, ANNEX III REG. 4 OF IMDG-CODE)	UN 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT, 9, (E) Number of packages and packaging type (e.g. 1 Fibreboard box) weight (e.g. xx kg) Shipper's & consignee's address Sea freight (IMDG Code): (language English) IMO-DANGEROUS GOODS DECLARATION (SOLAS 74, KAP. VII, REG 5, MARPOL 73/79, ANNEX III REG. 4 OF IMDG-CODE)	UN 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT, 9, (E) Number of packages and packaging type (e.g. 1 Fibreboard box) weight (e.g. xx kg) Shipper's & consignee's address Sea freight (IMDG Code): (language English) IMO-DANGEROUS GOODS DECLARATION (SOLAS 74, KAP. VII, REG 5, MARPOL 73/79, ANNEX III REG. 4 OF IMDG-CODE)
Special provisions	188, 230, 310, 348, 376, 377, 387, 636	188, 230, 310, 348, 360, 376, 377, 387, 390, 670	
Miscellaneous	Work instruction of involved staff		

5.2.1. Example: Packaging containing batteries > 100 Wh, UN3480, P903



Max. content: as per UN packaging (e.g. Y30 = 30 Kg G)

5.2.2. Example: Packaging containing batteries > 100 Wh, UN3480, P903, overpack used











Max. content: 333 Kg G / shipment (Truck), if exceeding, additional requirements to the carrier will be needed

5.3. Shipment of Lithium Ion Batteries ≤ 100 Wh by Air Freight (IATA)

A passed transportation test according section 38.3 of the UN Manual of Tests and Criteria is required!

For IATA **PI965 SEC IB** only: Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity!

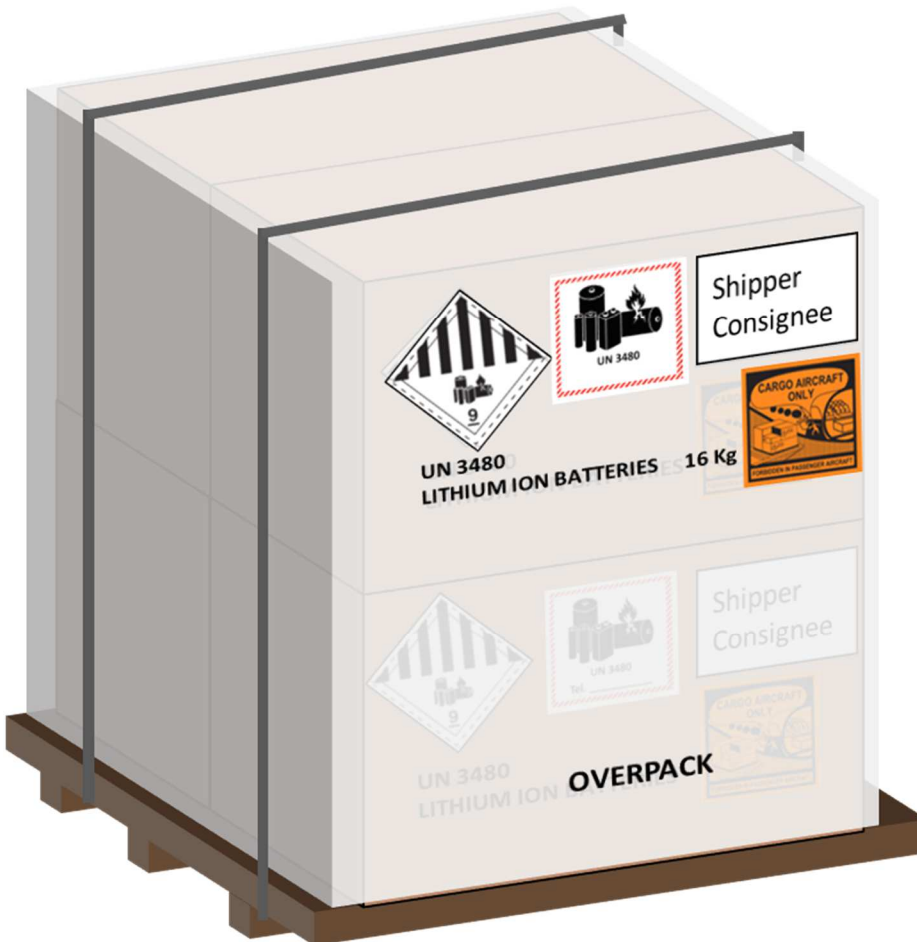
Airfreight (IATA)			
	<p>For lithium ion cell the Watt-hour rating is not more than 20 Wh. For lithium ion battery the Watt-hour rating is not more than 100 Wh. Lithium ion batteries subject to this provision shall be marked with the Watt-hour rating on the outside case, except those manufactured before 1 January 2006.</p>		
Packing Instructions	IATA PI965 Section IB	IATA PI966 Section II	IATA PI967 Section II
Transportation Mode	Batteries (without equipment)	Batteries packed with equipment	Batteries contained in equipment
			
Max. Quantity	none (more than 8 cells or 2 batteries per packaging)	As required for operation, plus 2 sets for replacement	none
Weight Limit PAX	prohibited		
Weight Limit CAO	10 kg net per package	5 kg net battery weight per packaging	
Packaging	<p>Strong outer packaging (fibreboard box) , stacking test 3 m in PI 965, Section IB. Batteries must be placed in inner packaging that completely encloses the battery; Batteries must be secured against movement within the outer packaging; Batteries must be protected to prevent short circuits 1.2m drop test</p>		<p>Strong outer packaging or equivalent protection of the battery by the device Protection against unintended putting into service. Protection against movements within the packaging; Protection against short circuit</p>
Marking	<p>UN 3480, Lithium ion batteries, battery weight (e.g net weight xx kg) Shipper-/Consignee's address</p>   		<p>Up to 2 batteries per package: no battery handling label required More than 2 batteries per package: battery handling label required</p> 
Transport Document	<p>Shipper's Declaration for Dangerous Goods: UN 3480 Lithium ion batteries, 9, // Fibreboard box(es) x kg // 965 // IB, see Example 1, Delete the "PASSENGER AND CARGO AIRCRAFT" box</p>	N/A	N/A
Information on Air Waybill	<p>In the "Handling Information" box: "Dangerous Goods as per associated Shipper's Declaration - CAO"</p>	<p>In the "Nature and Quantity of Goods" box: „Lithium ion batteries in compliance with section II of PI 966"</p>	<p>Only if more than 2 batteries per package, in the "Nature and Quantity of Goods" box: „Lithium ion batteries in compliance with section II of PI 967"</p>
Miscellaneous	<p>Official IATA-Training by authorized trainer required If not available, please contact IATA authorized expert</p>	Adequate instruction commensurate with responsibilities	
Special Provisions: A48, A88, A99, A154, A164, A181, A183, A185, A201, A213, A220, A331, A334, A802			

5.3.1. Example: Packaging containing batteries ≤ 100 Wh, PI 965, SEC IB



Max. content: 10 Kg net per packaging

5.3.2. Example: Packaging containing batteries ≤ 100 Wh, PI 965, SEC IB, overpack used










Max. content: none per overpack (from 01. Jan. 2016 min. size of "OVERPACK" 12mm)

5.4. Shipment of Lithium Ion Batteries > 100 Wh by Air Freight (IATA)

A passed transportation test according section 38.3 of the UN Manual of Tests and Criteria is required!

For IATA **PI965 SEC IA** only: Lithium ion cells and batteries must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity!

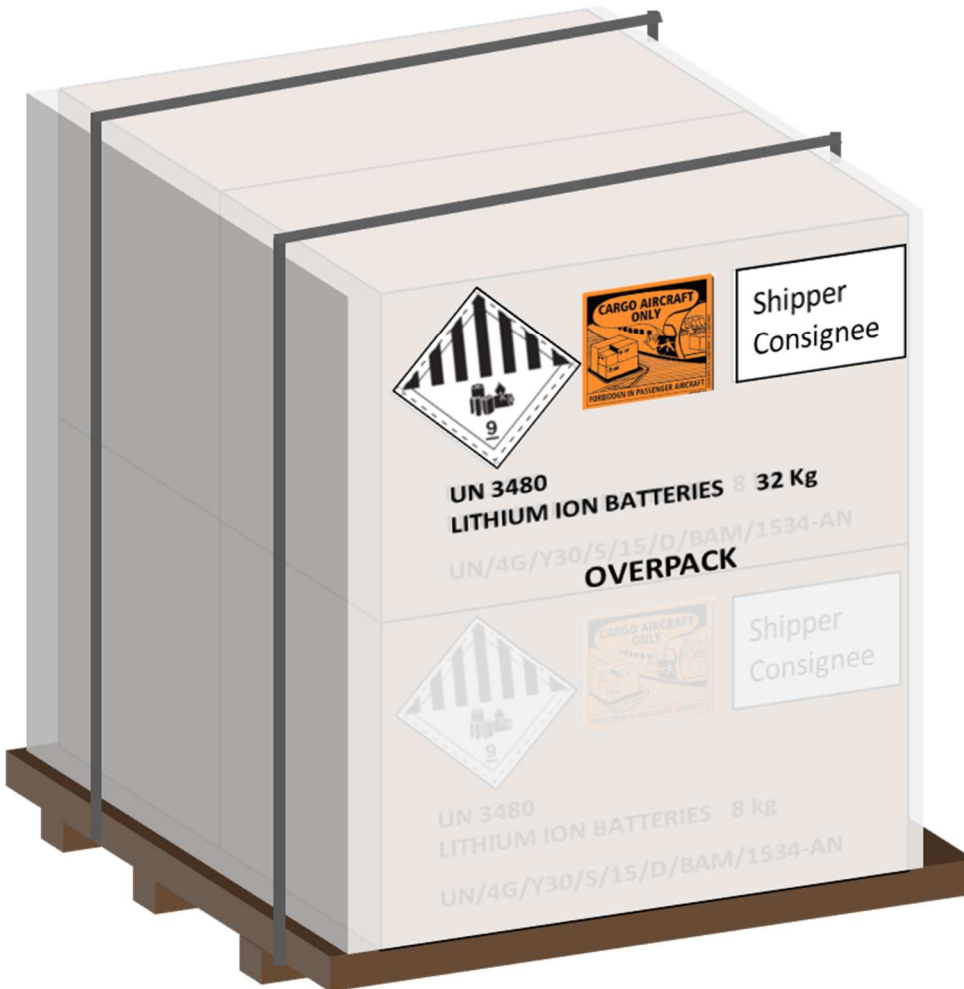
Airfreight (IATA)			
For lithium ion cell the Watt-hour rating is more than 20 Wh. For lithium ion battery the Watt-hour rating is more than 100 Wh.			
Packing Instructions	IATA PI965 Section IA	IATA PI966 Section I	IATA PI967 Section I
Transportation Mode	Batteries (without equipment)	Batteries packed with equipment	Batteries contained in equipment
			
Max. Quantity	none	number required for equipment plus 2 spare	none
Weight Limit PAX	prohibited	5 kg net battery weight per packaging	
Weight Limit CAO	35 kg net battery weight per packaging		
Packaging	Batteries must be placed in inner packaging that completely encloses the battery, batteries must be protected to prevent short circuits UN approved packaging (Packing Group II: e.g. UN 4G/Y30/...)	Batteries must be placed in inner packaging that completely enclose the battery, batteries must be protected so as to prevent short circuits UN approved packaging (Packing Group II: e.g. UN 4G/Y30/...)	Equipment containing batteries must be secured and packed to prevent unintended operation during transport Batteries must be protected to prevent short circuits due to contact to further conductive materials within the same packaging Strong outer packaging (e.g. cardboard box) UN approved packaging not required (SP A48)
Marking	UN 3480, Lithium ion batteries Net weight (NET QTY) Shipper-/Consignee's address  	UN 3481, Lithium ion batteries packed with equipment Net weight (NET QTY) Shipper-/Consignee's address 	UN 3481, Lithium ion batteries contained in equipment Net weight (NET QTY) Shipper-/Consignee's address 
Transport Document	Shipper's Declaration for Dangerous Goods: UN 3480 Lithium ion batteries, 9 // 965, delete the "PASSENGER AND CARGO AIRCRAFT" box	Shipper's Declaration for Dangerous Goods: UN 3481 Lithium ion batteries packed with equipment, 9 // 966	Shipper's Declaration for Dangerous Goods: UN 3481 Lithium ion batteries contained in equipment, 9 // 967
Information on Air Waybill	In the "Handling Information" box: "Dangerous Goods as per associated Shipper's Declaration - CAO" When a shipment contains both dangerous goods and non-dangerous goods, the number of packages containing dangerous goods shall be added in the "Handling Information" box		
Miscellaneous	Official IATA-Training by authorized trainer required. If not available, please contact IATA authorized expert Special Provisions: A48, A88, A99, A154, A164, A181, A183, A185, A201, A213, A220, A331, A334, A802		

5.4.1. Example: Packaging containing batteries > 100 Wh, PI 965, SEC IA




Max. content: 35 Kg net per packaging (CAO)

5.4.2. Example: Packaging containing batteries > 100 Wh, PI 965, SEC IA, overpack used



Weight limit CAO (cargo aircraft only): 35 kg net battery weight per packaging, none for overpack



5.5. Shipment of Lithium Ion Battery Prototypes

Transportation Mode	Prototypes Truck/Rail/Sea Freight	Prototypes Airfreight
	Prototypes: Batteries not tested according UN Test 38.3 Only for transport of <ul style="list-style-type: none"> • small production series of max. 100 batteries (IATA: p.a.) • prototypes for testing reasons only 	
Packing Instructions	ADR/RID/IMDG Code: SP 310, P910	IATA SP A88, P910: Approval required from the Competent Authority of the state of origin Note: to/across/via USA additional approval required from US Authority (DOT)
Max. Quantity	n/a	as defined in approval
Weight Limit	n/a	as defined in approval
Packaging	UN approved packaging: e.g. fibreboard box (Packing Group II: e.g. UN 4G/Y30/...) • Each battery shall be individually packed in an inner packaging, e.g. in a plastic bag • Non-combustible, non-conductive thermal insulation material, e.g. Vermiculite • Must be secured against movement within the outer packaging	as defined in approval
Marking	ADR/RID: UN 3480 IMDG: UN 3480 LITHIUM ION BATTERIES (100 x 100 mm) 	as defined in approval
Transport Document	Shipper's & consignee's address UN 3480 LITHIUM ION BATTERIES, 9, (E) Number of packages and packaging type (e.g. 1 fibreboard box) Battery weight (e.g. xx kg) "CARRIAGE IN ACCORDANCE WITH SPECIAL PROVISION 310" IMDG Code: IMO-DANGEROUS GOODS DECLARATION (SOLAS 74, KAP. VII, REG 5, MARPOL 73/79, ANNEX III REG. 4 OF IMDG-CODE)	as defined in approval
Miscellaneous	Work instruction of involved staff	as defined in approval


5.5.1. Example: Packaging containing Lithium Ion Battery Prototypes



5.6. Shipment of damaged or defective Lithium Ion Batteries

Damaged or Defective Batteries	
Transportation Mode	Truck/Rail/Sea (not comply to UN Test 38.3 anymore) Air Transport of damaged or defective batteries Damaged or defective cell or batteries, whether they have been identified as "non-critical" or as "critical", are forbidden for air transport (IATA DGR Special Provision A154).
Packing Instructions	SP376 P908 SP 376, P911
Criteria for "Damaged or Defective"	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>"Non-critical"7) (no possible danger during transport) Such Batteries do not conform to the tested type according to the applicable provisions of the UN Manual of Tests and Criteria, 38.3 This includes:</p> <ul style="list-style-type: none"> • Batteries identified as being defective for safety reasons; • Batteries that have leaked or vented; • Batteries that cannot be diagnosed prior to carriage; or • Batteries that have sustained physical or mechanical damage <p>In assessing a cell or battery as damaged or defective, an assessment or evaluation shall be performed based on safety criteria from the cell, battery or product manufacturer or by a technical expert with knowledge of the cell's or battery's safety features. An assessment or evaluation may include, but is not limited to, the criteria mentioned in SP 376.</p> </div> <div style="width: 48%;"> <p>"Critical"7) (possible danger during transport) Batteries liable to rapidly disassemble, dangerously react, produce a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours</p> </div> </div>
Max. Quantity	n/a
Weight Limit	n/a - A battery with a net mass of more than 30 kg shall be
Packaging	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <ul style="list-style-type: none"> • Each damaged or defective battery or equipment containing such batteries must be packed separately in leak proof inner packaging to prevent release of electrolyte • UN approved packaging required for all battery types (Packing Group II), e.g. fibreboard box • Must be secured against movement within the package • Sealed packagings shall be fitted with a venting device • Must be packed with non-combustible and non-conductive thermal insulation material, material class A1 or A2 (non-combustible, e.g. rockwool, glass wool, foamglass, Vermiculite) • Absorbing material to absorb leaking electrolyte from leaking batteries • Batteries shall be protected against short circuit <p>"Critical batteries" : as per approval</p> </div> <div style="width: 48%;"> <ul style="list-style-type: none"> • The packaging shall be capable of meeting certain performance requirements in case of rapid disassembly, dangerous reaction, production of a flame or a dangerous evolution of heat or a dangerous emission of toxic, corrosive or flammable gases or vapours of the cells or batteries, as specified in P911. • The additional packaging performance requirements shall be verified by a test as specified by the competent authority • A verification report shall be available on request as specified in P911. • Cells or batteries shall be protected against short circuit. • Alternative packing and/or carriage conditions may be authorized by the competent authority (In Germany: Federal Institute for Materials Research and Testing, BAM); detailed requirements as stated in the authorization. </div> </div>
Marking	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>UN 3480 DAMAGED / DEFECTIVE LITHIUM ION BATTERIES UN 3481 DAMAGED / DEFECTIVE LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT</p>  </div> <div style="width: 48%;"> <p>UN 3480 DAMAGED / DEFECTIVE LITHIUM ION BATTERIES UN 3481 DAMAGED / DEFECTIVE LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT</p>  </div> </div>
Transport Document	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>Shipper's & consignee's address UN 3480 LITHIUM ION BATTERIES, 9, (E) Number of packages and packaging type (e.g. 1 Aluminium box) Battery weight (e.g. xx kg) "Transport in accordance with special provision 376" If applicable, a copy of the competent authority approval shall accompany the carriage.</p> </div> <div style="width: 48%;"> <p>Shipper's & consignee's address UN 3480 LITHIUM ION BATTERIES, 9, (E) Number of packages and packaging type (e.g. 1 Aluminium box) Battery weight (e.g. xx kg) "Transport in accordance with special provision 376" If applicable, a copy of the competent authority approval shall accompany the carriage.</p> </div> </div>
Miscellaneous	<div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>Work instruction of involved staff</p> </div> <div style="width: 48%;"> <p>n/a</p> </div> </div>

5.7. Shipment of Lithium Ion Batteries for Disposal or Recycling

Batteries for Disposal & Recycling					
Transportation Mode	<p>Truck/Rail/Sea (not comply to UN Test 38.3 anymore)</p> <p>Waste batteries and batteries being shipped for recycling or disposal are prohibited from air transport unless approved by the appropriate national authority of the State of Origin and the State of the Operator (IATA DGR SP A183).</p>				
Packing Instructions	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">< 100 Wh (per battery)</td> <td style="width: 50%; text-align: center;">> 100 Wh (per battery)</td> </tr> <tr> <td colspan="2"> SP377 P909 </td> </tr> </table>	< 100 Wh (per battery)	> 100 Wh (per battery)	SP377 P909	
< 100 Wh (per battery)	> 100 Wh (per battery)				
SP377 P909					
Max. Quantity	none				
Weight Limit	30 kg per packaging none				
Packaging	<p>For batteries >100 Wh UN-approved packaging required (Packing Group II) For batteries ≤ 100 Wh and for batteries contained in equipment, UN-approved packaging is not required. Strong outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use. Batteries shall be packed to prevent short circuits and dangerous evolution of heat Protection against short-circuits and dangerous evolution of heat. This can be achieved by:</p> <ul style="list-style-type: none"> • individual protection of the battery terminal • inner packaging to prevent contact between batteries • batteries with recessed terminals designed to protect against short-circuits or • the use of non-conductive and non-combustible cushioning material to fill empty space between the batteries in the package <p>Batteries shall be secured within the outer packaging to prevent excessive movement during carriage (e.g. by using a non-conductive and noncombustible cushioning material or through the use of a tightly closed plastic bag)</p>				
Marking	<p>UN 3480 LITHIUM BATTERIES FOR DISPOSAL or LITHIUM BATTERIES FOR RECYCLING</p> <div style="text-align: center;">  </div>				
Transport Document	<p>Shipper's & consignee's address UN 3480, WASTE LITHIUM ION BATTERIES, 9, (E) Number of packages and packaging type (e.g. 1 Fibreboard box (4G)) Battery weight (e.g. xx kg)</p>				
Miscellaneous	<p>Work instruction of involved staff</p> <p>Damaged / defective batteries Batteries identified as being damaged or defective shall be carried in accordance with SP 376.</p> <p>Batteries for Disposal & Recycling Alternatively, lithium batteries for disposal and recycling can also be carried (like unused lithium batteries) under ADR SP 230 and SP 188, as appropriate, or – up to the intermediate processing facility – under ADR SP 636). More exemptions for lithium cells and batteries installed in equipment from private households are regulated in SP 670.</p>				

6. Useful Websites

The following websites provide various sources of useful information:

<http://www.unece.org>

<http://www.iata.org>

<http://www.icao.int>

<http://www.imo.org>

<http://www.gpo.gov/>

<http://phmsa.dot.gov/hazmat>

<https://www.lithium-batterie-service.de/en/>