

Dangerous Goods Transport Regulations for Lithium Cells and Batteries

January 2021

Some transport regulations are important for those involved in shipments of lithium cells and batteries to understand the regulations as explained here. Since the information here is a summary of the regulations, please use the latest Dangerous Goods Regulations listed in the Normative Reference section to confirm the details.

Packing instructions for lithium metal batteries (PI 968)

Section		Section II		Section IB	Section IA
Lithium Metal Content		Cell: ≤ 0.3 g Battery: ≤ 0.3 g	Cell: ≤ 1.0 g Battery: ≤ 2.0 g	Cell: ≤ 1.0 g Battery: ≤ 2.0 g	Cell: > 1.0 g Battery: > 2.0 g
Package Limits	Quantity	No limit	≤ 2 batteries or ≤ 8 cells	> 2 batteries or > 8 cells	No limit
	Net Weight	Cargo aircraft only 2.5 kg	Cargo aircraft only N/A	Cargo aircraft only 2.5 kg	Cargo aircraft only 35 kg
Quantity of Package per Consignment		No more than 1		No limit	
Classification		Exempted		Class 9	
Packaging		Strong rigid outer packaging 1.2 m drop test			UN specification packaging
Labels (see drawing on following page)		Cargo aircraft only label Lithium battery mark		Cargo aircraft only label Lithium battery mark Lithium battery hazardous label	Cargo aircraft only label Lithium battery hazardous label
Documents		Air waybill ^{*1}		Declaration for DG Air waybill ^{*2}	Declaration for DG Air waybill ^{*2}
Training		Establishment of documented procedures. Learning and reviewing these procedures, and maintaining training records.		Record of DG training and test	

*1 The words "Lithium metal batteries in compliance with Section II of PI 968" and "Cargo Aircraft Only" or "CAO" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

*2 The words "Dangerous Goods as per attached Shipper's Declaration" and "Cargo Aircraft Only" or "CAO" must appear in the air waybill's "Handling Information" column.

Packing instructions for lithium ion batteries (PI 965)

Section		Section II		Section IB	Section IA
Watt Hour		Cell: ≤ 2.7 Wh Battery: ≤ 2.7 Wh	Cell: ≤ 20 Wh Battery: ≤ 100 Wh	Cell: ≤ 20 Wh Battery: ≤ 100 Wh	Cell: > 20 Wh Battery: > 100 Wh
State of Charge (SOC)		Not exceeding 30% of rated capacity			
Package Limits	Quantity	No limit	≤ 2 batteries or ≤ 8 cells	> 2 batteries or > 8 cells	No limit
	Net Weight	Cargo aircraft only 2.5 kg	Cargo aircraft only N/A	Cargo aircraft only 10 kg	Cargo aircraft only 35 kg
Quantity of Package per Consignment		No more than 1		No limit	
Classification		Exempted		Class 9	
Packaging		Strong rigid outer packaging 1.2 m drop test			UN specification packaging
Labels (see drawing below)		Cargo aircraft only label Lithium battery mark		Cargo aircraft only label Lithium battery mark Lithium battery hazardous label	Cargo aircraft only label Lithium battery hazardous label
Documents		Air waybill ^{*3}		Declaration for DG Air waybill ^{*4}	Declaration for DG Air waybill ^{*4}
Training		Establishment of documented procedures. Learning and reviewing these procedures, and maintaining training records.		Record of DG training and test	

*3 The words "Lithium-ion batteries in compliance with Section II of PI 965" and "Cargo Aircraft Only" or "CAO" must be included on the air waybill, when an air waybill is used. The information should be shown in the "Nature and Quantity of Goods" box of the air waybill.

*4 The words "Dangerous Goods as per attached Shipper's Declaration" and "Cargo Aircraft Only" or "CAO" must appear in the air waybill's "Handling Information" column.

<Drawings of labels>

Cargo aircraft only label



Lithium battery mark



* Place for UN number(s)

** Place for telephone number for additional information

Lithium battery hazardous label



■ The major additional information for air transport of lithium cells and batteries

The test summary must be made available as specified in the UN Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

Reference

Except air transportation, the minimum requirements to transport lithium cells and batteries as exempted from class 9 dangerous goods (non-restricted goods) are as follows:

- 1) Cells and batteries shall be manufactured under a quality management program.
- 2) For a lithium metal cell, the lithium content is not more than 1 g. For a lithium metal battery, the aggregate lithium content is not more than 2 g.
For a lithium-ion cell, the Watt-hour rating is not more than 20 Wh. For a lithium-ion battery, the Watt-hour rating is not more than 100 Wh. The Watt-hour rating must be marked on the outside of the battery case except for batteries manufactured before January 1, 2009.
- 3) Each cell or battery must be of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.
- 4) Cells shall be packed in inner packaging that completely encloses the cell. The inner packaging shall be packed in strong rigid outer packaging.
- 5) A lithium battery mark must be marked on each package. A UN number and a telephone number must be placed on the mark for additional information.
- 6) Each package must be capable of withstanding a 1.2 m drop test.
- 7) Except when batteries are installed in or packed with equipment, packages shall not exceed 30 kg gross mass.

Maxell will provide certificates for 2) and 3) as the need arises. Documentation for 4) and 5) needs to be prepared by the customer. If our package is used for transport, Maxell will provide the certificate for 6) as the need arises. However, if the customer's package is used, the customer must confirm the package can withstand a 1.2 m drop test. Furthermore, even if our package is used for transport, the telephone number printed on the mark must be changed to that of the sender (customer).

Normative References

Major applicable regulations for the transportation of lithium cells and batteries are as follows: UN (United Nations) Recommendations (Air, Marine, Overland transportation)

- UN (United Nations): Recommendations on the Transport of Dangerous Goods: Model Regulations 21st revised edition
- UN (United Nations): Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria 7th revised edition

Air Transportation

- ICAO (International Civil Aviation Organization): Technical Instructions for the Safety Transport of Dangerous Goods by Air 2021-2022 edition
- IATA (International Air Transport Association): Dangerous Goods Regulations 62nd edition

Marine Transportation

- IMO (International Maritime Organization): International Maritime Dangerous Goods (IMDG) Code 2020 Edition