

## Update on Dangerous Goods Transportation Regulations for Lithium Cells and Batteries

January 2018

Some transportation regulations have recently been revised. It is important for those involved in shipments of lithium cells and batteries to understand the changes to the regulations as explained here. Since the information here is a summary of the changes, please use the updated Dangerous Goods Regulations listed in the Normative Reference section to confirm the details.

### Technical 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 <sup>*1</sup>		Declaration for DG Air waybill <sup>*2</sup>	Declaration for DG Air waybill <sup>*2</sup>
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.

### Technical 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
	Net Weight	Cargo aircraft only 2.5 kg	Cargo aircraft only N/A	Cargo aircraft only 10 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 <sup>*3</sup>		Declaration for DG Air waybill <sup>*4</sup>	Declaration for DG Air waybill <sup>*4</sup>
Training	Establishment of documented procedures. Learning and reviewing these procedures, and maintaining training records.		Record of DG training and test	

<sup>\*3</sup> 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.

<sup>\*4</sup> 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



Lithium battery hazardous label



\* Place for UN number(s)

\*\* Place for telephone number for additional information

#### ■ The major revisions for air transport of lithium cells and batteries

- 1) The specifications of the new Class 9 Lithium Battery hazard label have been added and come into effect as of January 1, 2017. The Class 9 Miscellaneous Dangerous Goods hazard label may continue to be used until December 31, 2018.
- 2) The specifications of the lithium battery mark have been revised and come into effect as of January 1, 2017.
- 3) An additional document to accompany consignments of Section IB of PI 965 and PI 968, and Section II of PI 965-PI 970 are no longer required as of January 1, 2017.

## 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 programme.
- 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 19th revised edition
- UN (United Nations): Recommendations on the Transport of Dangerous Goods: Manual of Tests and Criteria 6th revised edition

Air Transportation

- ICAO (International Civil Aviation Organization): Technical Instructions for the Safety Transport of Dangerous Goods by Air 2017-2018 edition
- IATA (International Air Transport Association): Dangerous Goods Regulations 59th edition

Marine Transportation

- IMO (International Maritime Organization): International Maritime Dangerous Goods (IMDG) Code 2016 Edition

## ■ The major revisions for UN Model Regulations 19th Revised Edition

- 1) The specifications of the new Class 9 Lithium Battery hazard label have been added and come into effect as of January 1, 2017. The Class 9 Miscellaneous Dangerous Goods hazard label may continue to be used until December 31, 2018.
- 2) The specifications of the lithium battery mark have been revised and come into effect as of January 1, 2017. The provisions concerning marking in SP 188 of 18th revised edition may continue to be applied until December 31, 2018.
- 3) An additional document to accompany consignments in SP 188 is no longer required as of January 1, 2017.

The IMDG Code 2016 edition will contain the descriptions of these UN recommendations. The voluntary compliance date is January 1, 2017. Compliance becomes mandatory on January 1, 2018. Although the regulations for land transportation in each country are based on UN recommendations, some districts, or countries may establish their own special requirements. Therefore the shipper shall confirm with the forwarder in advance.



**Visit our website at: [biz.maxell.com](http://biz.maxell.com)**

Maxell is accredited with international quality management standard ISO 9001 and international environmental management standard ISO 14001 certifications.

Catalog contents accurate as of January 2018.

Data and dimensions are just reference values.

Contents on this catalog are subject to change without notice.

Committed to the highest quality assurance management standards as well as responsibility to the environment.

---

**Maxell, Ltd. Energy Division**

