Reference: IMDG code 2014 and the ADG 7.3

UN3480 Lithium Ion Batteries
UN 3481 Lithium Ion Batteries packed with equipment
UN 3481 Lithium Ion Batteries contained in equipment
UN 3090 Lithium Metal Batteries
UN3091 Lithium Metal Batteries packed with equipment
UN3091 Lithium Metal Batteries contained in equipment

Refer to IMDG or ADG for definition of Lithium Ion & Metal Batteries

Please remember: Commercial shippers of Lithium batteries are required to be trained under the AMSA Marine Orders 41.

Disclaimer: The intention of this document is not to replace the IMDG, AMSA or ADG regulations, merely to aid with the interpretation of the 2015 Lithium battery requirements. No user should act on such information without reference to applicable Regulations. Every effort has been made to present accurate, current information but AIRSAFE shall not be held responsible for loss, damage or legal action due to errors or omissions, misprints or misinterpretation of the contents.
# Applies to new, undamaged batteries

<table>
<thead>
<tr>
<th>UN3480 - Lithium Ion Batteries</th>
<th>FULLY DECLARED DG (Packing Instruction P903)</th>
<th>UN3090 - Lithium Metal Batteries</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicable to:</strong></td>
<td><strong>Not subject to all aspects of the DGR</strong></td>
<td><strong>(Special provision 188)</strong></td>
</tr>
<tr>
<td><img src="image" alt="Cell" /> (Single unit)</td>
<td><img src="image" alt="Battery" /> (Multiple cells connected)</td>
<td></td>
</tr>
<tr>
<td>Ion Batteries <strong>over 100 Watts</strong> per hour (W/h) and Metal Batteries <strong>over 2 grams</strong> of Li metal</td>
<td>Ion Batteries no more than 100 W/h and Metal Batteries under 2 grams of Li metal</td>
<td>Ion Cells no more than 20 W/h and Metal Cells under 1 gram of Li metal</td>
</tr>
<tr>
<td>Ion Cells <strong>over 20 W/h</strong> and Metal Cells <strong>over 1 gram</strong> of Li metal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Packaging and marking requirements**
- UN Specification package to a PG II Standard required
- Protection against short circuit or arching. Inner packages must completely enclose Cell/Battery

**Required on packaging:**
- UN Number and Proper shipping name
- UN3480 Lithium ion batteries; or UN3090 Lithium metal batteries

**Quantity allowed**
- Within the UN package tested limits.
- Limited and Excepted Quantities are not applicable
- Maximum of 30 kg Gross mass per package

**Label required**
- Class 9
- No label is required but the above markings can be achieved by using the air transport lithium battery handling label

**Note:** A new multimodal lithium battery label will be introduced in the next edition of the IMDG code.

**Shippers Declaration / Multi-Modal Form required**
- YES, see example on last page
- NO

**Bill of Lading/Con-note or other transport document requirements**
- No additional requirements
- Document showing:
  - Lithium ion or metal battery (as applicable)
  - Handle with care - flammability hazard if package is damaged
  - Special procedure in the event of repacking or damage
  - Telephone number

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<table>
<thead>
<tr>
<th>UN3481 - Lithium Ion Batteries packed with equipment</th>
<th>FULLY DECLARED DG (Packing Instruction P903)</th>
<th>Not subject to all aspects of the DGR (Special provision 188)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applicable to:</td>
<td>Ion Batteries over 100 Watts per hour (W/h) and Metal batteries over 2 grams of Li metal</td>
<td>Ion Batteries no more than 100 W/h and Metal Batteries no more than 2 grams of Li metal</td>
</tr>
<tr>
<td>Note: this information relates to the batteries required to power the equipment.</td>
<td>Ion Cells over 20 W/h and Metal Cells over 1 gram of Li metal</td>
<td>Ion Cells no more than 20 W/h and Metal Cells no more than 1 gram of Li metal</td>
</tr>
<tr>
<td>Packaging and marking requirements</td>
<td>Strong Outer packaging complying with Chapter 4.1.1 and 4.1.3 (UN specification packaging required around batteries or equipment)</td>
<td>Strong outer packaging.</td>
</tr>
<tr>
<td></td>
<td>Inner packages must completely enclose Cell/Battery. Protection against short circuit or arching.</td>
<td>Inner packages must completely enclose Cell/Battery. Protection against short circuit or arching.</td>
</tr>
<tr>
<td></td>
<td><strong>Required on packaging:</strong> UN Number and Proper shipping name</td>
<td><strong>Required on packaging:</strong></td>
</tr>
<tr>
<td></td>
<td>UN3481 Lithium ion batteries packed with equipment; or UN3091 Lithium metal batteries packed with equipment</td>
<td>- Words: “Lithium ion battery” or “Lithium metal battery”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Handle with care - flammability hazard if package is damaged</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Special procedure in the event of repacking or damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Telephone number</td>
</tr>
<tr>
<td>Quantity allowed</td>
<td>No specified limit</td>
<td>No specified limit</td>
</tr>
<tr>
<td>Label required</td>
<td>Class 9</td>
<td>No label is required but the above markings can be achieved by using the air transport lithium battery handling label</td>
</tr>
<tr>
<td>Shippers Declaration / Multi-Modal Form required</td>
<td>YES, see example on last page</td>
<td>NO</td>
</tr>
<tr>
<td>Bill of Lading/Con-note or other transport document requirements</td>
<td>No additional requirements</td>
<td>Document showing:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Lithium ion or metal battery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Handle with care - flammability hazard if package is damaged</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Special provision in the event of repacking or damage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Telephone number</td>
</tr>
</tbody>
</table>

Note: A new multimodal lithium battery label will be introduced in the next edition of the IMDG code.
### Applies to equipment containing new, undamaged batteries

<table>
<thead>
<tr>
<th>UN3481 - Lithium Ion Batteries contained in equipment</th>
<th>FULLY DECLARED DG (Packing Instruction P903)</th>
<th>Not subject to all aspects of the DGR (Special provision 188)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applicable to:</strong></td>
<td>Ion Batteries over 100 Watts per hour (W/h) and Metal batteries over 2 grams of Li metal</td>
<td>Ion Batteries no more than 100 W/h and Metal Batteries no more than 2 grams of Li metal</td>
</tr>
<tr>
<td>Note: this information relates to the batteries required to power the equipment.</td>
<td>Ion Cells over 20 W/h and Metal Cells over 1 gram of Li metal</td>
<td>Ion Cells no more than 20 W/h and Metal Batteries no more than 1 gram of Li metal</td>
</tr>
</tbody>
</table>

### Packaging and marking requirements

- **Strong Outer packaging complying with Chapter 4.1.1 except 4.1.1.3 and 4.1.3** (UN specification packaging not required)
- Protection against short circuit, arching or accidental activation.

**Required on packaging:**
- UN number and Proper shipping name: UN3481 Lithium ion batteries contained in equipment; or UN3091 Lithium metal batteries contained in equipment
- **Strong Outer packaging or equipment that offers equivalent protection to packaging.**
- Protection against short circuit, arching or activation

**Required on packaging:**
- Words: “Lithium ion battery” or “Lithium metal battery”
- Handle with care - flammability hazard if package is damaged
- Special procedure in the event of repacking or damage
- Telephone number

**Note 1:** Except when there are no more than 2 batteries or 4 cells contained in equipment, button cells or circuits boards - then no marking is required

### Quantity allowed

- No specified limit
- No specified limit

### Label required

- Class 9
- No label is required but the above markings can be achieved by using the air transport lithium battery handling label

**Note:** A new multimodal lithium battery label will be introduced in the next edition of the IMDG code.

**Exemption:** See Note 1 above - no labelling/marking is required

### Shippers Declaration / Multi-Modal Form required

- YES, see example on last page
- NO

### Bill of Lading/Con-note or other transport document requirements

- No additional requirements
- Document showing:
  - Lithium ion or metal battery
  - Handle with care - flammability hazard if package is damaged
  - Special procedure in the event of repacking or damage
  - Telephone number

**Exemption:** See Note 1 above - no document/marking is required
## Applies to Damaged or Defective Batteries (SP376)

| UN3480 - Lithium Ion Batteries | FULLY DECLARED DG  
| UN3481 - Lithium Ion Batteries packed with Equipment | (Packing Instruction P908)  
| UN3481 - Lithium Ion Batteries contained in Equipment |  
| UN3090 - Lithium Metal Batteries |  
| UN3091 - Lithium Metal Batteries packed with Equipment |  
| UN3091 - Lithium Metal Batteries contained in Equipment |  

### Applicable to:

All sizes of cells or batteries (including those contained in equipment) that:
- are defective for safety reasons;
- have leaked or vented;
- cannot be diagnosed prior to transport; or
- have sustained physical or mechanical damage

### Packaging and marking requirements

UN Specification package to a PG II Standard as specified in Packing Instruction 908

In addition:
- Each battery, cell or piece of equipment must be individually packed in inner packages and placed into an approved outer. The inner or outer package must be leak-proof to prevent potential leakage;
- Each inner package must be surrounded by sufficient non-combustible, non-conductive thermal insulation to protect against a dangerous evolution of heat; and
- Leaking cells or batteries must have sufficient inert absorbent material added to inner or outer packagings to absorb the release of electrolyte.

**Required on packaging:**
- UN Number + Proper shipping name  (see top left corner of page)
- “DAMAGED/DEFECTIVE LITHIUM ION BATTERIES” or “DAMAGED/DEFECTIVE LITHIUM METAL BATTERIES” as applicable.

### Quantity allowed

Within the UN package tested limits.

**Note:** A cell or battery with a net mass of more than 30 kg is limited to one per outer package

### Label required

Class 9

### Shippers Declaration / Multi-Modal Form required

YES, see example on last page

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Note: SP 188 does not apply to damaged or defective batteries as they do not comply with Section 2.9.4. in that they are not proven to be in a condition meeting the requirements of UN testing in accordance with Part III of Subsection 38.3 of the Manual of tests and criteria.
### Applies to Recycled Batteries or Batteries for Disposal (SP377)

<table>
<thead>
<tr>
<th>UN Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN3480</td>
<td>Lithium Ion Batteries</td>
</tr>
<tr>
<td>UN3481</td>
<td>Lithium Ion Batteries packed with Equipment</td>
</tr>
<tr>
<td>UN3481</td>
<td>Lithium Ion Batteries contained in Equipment</td>
</tr>
<tr>
<td>UN3090</td>
<td>Lithium Metal Batteries</td>
</tr>
<tr>
<td>UN3091</td>
<td>Lithium Metal Batteries packed with Equipment</td>
</tr>
<tr>
<td>UN3091</td>
<td>Lithium Metal Batteries contained in Equipment</td>
</tr>
</tbody>
</table>

**FULLY DECLARED DG**
(Packing Instruction P909)

- Cells or batteries (including those contained in equipment) being sent for disposal or recycling but that are not defective
- Defective or damaged batteries must be sent under Packing Instruction 908

**Applicable to:**
Cells or batteries (including those contained in equipment) being sent for disposal or recycling but that are not defective
Defective or damaged batteries must be sent under Packing Instruction 908

**Packaging and marking requirements**

- Each battery, cell or piece of equipment must be packed to prevent short circuit and dangerous evolution of heat (See Packing Instruction 909 Additional requirements).
- UN Specification package to PG II Standard as specified in Packing Instruction 909
- Except for:
  - Li ion batteries 100 W/H or less, Li ion cells 20 W/H or less, Li metal batteries 2 gram or less, Li metal cells 1 gram or less which do not require UN specification packaging if the gross mass is 30 kg or less;
  - Batteries with a gross mass of 12 kg or more with a strong impact resistant outer casing which do not require UN specification packaging when packed in a strong outer package; and
  - Batteries or cells contained in equipment in strong outer packaging of adequate strength, or large equipment unpackaged or secured on pallets if equivalent protection is provided.

**Required on packaging:**
- UN Number + Proper shipping name (see top left corner of page)
- “LITHIUM BATTERIES FOR DISPOSAL” or “LITHIUM BATTERIES FOR RECYCLING” as applicable.

**Quantity allowed**

- Within the UN package tested limits or as excepted in packaging requirements above.
- Limited and Excepted Quantities not applicable

**Label required**

- Class 9

**Shippers Declaration / Multi-Modal Form required**

- YES, see example on last page

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Note: SP 188 does not apply to recycled batteries or batteries being shipped for disposal as they do not comply with Section 2.9.4. in that they are not proven to be in a condition meeting the requirements of UN testing in accordance with Part III of Subsection 38.3 of the Manual of tests and criteria.
### Information relating to Special Provision 188

Maximum gross mass per package for Li batteries without equipment = 30 kg Gross

Example of the DGD document required for Li Batteries

**E.g. Lithium ion/metal Battery (delete non-applicable)**

*Handle with care. Caution - flammable.*

Contact: _____________ Tel: ________________

*if package is damaged or requires repacking.*

(***Note 1:** Except when there are no more than 2 batteries or 4 cells contained in equipment, button cells or circuits boards - then no marking/documentation is required)

### Additional Information

To calculate watts per hour for Lithium ion

\[ \text{Ah (Amperes per hour)} \times \text{V (Volt)} = \text{Wh} \]