



## Shipping Dangerous Goods – Lithium batteries by Ground

*DISCLAIMER: These materials are provided as guidance only to assist properly trained shippers. All shippers are responsible to ensure they are properly trained to ship dangerous goods. These materials do not alter, satisfy, or influence any regulatory requirements. The contents of these materials are subject to change and Purolator accepts no liability for loss or damage resulting from changes, errors, omissions, or misinterpretations of these materials.*

### Lithium Ion Batteries – UN3480, UN3481

### Lithium Metal Batteries – UN3090, UN3091

The following information is only for the shipment of lithium batteries by **ground transport**. If you are shipping lithium batteries by air transport, please refer to the Purolator document “**Lithium Batteries by Air**”.

Lithium batteries are used to power a wide range of electronic devices and equipment including items such as laptop computers, cell phones/smartphones, cameras, medical equipment and power tools. Lithium batteries are also dangerous goods and are regulated in Canada by the Transport of Dangerous Goods Act and Regulations. If you are shipping any lithium batteries, even those **packed with or contained in** equipment, you must meet the requirements outlined in the regulations and declare these shipments to Purolator or any other carrier.

**Lithium ion** batteries are known as secondary batteries and are rechargeable. These are often used in laptop computers, cell phones/smartphones and power tools. **Lithium metal** batteries are known as primary batteries and are typically not rechargeable. These are often used in items like watches, calculators and remote car locks. There are different requirements for lithium metal versus lithium ion batteries.

Two additional terms that have differing regulatory requirements are:

- **Packed with equipment** means that the battery is not physically attached or connected to the device. An example would be a spare battery in a package containing a power tool.
- **Contained in equipment** means the battery is physically attached or connected to the device. A common example is the battery used to power a laptop computer which is integrated into the laptop.

One of the key safety requirements of all lithium batteries is **short circuit protection**. To prevent short circuits, which can cause the battery to overheat and catch on fire, each battery must be separated from any metal object in the package and the battery terminals insulated with a non-conductive material like electrical tape. Batteries must also be packaged to prevent them from shifting during transport.



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### Regulatory Exemption for Lithium Batteries

As the shipper, you can determine if your batteries are exempt from the regulations by referring to **Special Provision 34** (TDGR Schedule 2). The guidelines for exemption are as follows:

- a) for a lithium metal or lithium alloy **cell**, the lithium content is not more than 1 g, and, for a lithium-ion **cell**, the watt-hour rating is not more than 20 Wh;
- b) for a lithium metal or lithium alloy **battery**, the aggregate lithium content is not more than 2 g, and for a lithium-ion **battery**, the watt-hour rating is not more than 100 Wh;
- c) the cells and batteries are afforded protection against short circuit, including protection against contact with conductive materials within the same packaging that could lead to a short circuit;
- d) the cells and batteries are packed in a means of containment that completely encloses the cells and batteries;
- e) the gross mass of the cells and batteries does not exceed 30 kg, except when the cells and batteries are installed in or packed with equipment.

Where a shipper determines that the requirements of Special Provision 34 can be met, the shipment may be exempt from the regulations if it meets all other requirements. The general requirements for shipments that meet this exemption are shown in the tables after this section.

Despite any exemption, Purolator requires that shippers apply a **Lithium Battery Handling label** to each package to prevent the shipment inadvertently being placed on an aircraft.

If the criteria in **Special Provision 34 cannot be met**, the shipment may be prepared using the 500kg Exemption (TDGR Section 1.16) or as Fully Regulated dangerous goods. Shippers may also choose to prepare the shipment according to the ICAO Technical Instructions (air transport regulations) and offer it for transport by ground. This is acceptable if all of the regulatory requirements for air transport are met, including marking, labeling, documentation and packaging. Shippers can refer to the Purolator document "Lithium Batteries by Air".



## Shipping Dangerous Goods – Lithium batteries by Ground

### Lithium Ion Batteries – If exempt under Special Provision 34

	UN3480	UN3481	
	Lithium Ion Batteries	Lithium Ion Batteries packed with equipment	Lithium Ion Batteries contained in equipment
Cell watt-hour rating	20 Wh or less	20 Wh or less	20 Wh or less
Battery watt-hour rating	100 Wh or less	100 Wh or less	100 Wh or less
Max gross mass per package	30 kg	n/a	n/a
UN specification packaging	No	No	No
Shippers declaration	No	No	No
Hazard label	No	No	No
Marking requirements	<ul style="list-style-type: none"> <li>• “Lithium Ion”</li> <li>• Flammability hazard</li> <li>• Handle with care</li> <li>• Indication that special procedures be followed in case of damage, including inspection and repacking if necessary</li> <li>• Phone number for more information</li> </ul>	<ul style="list-style-type: none"> <li>• “Lithium Ion”</li> <li>• Flammability hazard</li> <li>• Handle with care</li> <li>• Indication that special procedures be followed in case of damage, including inspection and repacking if necessary</li> <li>• Phone number for more information</li> </ul>	<ul style="list-style-type: none"> <li>• “Lithium Ion”</li> <li>• Flammability hazard</li> <li>• Handle with care</li> <li>• Indication that special procedures be followed in case of damage, including inspection and repacking if necessary</li> <li>• Phone number for more information</li> </ul>
Lithium battery safety document	Yes	Yes	Yes
Lithium battery handling label	Yes <sup>1</sup> 	Yes <sup>1</sup> 	Yes <sup>1</sup> 
Other requirements	<ul style="list-style-type: none"> <li>• Handling label requires contact phone number</li> <li>• Bill of lading shows “Exempt TDGR SP 34” <sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Handling label requires contact phone number</li> <li>• Bill of lading shows “Exempt TDGR SP 34” <sup>1</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Handling label requires contact phone number</li> <li>• Bill of lading shows “Exempt TDGR SP 34” <sup>1</sup></li> </ul>
DG surcharge	No	No	No
Reference	TDGR Special Prov 34	TDGR Special Prov 34	TDGR Special Prov 34

<sup>1</sup> Purolator requirement/limitation



## Shipping Dangerous Goods – Lithium batteries by Ground

### Lithium Metal Batteries – If exempt under Special Provision 34

	UN3090	UN3091	
	Lithium Metal Batteries	Lithium Metal Batteries packed with equipment	Lithium Metal Batteries contained in equipment
Cell lithium content	1 g or less	1 g or less	1 g or less
Battery lithium content	2 g or less	2 g or less	2 g or less
Max gross mass per package	30 kg	n/a	n/a
UN specification packaging	No	No	No
Shippers declaration	No	No	No
Hazard label	No	No	No
Marking requirements	<ul style="list-style-type: none"> <li>“Lithium Metal”</li> <li>Flammability hazard</li> <li>Handle with care</li> <li>Indication that special procedures be followed in case of damage, including inspection and repacking if necessary</li> <li>Phone number for more information</li> </ul>	<ul style="list-style-type: none"> <li>“Lithium Metal”</li> <li>Flammability hazard</li> <li>Handle with care</li> <li>Indication that special procedures be followed in case of damage, including inspection and repacking if necessary</li> <li>Phone number for more information</li> </ul>	<ul style="list-style-type: none"> <li>“Lithium Metal”</li> <li>Flammability hazard</li> <li>Handle with care</li> <li>Indication that special procedures be followed in case of damage, including inspection and repacking if necessary</li> <li>Phone number for more information</li> </ul>
Lithium battery safety document	Yes	Yes	Yes
Lithium battery handling label	Yes <sup>2</sup> 	Yes <sup>2</sup> 	Yes <sup>2</sup> 
Other requirements	<ul style="list-style-type: none"> <li>Handling label requires contact phone number</li> <li>Bill of lading shows “Exempt TDGR SP 34” <sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Handling label requires contact phone number</li> <li>Bill of lading shows “Exempt TDGR SP 34” <sup>2</sup></li> </ul>	<ul style="list-style-type: none"> <li>Handling label requires contact phone number</li> <li>Bill of lading shows “Exempt TDGR SP 34” <sup>2</sup></li> </ul>
DG surcharge	No	No	No
Reference	TDGR Special Prov 34	TDGR Special Prov 34	TDGR Special Prov 34

<sup>2</sup> Purolator requirement/limitation