



Shipping Dangerous Goods – Lithium batteries by Air

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

Lithium Ion Batteries (packed with or contained in equipment)¹ – UN3481

Lithium Metal Batteries – UN3090

Lithium Metal Batteries (packed with or contained in equipment)¹ – UN3091

The following information is related only to the shipment of lithium batteries by **air transport**. For ground transport, please refer to the Purolator document “**Lithium Batteries by Ground**”.

Regulatory updates:

Effective April 1, 2016:

- Lithium ion batteries (UN3480) are forbidden on passenger aircraft (PAX) and must be prepared for and transported by Cargo Aircraft Only (CAO).
- Lithium ion batteries (UN3480) must not be charged at more than 30% of their rated capacity.
- All air shipments of UN3480 now require a Cargo Aircraft Only (CAO) label.
- Multi-piece air shipments of UN3480 are no longer allowed – must be single piece.

Effective December 31, 2014:

- Lithium metal batteries (UN3090) are forbidden on passenger aircraft (PAX) and must be prepared for and transported by Cargo Aircraft Only (CAO).

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.








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.

¹ **Packed with equipment** means that the battery is not physically attached or connected to the device. An example is a spare battery in a package containing a power tool. **Contained in equipment** means the battery is physically attached or connected to the device. An example is a battery attached to a laptop computer.



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UN3480 – Lithium Ion Batteries

	UN3480		
	Lithium Ion Batteries		
General characteristics	Lower power batteries Small quantities	Lower power batteries Higher quantities	Higher power batteries
Cell watt-hour rating	20 Wh or less	20 Wh or less	More than 20 Wh
Battery watt-hour rating	100 Wh or less	100 Wh or less	More than 100 Wh
Max quantity per package	FORBIDDEN – PAX CAO – Lesser of: 2.5 kg net or 8 cells or 2 batteries	FORBIDDEN – PAX 10 kg net – CAO	FORBIDDEN – PAX 35 kg net – CAO
UN specification packaging	No	No	Yes (PG II)
Shippers declaration	No	Yes	Yes
Package Marking	No	UN number Proper shipping name	UN number Proper shipping name
Hazard label	No	Yes (Class 9) 	Yes (Class 9) 
Lithium battery handling label			No
Other handling labels			
Other requirements	<ul style="list-style-type: none"> Lithium battery handling label requires contact phone number 	<ul style="list-style-type: none"> Lithium battery handling label requires contact phone number Batteries charged at 30% or less of rated capacity Net weight on declaration (kg) Shippers declaration must show “965 IB” in Packing Instruction column 	<ul style="list-style-type: none"> Batteries charged at 30% or less of rated capacity Net weight on declaration (kg)
DG surcharge	No	Yes	Yes
Reference	ICAO TI Packing Inst 965 Section II	ICAO TI Packing Inst 965 Section IB	ICAO TI Packing Inst 965 Section IA



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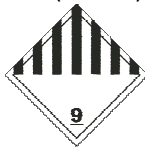





UN3481 – Lithium Ion Batteries (packed with or contained in equipment)

	UN3481		UN3481	
	Lithium Ion Batteries packed with equipment		Lithium Ion Batteries contained in equipment	
General characteristics	Lower power batteries	Higher power batteries	Lower power batteries	Higher power batteries
Cell watt-hour rating	20 Wh or less	More than 20 Wh	20 Wh or less	More than 20 Wh
Battery watt-hour rating	100 Wh or less	More than 100 Wh	100 Wh or less	More than 100 Wh
Max quantity per package	5 kg net – PAX 5 kg net - CAO	5 kg net – PAX 35 kg net - CAO	5 kg net – PAX 5 kg net - CAO	5 kg net – PAX 35 kg net - CAO
UN specification packaging	No	Yes (PG II)	No	No
Shippers declaration	No	Yes	No	Yes
Package marking	No	UN number Proper shipping name	No	UN number Proper shipping name
Hazard label	No	Yes (Class 9) 	No	Yes (Class 9) 
Lithium battery handling label	Yes 	No	Yes 	No
Other Handling labels	If CAO 	If CAO 	If CAO 	If CAO 
Other requirements	Handling label requires contact phone number	Net weight on declaration (kg)	Handling label requires contact phone number	Net weight on declaration (kg)
DG surcharge	No	Yes	No	Yes
Reference	ICAO TI Pkg Inst 966 Section II	ICAO TI Pkg Inst 966 Section I	ICAO TI Pkg Inst 967 Section II	ICAO TI Pkg Inst 967 Section I



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UN3090 – Lithium Metal Batteries

	UN3090		
	Lithium Metal Batteries		
General characteristics	Lower power batteries Small quantities	Lower power batteries Higher quantities	Higher power batteries
Cell lithium content	1 g or less	1 g or less	More than 1 g
Battery lithium content	2 g or less	2 g or less	More than 2 g
Max quantity per package	PAX – FORBIDDEN CAO - Lesser of: 2.5 kg net or 8 cells or 2 batteries	FORBIDDEN – PAX 2.5 kg net – CAO	FORBIDDEN – PAX 35 kg net - CAO
UN specification packaging	No	No	Yes (PG II)
Shippers declaration	No	Yes	Yes
Package marking	No	UN number Proper shipping name	UN number Proper Shipping name
Hazard label	No	Yes (Class 9) 	Yes (Class 9) 
Lithium battery handling label	Yes 	Yes 	No
Other handling labels	Yes 	Yes 	Yes 
Other requirements	<ul style="list-style-type: none"> Handling label requires contact phone number 	<ul style="list-style-type: none"> Handling label requires contact phone number Shippers declaration must show “968 IB” in Packing Instruction column 	<ul style="list-style-type: none"> Net weight on declaration (kg)
DG surcharge	No	Yes	Yes
Reference	ICAO TI Packing Inst 968 Section II	ICAO TI Packing Inst 968 Section IB	ICAO TI Packing Inst 968 Section IA



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UN3091 – Lithium Metal Batteries (packed with or contained in equipment)

	UN3091		UN3091	
	Lithium Metal Batteries packed with equipment		Lithium Metal Batteries contained in equipment	
General characteristics	Lower power batteries	Higher power batteries	Lower power batteries	Higher power batteries
Cell lithium content	1 g or less	More than 1 g	1 g or less	More than 1 g
Battery lithium content	2 g or less	More than 2 g	2 g or less	More than 2 g
Max quantity per package	5 kg net – PAX 5 kg net - CAO	5 kg net – PAX 35 kg net – CAO	5 kg net – PAX 5 kg net – CAO	5 kg net – PAX 35 kg net – CAO
UN specification packaging	No	Yes (PG II)	No	No
Shippers declaration	No	Yes	No	Yes
Package marking	No	UN number Proper shipping name	No	UN number Proper shipping name
Hazard label	No	Yes (Class 9) 	No	Yes (Class 9) 
Lithium battery handling label	Yes 	No	Yes 	No
Other Handling labels	If CAO 	If CAO 	If CAO 	If CAO 
Other requirements	Lithium battery handling label requires contact phone number	Net weight on declaration (kg)	Lithium battery handling label requires contact phone number	Net weight on declaration (kg)
DG surcharge	No	Yes	No	Yes
Reference	ICAO TI Pkg Inst 969 Section II	ICAO TI Pkg Inst 969 Section I	ICAO TI Pkg Inst 970 Section II	ICAO TI Pkg Inst 970 Section I