

The products referenced herein are "articles" under 29 CFR 1910.1200(c) and are not subject to OSHA's requirements for material safety data sheets under its Hazard Communication Standard, 29 CFR 1910.1200. This Product Data Sheet is provided as a service to our customers.

Section I - Product and Company Information

Identity: Lithium-ion and Lithium-ion Polymer Batteries (Li-ion Batteries)
Models: All
Effective Date: February 24, 2017

Manufacturer
 Motorola Solutions, Inc.
 500 W. Monroe Street
 Chicago, Illinois 60661 USA
Phone: 1-847-576-5000

Section II – Composition Information

Motorola Solutions battery packs contain Li-ion cells from various manufacturers. Li-ion cells are generally composed of the following major ingredients:

Cell component	Common chemical name / General name	CAS number	Concentration range
Positive electrode	Lithiated cobalt oxides	12190-79-3	20-40%
	Lithiated manganese oxides	12057-17-9	
	Proprietary lithiated nickel-manganese-cobalt oxides	N/A	
Negative electrode	Graphite	7782-42-5	10-20%
Binders	Polyvinylidene difluoride and/or polytetrafluoroethylene	24937-79-9	0-3%
		9002-84-0	
Electrolyte salt	Lithium salt (one or more of lithium hexafluorophosphate and lithium tetrafluoroborate)	21324-40-3	1-5%
		14283-07-9	
Electrolyte solvent	Organic solvents including one or more of the following: ethylene carbonate, diethylcarbonate, dimethylcarbonate, ethylmethylcarbonate, and propylene carbonate.	96-49-1	5-20%
		105-58-8	
		616-38-6	
		623-53-0	
		108-32-7	
Other components	Copper	7440-50-8	5-10%
	Aluminum	7429-90-5	5-40%
	Nickel	7440-02-0	0-5%
	Polyethylene and/or polypropylene	9002-88-4 9003-07-0	1-3%

As manufactured, Li-ion cells do not contain lithium metal.

Section III – Hazards Identification

Potentially hazardous materials are fully contained in a hermetically sealed case designed to withstand normal handling and use. Exposure could occur only if the battery or cells have been opened, disassembled, crushed, burned, exposed to high temperatures (> 60° C or 140° F), or subjected to other types of abuse. Exposure to cell contents may be harmful under some circumstances.

Follow instructions and precautions for safe use of the battery pack.

Section IV – First Aid Measures

Cell manufacturers recommend that in case of exposure to cell contents, wash affected area for at least 15 minutes with generous amounts of water and seek medical attention.

Section V – Firefighting Measures

Fires involving these types of battery packs should be flooded with water or use CO₂, foam, or dry chemical extinguishing media. Fires involving large quantities of batteries may produce toxic, corrosive, or irritating fumes including HF.

Section VI – Accidental Release Measures

If batteries are spilled and damaged, they should be disposed of according to the disposal section.

Section VII – Handling and Storage

The battery pack and enclosed cells should not be opened, disassembled, crushed, burned, or exposed to high temperatures (> 60° C or 140° F).

Section VIII – Exposure Controls / Personal Protection

No personal protection is required during normal handling and use. Exposure to the ingredients contained within the cells within the battery pack could be harmful under some circumstances. In case of exposure to cell contents, wash affected area for at least 15 minutes with generous amounts of water and seek medical attention.

Section IX – Physical and Chemical Properties

These batteries are solid articles. Properties such as odor, pH, vapor pressure, solubility, etc. are not applicable.

Section X – Stability and Reactivity

Reactivity	None during normal handling and use
Incompatibility	None during normal handling and use
Hazardous Decomposition Products	None during normal handling and use
Conditions to Avoid	The battery pack and enclosed cells should not be opened, disassembled, crushed, burned, or exposed to high temperatures.

Section XI – Toxicological Information

There are no known toxicological properties of the batteries during normal handling and use.

Section XII – Ecological Information

There are no known ecological risks of the batteries during normal handling and use.

Section XIII – Disposal

All Motorola Solutions Li-ion batteries contain recyclable materials. Recycling options available in your local area should be considered when disposing of this product. Do not dispose of in fire.

Section XIV – Transport Information

UN 3480 – Lithium ion batteries

UN 3481 – Lithium ion batteries contained in equipment

UN 3481 – Lithium ion batteries packed with equipment

The Watt-hour rating for all Motorola Solutions, Inc. lithium ion products is less than 20 Watt-hours for cells and less than 100 Watt-hours for batteries.

When packaged and shipped by Motorola Solutions, Inc., these batteries are tested, packaged and labeled in accordance with all applicable requirements for transport by mode of shipment (air, sea or ground), as follows:

1) International Air Transport Association (IATA), International Civil Aviation Organization (ICAO) Technical Instructions Dangerous Goods Regulations 58th Edition 2017:

a) PI 965 Section IB or Section II (UN 3480, batteries), including 30% state of charge maximum limit addendum effective April 1st 2016

b) PI 966 Section II (UN 3481, batteries packed with equipment), and 967 Section II (UN 3481, batteries contained in equipment);

2) International Maritime Dangerous Goods (IMDG 2015, Amendment 37)

3) U.S. Department of Transportation (DOT) 49 CFR 173.185 and Special Provision 188;

4) European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR 2017) Special Provisions 188 and 230

All Motorola Solutions Li-ion batteries are tested in accordance with the *UN Manual of Tests and Criteria*, Part III, Subsection 38.3.

For transportation emergencies involving Motorola Solutions battery products, call CHEMTREC at 1-800-424-9300.

Section XV – Regulatory Information

The products referenced herein are "articles" under 29 CFR 1910.1200(c) and are not subject to OSHA's requirements for material safety data sheets under its Hazard Communication Standard, 29 CFR 1910.1200.

Section XVI – Other Information

Notice: The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Motorola Solutions makes no warranty expressed or implied with respect to this information and recommendations and disclaims all liability from reliance on it. "Equivalent lithium content" information is available from the manufacturer.

Lithium Battery Safety Document – Section II or Section I.B Shipments

AWB or Tracking Number: _____

This document may be used to comply with the additional documentation requirements of the IATA DGR.

WARNING: LITHIUM BATTERIES THAT HAVE BEEN RECALLED BY THE MANUFACTURER FOR SAFETY REASONS **MUST NOT** BE SHIPPED BY AIR.

Terminology:

- Cell – *electrochemical unit, consisting of an anode and a cathode, capable of generating electrical current*
- Battery – *assembly of cells*
- Lithium ion cells/batteries – *generally rechargeable – includes lithium polymer cells/batteries*
- Lithium metal cells/batteries – *non-rechargeable*

This shipment contains lithium cells or batteries in the following configuration (check applicable description):

Section II

Lithium Ion - <i>Maximum of</i>	Lithium Metal – <i>Maximum of</i>
<ul style="list-style-type: none"> • 20 Watt-hours per cell or • 100 Watt-hours per battery 	<ul style="list-style-type: none"> • 1 gram of lithium metal per cell or • 2 grams of lithium metal per battery
<input type="checkbox"/> Cells or batteries only (Lithium ion batteries in compliance with Section II of PI 965) – ≤ 8 cells or ≤ 2 batteries in a package, without electronic equipment. <i>(Note: For cells or batteries of ≤ 2.7 Wh, the number of cells/batteries in the package must be limited to 2.5 kg net weight.</i>	<input type="checkbox"/> Cells or batteries only (Lithium metal batteries in compliance with Section II of PI 968) – ≤ 8 cells or ≤ 2 batteries in a package, without electronic equipment. <i>(Note: For cells or batteries with a lithium metal content of ≤ 0.3 g, the number of cells/batteries in the package must be limited to 2.5 kg net weight.</i>
<input type="checkbox"/> Packed with equipment (Lithium ion batteries in compliance with Section II of PI 966) – Cells or batteries contained in a package with associated electronic equipment. Packages must be limited to 5 kg net weight of batteries.	<input type="checkbox"/> Packed with equipment (Lithium metal batteries in compliance with Section II of PI 969) – Cells or batteries contained in a package with associated battery-powered equipment – with the batteries not installed in the equipment. Packages must be limited to 5 kg net weight of batteries.
<input type="checkbox"/> Contained in equipment (Lithium ion batteries in compliance with Section II of PI 967) – Cells or batteries installed in equipment. Packages must be limited to 5 kg net weight of batteries.	<input type="checkbox"/> Contained in equipment (Lithium metal batteries in compliance with Section II of PI 970) – Cells or batteries installed in equipment. Packages must be limited to 5 kg net weight of batteries.

Section I.B

<input type="checkbox"/> Cells or batteries only (ICAO/IATA Packing Instruction 965, Section I.B) – > 8 cells or > 2 batteries in a package, without electronic equipment; or for cells or batteries of ≤ 2.7 Wh, a number of cells/batteries that exceeds 2.5 kg. ** Total package weight is restricted to 10 kg G. **	<input type="checkbox"/> Cells or batteries only (ICAO/IATA Packing Instruction 968, Section I.B) – > 8 cells or > 2 batteries in a package, without electronic equipment. ** Total package weight is restricted to 2.5 kg G. **
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- This package must be handled with care. A flammability hazard exists if the package is damaged.
- If this package is damaged in transportation, it must not be loaded until the condition of the contents can be verified. The batteries contained in this package must be inspected for damage and may only be repacked if they are intact and protected against short circuits.
- For more information about the batteries contained in this package, call the following telephone number:

List telephone number here, including area code and any applicable country code

Name/Address of shipper:

Signed: _____ Date: _____

