

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:** March 25, 2021

**Manufacturer**  
 Motorola Solutions, Inc.  
 500 W. Monroe Street, Ste 4400  
 Chicago, Illinois 60661-3781 USA  
**Phone: 1-847-576-5000**

## Section II – 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 III – 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 Lithiated manganese oxides Proprietary lithiated nickel-manganese-cobalt oxides	12190-79-3 12057-17-9 N/A	20-40%
Negative electrode	Graphite	7782-42-5	10-20%
Binders	Polyvinylidene difluoride and/or polytetrafluoroethylene	24937-79-9 9002-84-0	0-3%
Electrolyte salt	Lithium salt (one or more of lithium hexafluorophosphate and lithium tetrafluoroborate)	21324-40-3 14283-07-9	1-5%
Electrolyte solvent	Organic solvents include one or more of the following: ethylene carbonate, diethyl carbonate, dimethyl carbonate, ethyl methyl carbonate, and propylene carbonate.	96-49-1 105-58-8 616-38-6 623-53-0 108-32-7	5-20%
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 IV – First Aid Measures

Cell manufacturers recommend that in case of exposure to cell contents, wash the 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 CO<sub>2</sub>, 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

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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

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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 the affected area for at least 15 minutes with generous amounts of water and seek medical attention.

## Section IX – Physical and Chemical Properties

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

## Section X – Stability and Reactivity

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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

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

## Section XII – Ecological Information

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

## Section XIII – Disposal

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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 in fire.

## Section XIV – Transport Information

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- 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 batteries and products containing or packed with is less than or equal to 20 Watt-hours for cells and less than or equal to 100 Watt-hours for batteries.

When packaged and shipped by Motorola Solutions, Inc., these batteries are tested, packaged, marked 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:
  - a) PI 965 Section IB or Section II (UN 3480, batteries), offered for transport at a state of charge (SOC) not exceeding 30% of their rated design capacity.
  - 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) Special Provision 188 and 230
- 3) U.S. Department of Transportation (DOT) 49 CFR 173.185;
- 4) Canadian Transport of Dangerous Goods Regulations (TDGR) Special Provision 34
- 5) European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) Special Provision 188 and 230
- 6) UN Model Regulations 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 emergencies involving Motorola Solutions battery products, call CHEMTREC at 1-800-424-9300 North America or 1-703-5273887 International.**

## Section XV – Regulatory Information

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## Section XVI – Other Information

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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.