



Battery Information Data Sheet

Lithium-ion and Lithium-ion Polymer Battery

This data sheet is applicable to lithium-ion polymer batteries contained in Garmin nüvi®, nüvifone®, Garminfone™, zūmo®, aera®, SafeNav™, StreetPilot®, Astro®, Alpha™, BarkLimiter™, Delta™, Delta Sport™, Forerunner®, fēnix™, nüLink!™, Edge®, GPSMAP®, Rino®, Approach®, dēzl™, quatix™, GLO™, GTU™, GDB™ 50 and GPS 10X products

Batteries are defined as “articles” under the OSHA Hazard Communications Standard and are exempt from the Material Safety Data Sheet and Hazard Communications requirements. Garmin is providing this Data Sheet as a service to its customers for general information purposes only. The information in this Data Sheet has been provided to Garmin by the battery manufacturers, and Garmin has not independently evaluated its accuracy or completeness. This Data Sheet is not intended to be a comprehensive exposition of the properties of lithium ion batteries. No guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein.

1. Composition

The following constituents are potentially present in lithium ion batteries used in Garmin products. The concentrations given are an approximation. Specific battery chemistries and concentrations will vary by the particular battery and battery manufacturer.

Substance	CAS No.	Concentration
Lithium Cobalt Dioxide	12190-79-3	20 – 50 %
Aluminum	7429-90-5	2 – 40 %
Graphite	7740-44-0	10 – 20 %
Organic Electrolyte	Proprietary	10 – 20 %
Copper	7440-50-8	2 – 15 %
Polyvinylidene Fluoride (PVDF)	24937-79-9	<5 %

2. Hazards Identification

Primary Routes of Entry

Skin contact: No

Skin absorption: No

Eye contact: No

Inhalation: No

Ingestion: No

3. Fire Hazards

Extinguishing Media: CO₂, Dry chemical or foam. Water may be effective in extinguishing fire in materials surrounding lithium ion batteries.

Unusual Fire & Explosion Hazards: Fires in confined spaces or involving large quantities of lithium ion batteries may produce dangerous fumes. Do not open, crush, disassemble, or incinerate battery. Do not expose battery to extreme heat or fire.

4. Health Hazards

Symptoms of Exposure: Under conditions of normal use there should be no exposure to hazardous materials. In the event of an opened battery

Inhalation: Contents of an opened battery cell can cause respiratory irritation

Ingestion: Contents of an opened battery cell can cause stomach irritation and burns. Seek medical help immediately if ingested

Skin Contact: Contents of an opened battery cell can cause skin irritation

Eye Contact: Contents of an opened battery cell can cause eye irritation

5. Safe Handling and Use

Storage: Store in a cool place, prevent condensation on cell or battery terminals. Elevated temperatures may result in reduced battery life. Optimum storage temperatures are between -31°F and 95°F.

Handling: Short circuit will bring high temperature elevation to the battery as well as shorten the battery life. Avoid short circuits as the heat can burn attendant skin and rupture the battery cell case. Batteries packaged in bulk containers should not be shaken.

Charging: This battery is designed for recharging. Charge battery before use. Observe the specified charge rate since higher rates can cause a rise in internal gas pressure which may result in damaging heat generation or cell rupture and/or venting.

CAUTION: Do not puncture or otherwise damage the battery or dispose in fire, mix with other battery types, charge above specified rate, connect improperly, or short circuit, which may result in overheating, explosion or leakage of cell contents.

6. Protection

No protective equipment is necessary under conditions of normal use.
In the event of a fire or opened cell:

Eye/Face Protection: Goggles and face shield

Skin Protection: Gloves and protective clothing

Respiratory Protection: Inorganic dust respirator

7. Disposal

Recycle or dispose in accordance with applicable Federal, state and local regulations. Do not incinerate or heat batteries to temperatures above 100°C (212°F).

8. Transportation

Lithium ion batteries used in Garmin products are of a type eligible for transport under the exceptions set forth in Section II of Packing Instructions 965-967 of the International Air Transport Association Dangerous Goods Regulations (54th Edition, 2013). Lithium ion batteries used in Garmin products have an equivalent lithium content of no more than 1.5 g per cell and 8.0 g per battery or battery pack and a Watt-hour rating of no more than 20 Watt-hours per cell and 100 Watt-hours per battery or battery pack

Lithium ion batteries used in Garmin products are tested in accordance with the *UN Manual of Tests and Criteria*, Part III, Subsection 38.3.