

GARMIN.

GARMIN LITHIUM- ION BATTERY INFORMATION

.....

**GARMIN LTD. OR ITS SUBSIDIARIES
C/O GARMIN INTERNATIONAL
1200 E. 151ST STREET
OLATHE, KS 66062 USA**

.....

Confidential

This drawing and the specifications contained herein are the property of Garmin Ltd. or its subsidiaries and may not be reproduced or used in whole or in part as the basis for manufacture or sale of products without written permission.

Statement

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.

.....

GARMIN LITHIUM-ION BATTERY INFORMATION

LITHIUM-ION AND LITHIUM-ION POLYMER BATTERY

This data sheet is applicable to Lithium-Ion polymer batteries contained in Garmin aera[®]; Alpha[™]; Approach[®]; Astro[®]; BarkLimiter[™]; Camper; Captain Marvel[™], Catalyst[™]; D2[™]; Darth Vader[™]; DC[™]; Delta[™]; Delta Sport[™]; Delta Upland[™]; Delta Inbounds[™]; Descent[™]; dēzl[™]; dēzlCam[™]; Drive[™]; DriveAssist[™]; DriveLuxe[™]; DriveSmart[™]; DriveTrack[™]; Edge[®]; Enduro; epix[™]; fēnix[™]; First Avenger[™]; Forerunner[®]; Garmin Dash Cam[™]; Garmin fleet[™]; Garminfone[™]; G5 Battery Pack; GDB[™] 50 and GPS 10X products; GDL[®]; GDR 35; GHS[™]; GLO[™]; GPSMAP[®]; OnDeck[™] Hub; GTU[™]; Impact[™]; inReach[®]; Instinct[™]; Lily[™]; LiveScope[™]; Overlander[™]; MARQ[™]; Montana[®]; Monterra[™]; Nautix[™]; Navigator; nüLink![™]; nüvi[®]; nüviCam[™]; nüvifone[®]; PRO; PRO Control[®]; PRO Trashbreaker[™]; quatix[™]; Rey[™]; Rino[®]; RV; SafeNav[™]; Sport PRO[™]; StreetPilot[®]; Striker Cast[™]; Swim[™]; T5; tactix[™]; Tread[™]; TruSwing[™]; TT[™]; Varia Vision[™]; Varia[™]; Venu[™]; VIRB[™]; vívoactive[®]; vívomove[®] HR; vívosmart[™]; vívosport[™]; Xero[®] S1; zūmo[®]. This data sheet also applies to product replacement Lithium Ion batteries when available.

I. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Lithium Ion / Lithium Polymer Batteries located within above products

Company Name: Garmin International, Inc. 1200 E. 151st Street, Olathe, KS 66062

Garmin Australasia Pty Ltd., PO Box 684, Seven Hills, NSW 1730

Product Category: Article

CHEMTREC[®] 24 hr Emergency: US 800-424-9300

CHEMTREC[®] 24 hr Emergency: AUS 61-290372994, Toll-Free: 1-800-262-8200

CHEMTREC[®] 24 hr Emergency: International 703-527-3887

II. HAZARD(S) IDENTIFICATION

Emergency overview:

Not considered dangerous as manufactured. If battery is damaged, exposure to product components may cause eye, skin and respiratory tract irritation. Combustion products from a fire involving batteries may be harmful.

Potential Health Effects: Eyes.

- None anticipated under normal product use and handling conditions. If battery is damaged, exposure may cause severe irritation or burns

GARMIN LITHIUM-ION BATTERY INFORMATION

Potential Health Effects: Skin

- None anticipated under normal product use and handling conditions. If battery is damaged, exposure may cause severe irritation or burns

Potential Health Effects: Ingestion

- Not considered a likely route of exposure under normal product use and handling conditions. Ingestions of material from a damaged battery may cause serious burns to mouth, esophagus, and gastrointestinal tract.

Potential Health Effects: Inhalation

- None anticipated under normal product use and handling conditions. If battery is damaged, exposure to vapors or mist may cause respiratory irritation.

HMIS Ratings: Health: 0 Fire: 0 HMIS Reactivity: 0

III. COMPOSITION/INFORMATION ON INGREDIENTS

Substance	WT Percent	CAS #
Graphite Carbon	19.5%	7782-42-5
Aluminum	16.7%	7429-90-5
Copper	10.4%	7440-50-8
Lithium Manganese Oxide	8.7%	12057-17-9
Lithium Cobalt Oxide	8.7%	12190-79-3
Lithium Nickel Oxide	8.7%	1203-65-1
Polypropylene	7.3%	9003-07-0
Polyethylene	5.6%	9002-88-4
Ethylene Carbonate	3.6%	96-49-1
Lithium Hexafluorophosphate	3.6%	21324-40-3
Polyvinylidene Fluoride (PVDF)	3.6%	24937-79-9
Dimethyl Carbonate	3.6%	616-38-6

IV. FIRST-AID MEASURES

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

- **Inhalation:** Contents of an opened battery cell can cause respiratory irritation
- **Ingestion:** Contents of battery cell can cause stomach irritation / burns. Seek medical help immediately

GARMIN LITHIUM-ION BATTERY INFORMATION

- **Skin Contact:** Contents of an opened battery cell can cause skin irritation
- **Eye Contact:** Contents of an opened battery cell can cause eye irritation

V. FIRE-FIGHTING MEASURES

- **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.

VI. ACCIDENTAL RELEASE MEASURES

Remove personnel from area until fumes dissipate. If the skin has come into contact with the electrolyte, it should be washed thoroughly with water.

Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.

VII. HANDLING AND STORAGE

- **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.

GARMIN LITHIUM-ION BATTERY INFORMATION

VIII. EXPOSURE CONTROLS/PERSONAL 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

IX. PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance:** Cylindrical or prismatic shape
- **Odor:** none
- **pH:** Not Applicable
- **Flash point:** Not applicable unless individual components exposed
- **Flammability:** Not applicable unless individual components exposed
- **Relative density:** Not applicable unless individual components exposed
- **Solubility (water):** Not applicable unless individual components exposed

X. STABILITY AND REACTIVITY

Product is stable when used under normal conditions

- **Conditions to avoid:** Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble Short circuit. Expose over a long period to humid conditions.
- **Materials to Avoid:**
- **Hazardous Decomposition Products:** Carbon Monoxide, Hydrofluoric Acid

XI. TOXICOLOGICAL INFORMATION

Acute Dose Effects

A: General Product Information: If product is ruptured, material may cause irritation to the skin, eyes and respiratory tract.

GARMIN LITHIUM-ION BATTERY INFORMATION

B: Component Analysis – LD50/LC50: No LD50/LC50's are available for this product's components.

Carcinogenicity

A: General Product Information: No information available for the product.

B: Component Carcinogenicity: None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

XII. ECOLOGICAL INFORMATION

.....

- **Mammalian effects:** None known if used/disposed of correctly
- **Eco-toxicity:** None known if used/disposed of correctly
- **Bioaccumulation potential:** None known if used/disposed of correctly
- **Environmental fate:** None known if used/disposed of correctly

XIII. DISPOSAL CONSIDERATIONS (NON-MANDATORY)

.....

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).

XIV. TRANSPORT INFORMATION (NON-MANDATORY)

.....

Lithium-ion batteries used in Garmin's 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. 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 of a type that has been demonstrated to pass the tests set forth in the UN Manual of Tests and Criteria, Part III, Subsection 38.3.

Batteries shipped as individual or bulk batteries (separate from equipment) under Packing Instruction 965 are forbidden from carriage on passenger aircraft and must bear the Cargo Aircraft Only label.

GARMIN LITHIUM-ION BATTERY INFORMATION

XV. REGULATORY INFORMATION (NON-MANDATORY)

OSHA: Hazardous Communication Standard (29CFR 1910.1200): Non-Hazardous

XVI. OTHER INFORMATION

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.