

GenX Lithium Polymer Battery

Data Sheet

SECTION 1. Product and Company identification

Product Name	: GenX Power Premium 44.4V 12S 16000mAh 25C / 50C Lipo Lithium Battery
Model (Ordering Part No.)	: RKI- 4792
Use of the substance/preparation	: GenX 3.7V 16000mah Lithium polymer rechargeable cells
Nominal Voltage	: 44.4V
Capacity	: 16000mAh
Configuration	: 12S (12 cells in Series)
Discharge Rate	: 25C
Max Burst discharge Rate	: 50C
Recommended Max Charging Current	: 1C
Net Weight ($\pm 2\%$)	: 3810grams
Dimensions	: 185mm*75mm*146mm
Telephone number for information	: +91-79-29750885-886 (INDIA)

SECTION: 1.Precautions, Usage & Warranty

GenX Li-Po batteries are very sensitive and can get damaged easily and permanently if not used properly. Charging batteries with non standard chargers will ensure reduction in battery life and efficiency. We strongly recommend charging battery with our chargers or only standard chargers designed to charge Li-Ion batteries.

If the batteries are drained beyond their discharge capacity they will get heated and will get damaged permanently. Each battery is rated for discharge current.

If the battery is rated at 2000mAH, 2C it means that it can discharge 4 Ampere (2000ma x 2) current at max. If the load is above 4A the battery will heat up and loose its efficiency to store charge over a period.

Over discharging of battery may also create problem. If the voltage of battery reduces to 3.5V per cell (i.e. 10.5V or below for 12.4V battery) the battery is considered discharged. If still battery is connected then battery may get damaged.

SECTION 2. Hazards identification

2.1. Potential health effects

Lithium cobalt oxide: Odorless blue-black powder - cobalt and cobalt compounds are considered to be possible human carcinogens. By International Agency for Research on Cancer (IARC): May irritate eyes, skin, nose, throat and respiratory system and may cause allergic skin sensitization.

Carbon: Odorless black powder - no cases of carbon being harmful to humans have been reported. World Health Organization (WHO), and International Labour Organization (ILO) have never verified that carbon causes irritation of the skin and mucous membrane, etc.

Electric agent: Black powder (Garlic-Like), Toxicity (Am. Conf. Of Gov. Ind. Hygienists ACGIH 2000 Edition) - Simple Asphyxiant, Flammability limits in air (STP conditions): 2.4-83vol% (The upper limit could reach 100%)

Bond: Odorless white powder - inhalation and skin contact are expected to be the primary routes of occupational exposure to this material. As a finished product, it is a synthetic, high molecular weight polymer. Due to its chemical and physical properties, this material does not require special handing other than the good industrial hygiene and safety practices employed with any industrial material of this type. Under normal processing conditions this material releases fume or vapor. Components of these releases may vary with processing time and temperature. Process releases may produce eye, skin and/respiratory tract irritation and with repeated or prolonged exposures, nausea, drowsiness, headache and weakness. Although unlikely under normal handling conditions, if this material is heated in excess of 600°F (315°C), hazardous, decomposition products will be produced. Hazardous decomposition products include hydrogen fluoride and oxides of carbon, the concentrations of which vary with temperature and heating regimens.

Safety Data Sheet

Electrolyte: Colorless liquid - may cause moderate to severe irritation, burning, and dryness of the skin. May cause eye irritation or burning. Breathing of the mists, vapors or fumes may irritate the nose, throat and lungs. Exposure of material with areas which contain water may generate hydrofluoric acid which can cause immediate burns on skin, severe eye burns to the mouth and gastrointestinal tract if inhaled. Direct exposure to areas of the body needs to be treated immediately to prevent injury.

SECTION: 3. Composition/information on ingredients

Name	CAS number	%
Carbon (C)	133-86-4	10-25
Lithium-polymer Cobalt Oxide (LCoO ₂)	12057-24-8 1308-04-9	20-40
Lithium-Polymer Hexafluorophosphate (LiPF ₆)	21340-40-3	1.4
Organic Carbonates (EC/EMC/DEC)	N/A	8-18
Polyvinylidene Fluoride (PVDF)	24937-79-9	1-5
PP+PE	9003-07-0 9002-8804	4-6
Copper (Cu)	7440-50-8	15-30
Aluminum (Al)	7429-50-5	10-20
Nickel	7440-02-0	0.5-1

SECTION: 4. First aid measures

4.1. First aid procedures

- First-aid measures general : The following first aid measures are required in the case of exposure to interior battery components after damage of the external battery casing. Undamaged, closed cells do not represent a danger to health.
- First-aid measures after inhalation : Assure fresh air breathing. If breathing difficulty or discomfort occurs and persists, see a physician. If breathing stops, give artificial respiration and see a physician immediately.
- First-aid measures after skin contact : Remove contaminated clothing and thoroughly wash with soap and plenty of water. If irritation persists, consult a physician.
- First-aid measures after eye contact : Rinse thoroughly with plenty of water for at least 15 minutes. If symptoms persist contact a physician.
- First-aid measures after ingestion : Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. If open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.

SECTION: 5. Firefighting measures

5.1. Extinguishing media

Hazardous combustion: When burned, hazardous products of combustion including fumes of carbon monoxide, carbon dioxide, and fluorine can occur.

Fire and explosion: This material does not represent an unusual fire or explosion hazard.

Flash point: N/A

Auto ignition: N/A

Flammability limits: N/A

5.2. Extinguishing media

- Suitable extinguishing media : Carbon dioxide, dry chemical or foam
- Protection during firefighting : Wear protective clothing and self-contained breathing apparatus to avoid fume inhalation.

SECTION: 6. Accidental release measures

6.1. Personal precautions

Evacuate personnel to safe areas, ventilate the area.

For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

For emergency responders

Protective equipment : Inhalation of any vapor that may be emitted should be avoided. Wear self-contained breathing apparatus to avoid fume inhalation. Rubber gloves should be used to handle the contents of crushed or opened batteries.

6.2. Environmental precautions

Sweep up and place in a suitable container, dispose of waste according to local, state and federal laws and regulations.

SECTION: 7. Handling and storage

7.1. Handling

Battery charge: Charge according to manufacturer's specifications.

Battery disassembly: The batteries should never be disassembled, or mechanically abused. Should a battery unintentionally be crushed or opened, thus releasing its content, rubber gloves should be used to handle battery components. The inhalation of any vapor that may be emitted should be avoided.

Short circuiting of a battery: As with any battery, short circuit causes heating. In addition, short circuit reduces the life of the battery and can lead to ignition of surrounding materials. Physical contact with a short-circuited battery can cause skin burns.

Reverse polarity: Avoid reversing the battery polarity of a battery pack, which can cause the battery to be damaged and potentially cause a fire.

7.2. Storage

Storage conditions : Store in a cool, dry and ventilated area. Do not place the battery near heating equipment or expose to direct sunlight for long periods of time. Elevated temperatures can result in shortened battery life and degrade performance.

SECTION: 8. Exposure controls/personal protection

Personal protective equipment	: None required under normal use.
Eye protection	: Use ANSI approved chemical work safety goggles or face shield, when handling a leaking or ruptured battery.
Skin protection	: Use rubber apron and protective gloves if working with or handling a ruptured battery.
Hand protection	: In case of spill use PVC, neoprene or nitrile gloves of 15 mils (0.015 inch) or thicker.
Work hygienic practice	: Use good chemical hygiene practice. Wash hands after use and before drinking, eating or smoking. Wash hands thoroughly after cleaning-up a battery spill caused by leaking battery. No eating, drinking, or smoking in battery storage area. Launder contaminated cloth before re-use.
Supplementary safety and health data	: If the battery case is broken or cells leaking, the main hazard is the electrolyte. The electrolyte is a solution of LiPF ₆ , EC, EMC and DEC.

SECTION: 9. Physical and chemical properties

Physical state	: Solid article
Freezing point	: N/A
Boiling point	: N/A
Density	: N/A
Vapor pressure	: N/A
Vapor density	: N/A
Flash point	: N/A
Evaporation rate	: N/A

SECTION: 10. Stability and reactivity

10.1. Stability

Stable during normal operating conditions.

10.2. Conditions to avoid

Keep away from open flames, hot surfaces, and sources of ignition. Do not puncture, crush, or incinerate.

10.3. Incompatible materials

Incompatible with water, moisture, strong oxidizing agents, reducing agents, acids and bases.

10.4. Hazardous decomposition products

None, under normal operating conditions. Carbon dioxide and hydrogen fluoride gas may be generated during combustion of battery.

SECTION: 11. Toxicological information

Not applicable under normal conditions of use. Chemicals within the battery have the following properties: Cobalt in lithium cobalt oxide is considered as a class 2B carcinogen by IARC. Organic carbonated (electrolyte) vapors are categorized as corrosive, flammable and irritants.

SECTION: 12. Ecological information

12.1 Ecotoxicity

The batteries when properly used or disposed of do not present environmental hazard. The batteries do not contain mercury, cadmium or lead. Do not let internal components enter marine environment. Avoid release to waterways, wastewater or groundwater.

13.1. Waste treatment methods

Do not incinerate. Waste disposal must be in accordance with any and all applicable regulations. Disposal of lithium rechargeable batteries should be performed by permitted, professional disposal firms knowledgeable in federal, state or local requirements. Lithium batteries should be discharged to 0.00mAh prior to disposal.

SECTION: 14. Other information

The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Dazzle Robotics makes no warranty expressed or implied with respect to this information. Dazzle Robotics does not accept liability for any loss or damage that may occur, whether direct, incidental or consequential, from the use of this information.