

SAFETY DATA SHEET

Lithium Iron Phosphate Battery **GOLF SERIES LITHIUM BATTERIES**

APPLICABLE MODELS

38.4V 100Ah

51.2V 54Ah

51.2V 105Ah

51.2V 150Ah

70.4V 105Ah

76.8V 105Ah



Document Type

Safety Data Sheet (SDS)



Issue Date

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Version

1.2



Prepared by

HIO Battery

IMPORTANT



Read this Safety Data Sheet (SDS) carefully before handling, using, or storing this product. This document provides important health, safety, and environmental information. Ensure that this SDS is available to all personnel involved in handling or having access to this product.

SECTION 1 — IDENTIFICATION

1.1 Product Name:

Lithium Iron Phosphate Battery

1.2 Product Series:

HIO Golf Series Lithium Batteries

1.3 Applicable Models:

Battery Specification	HIO Model Number
38.4V 100Ah	HIO38100C
51.2V 105Ah	HIO51105C / HIO51105S
51.2V 54Ah	HIO51054C
51.2V 150Ah	HIO51150
70.4V 105Ah	HIO70105
76.8V 105Ah	HIO76105

1.4 Recommended Use:

Rechargeable Lithium iron phosphate battery for golf carts and low-speed electric vehicles.

1.5 Supplier:

HIO Power LLC
320 London Rd, Ste 128
Delaware, OH 43015

1.6 Emergency Contact:

Phone: +1 656-231-2100 (24 hours)

Text: +1 326-467-0028

Email: support@hiobattery.com

SECTION 2 — HAZARD(S) IDENTIFICATION

2.1 Classification of the substance or mixture

GHS US Classification:

The product is a sealed battery article. No adverse health effects are expected during normal use when the battery remains intact and is handled according to manufacturer instructions. Hazardous exposure may occur only if the battery is damaged, overheated, abused, or subjected to conditions that result in the release of electrolyte vapors, smoke, or fumes.

2.2 GHS Label Elements, Including Precautionary Statements

GHS US Labeling: No labeling applicable. No signal word or hazard pictograms are required.

2.3 Other Hazards Which Do Not Result in Classification

Battery damage, misuse, short circuit, overheating, or exposure to fire may result in thermal runaway, electrolyte leakage, or release of hazardous decomposition products.

2.4 Unknown Acute Toxicity (GHS US)

Not applicable.

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances

Not applicable.

3.2 Mixtures

The product is a sealed rechargeable lithium iron phosphate battery pack. The battery contains sealed electrochemical cells composed of the following materials:

COMPONENT	CAS NO.	COMPOSITION
Lithium Iron Phosphate	15365-14-7	35–37%
Graphite	7782-42-5	15–18%
Aluminum	7429-90-5	13–14%
Ethyl Methyl Carbonate	623-53-0	10–12%
Ethylene Carbonate	96-49-1	8–10%
Copper	7440-50-8	6–7%
Lithium Hexafluorophosphate	21324-40-3	2–3%
Low Density Polyethylene	9002-88-4	2–3%
Polyvinylidene Fluoride Resin	24937-79-9	0.7–1.1%
Carbon Black	1333-86-4	0.4–1%

Composition percentages are approximate and may vary depending on battery model and configuration.

The above components are contained within a sealed battery enclosure. Under normal conditions of use, exposure to internal components is not expected. Exposure may occur only if the battery is damaged, opened, overheated, or improperly handled.

SECTION 4 — FIRST-AID MEASURES

4.1 Description of First Aid Measures

General Advice

The battery is a sealed unit. Under normal use, exposure to internal battery materials is not expected. If the battery is damaged, leaking, overheated, or involved in a fire, follow the first-aid measures below.

Inhalation:

Move the affected person to fresh air immediately. Keep the person warm and at rest. Seek medical attention if symptoms such as coughing, difficulty breathing, dizziness, or irritation occur.

Skin Contact:

If electrolyte or battery contents come into contact with skin, immediately flush the affected area with plenty of clean water. Remove contaminated clothing and seek medical attention if irritation persists.

Eye Contact:

Immediately rinse eyes cautiously with clean water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing and seek medical attention.

Ingestion:

Do not induce vomiting. Rinse mouth with water and seek medical attention immediately.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed

Exposure to electrolyte or decomposition products from a damaged battery may cause skin irritation, eye irritation, respiratory irritation, or chemical burns.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

Treat symptomatically. If exposure occurs from a damaged battery or thermal event, provide medical attention as necessary.

SECTION 5 — FIRE-FIGHTING MEASURES

5.1 Suitable (and unsuitable) extinguishing media

Use water spray, dry chemical powder, carbon dioxide (CO₂), or other extinguishing media suitable for surrounding fire conditions.

For large battery fires, cooling with large amounts of water may be necessary to prevent thermal propagation and control battery temperature.

Unsuitable Extinguishing Media:

No specific extinguishing media is known to be unsuitable. Avoid using methods that may cause mechanical damage to the battery.

5.2 Special Hazards Arising from the Substance or Mixture

Damaged, overheated, or burning lithium iron phosphate batteries may release hazardous decomposition products, including:

- Carbon monoxide (CO)
- Carbon dioxide (CO₂)
- Hydrogen fluoride (HF)
- Other toxic or irritating vapors

Battery cells may experience thermal runaway, resulting in fire, rupture, or release of hazardous gases.

5.3 Advice for Firefighters

Firefighters should wear appropriate protective equipment, including self-contained breathing apparatus (SCBA) and protective clothing.

Avoid direct contact with damaged batteries. If safe to do so, move undamaged batteries away from the fire area.

Cool exposed battery packs with water spray to reduce the risk of thermal propagation.

5.4 Additional Information

Lithium iron phosphate batteries do not burn easily under normal conditions. However, damaged, improperly handled, overheated, or externally heated batteries may ignite or release hazardous gases.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, Protective Equipment and Emergency Procedures**For Non-Emergency Personnel:**

Avoid direct contact with damaged batteries. Do not touch leaked electrolyte or damaged internal components. Keep away from heat sources, sparks, and flames.

Ensure adequate ventilation if the battery is damaged, leaking, overheated, or releasing vapors.

For Emergency Responders:

Wear appropriate personal protective equipment (PPE), including chemical-resistant gloves and safety glasses. Use respiratory protection if smoke, vapor, or decomposition products are present.

Remove damaged batteries from the area if it can be done safely.

6.2 Environmental Precautions

Prevent electrolyte leakage and damaged battery components from entering soil, waterways, or drainage systems.

Dispose of damaged batteries according to applicable local, state, and federal regulations.

6.3 Methods and Materials for Containment and Cleaning Up

For damaged or leaking batteries:

- Isolate the affected area and avoid contact with leaked materials.
- Collect leaking electrolyte and contaminated materials using appropriate protective equipment.
- Place damaged batteries and contaminated materials in suitable containers for disposal or recycling.

Do not attempt to open, disassemble, puncture, or repair damaged battery cells.

6.4 Reference to Other Sections

Refer to:

- Section 8 for exposure controls and personal protection.
- Section 13 for disposal considerations.

SECTION 7 — HANDLING AND STORAGE

7.1 Precautions for Safe Handling

Handle the battery pack carefully to prevent mechanical or electrical damage.

Avoid:

- Short circuiting the battery terminals.
- Reverse polarity connection.
- Dropping, crushing, puncturing, or deforming the battery.
- Opening, disassembling, or modifying the battery pack.
- Exposure to fire, excessive heat, or direct flame.
- Contact with water or other liquids.

Use only chargers, accessories, and equipment approved by HIO Battery.

Do not overcharge, over-discharge, or operate the battery outside the specified operating conditions.

If the battery is damaged, swollen, leaking, overheating, or emitting unusual odor or smoke, discontinue use immediately and follow appropriate safety procedures.

7.2 Conditions for Safe Storage, Including Any Incompatibilities

Storage Conditions:

Store in a cool, dry, and well-ventilated area away from direct sunlight, heat sources, open flames, sparks, and incompatible materials. Keep the battery protected from physical damage.

Recommended Storage Temperature:

-10°C to 45°C (32°F to 113°F)

Recommended Storage State of Charge (SOC):

50%–70%

Avoid:

Long-term storage at extreme temperatures.

Storage near heating equipment.

Storage in areas with high humidity or risk of flooding.

7.3 Other Precautions

Keep battery terminals protected from accidental short circuits during storage and transportation.

Do not store damaged batteries with normal batteries.

Damaged batteries should be isolated and handled according to applicable safety procedures.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Occupational Exposure Limits:

No occupational exposure limits have been established for the intact battery product.

Under normal conditions of use and handling, exposure to internal battery components is not expected.

8.2 Exposure Controls

Engineering Controls:

No special engineering controls are required during normal use.

Provide adequate ventilation when handling damaged, leaking, overheated, or burned batteries.

8.3 Personal Protective Equipment (PPE)

Respiratory Protection:

Not required under normal operating conditions.

Use appropriate respiratory protection when handling damaged batteries that are releasing smoke, vapors, or decomposition products.

Hand Protection:

Not required during normal use.

Wear chemical-resistant protective gloves when handling damaged, leaking, or opened batteries.

Eye Protection:

Not required during normal use.

Wear safety glasses or goggles when handling damaged, leaking, or opened batteries.

Skin and Body Protection:

Not required during normal use.

Wear suitable protective clothing when handling damaged batteries or leaked electrolyte.

8.4 Environmental Exposure Controls

Prevent release of electrolyte or battery components into the environment.

Dispose of damaged batteries according to applicable local, state, and federal regulations.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

PROPERTY	INFORMATION
Appearance	Prismatic battery pack
Physical State	Solid
Color	Varies by model
Odor	Odorless
pH	Not applicable
Melting Point	Not applicable
Boiling Point	Not applicable
Flash Point	Not applicable
Evaporation Rate	Not applicable
Vapor Pressure	Not applicable

PROPERTY	INFORMATION
Solubility in Water	Insoluble
Flammability	Not flammable as supplied
Flammability Limits	Not applicable
Vapor Pressure	Not applicable
Vapor Density	Not applicable
Relative Density	Not applicable
Partition Coefficient	Not applicable
Auto-Ignition Temp.	Not applicable
Decomposition Temp.	Not applicable
Viscosity	Not applicable

9.2 Other Information

Battery Type:

Rechargeable Lithium Iron Phosphate Battery Pack (LiFePO_4)

Additional product specifications are provided in the applicable product datasheets.

SECTION 10 — STABILITY AND REACTIVITY

10.1 Reactivity

No hazardous reactions are expected during normal use and storage.

10.2 Chemical Stability

The product is stable under normal operating, handling, and storage conditions.

10.3 Possibility of Hazardous Reactions

Hazardous reactions may occur if the battery is damaged, overheated, overcharged, short-circuited, or exposed to fire.

10.4 Conditions to Avoid

Avoid:

- Excessive heat or exposure to fire.
- Temperatures above recommended operating limits.
- Short circuiting the terminals.
- Overcharging or forced over-discharge.
- Crushing, puncturing, deformation, or disassembly.
- Prolonged exposure to moisture or water.

10.5 Incompatible Materials

Avoid contact with:

- Strong oxidizing agents.
- Strong acids.
- Strong bases.

10.6 Hazardous Decomposition Products

Thermal decomposition or combustion may produce:

- Carbon monoxide (CO)
- Carbon dioxide (CO_2)
- Lithium-containing oxides
- Other hazardous fumes

SECTION 11 — TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

Acute Toxicity

No adverse health effects are expected during normal use of the intact battery pack.

Exposure to internal battery materials may occur only if the battery is damaged, opened, overheated, or leaking.

Skin Corrosion / Irritation

Contact with electrolyte or internal battery components from a damaged battery may cause skin irritation or chemical burns.

Serious Eye Damage / Eye Irritation

Contact with electrolyte or vapors released from a damaged battery may cause eye irritation or injury.

Respiratory Sensitization / Irritation

Smoke, vapors, or decomposition products released from an overheated or burning battery may cause respiratory irritation.

Germ Cell Mutagenicity

Not applicable.

Carcinogenicity

Not applicable.

Reproductive Toxicity

Not applicable.

Specific Target Organ Toxicity (STOT)

Not applicable under normal conditions of use.

Aspiration Hazard

Not applicable.

11.2 Additional Information

The battery is a sealed article. Toxicological effects are not expected when the product is used and handled according to manufacturer instructions.

SECTION 12 — ECOLOGICAL INFORMATION

12.1 Toxicity

No ecological effects are expected during normal use of the intact battery product.

Release of battery components may occur only if the battery is damaged, leaking, or improperly handled.

12.2 Persistence and Degradability

Not applicable for the battery product.

12.3 Bioaccumulative Potential

Not applicable for the battery product.

12.4 Mobility in Soil

Not applicable for the battery product.

12.5 Other Adverse Effects

Prevent damaged batteries or battery components from entering soil, waterways, or drainage systems.

Dispose of batteries according to applicable local, state, and federal regulations.

SECTION 13 — DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Dispose of batteries in accordance with applicable local, state, and federal regulations.

Do not dispose of batteries with ordinary household or municipal waste.

Lithium iron phosphate batteries should be collected, recycled, or disposed of through qualified recycling facilities.

13.2 Disposal of Damaged Batteries

Damaged, leaking, or overheated batteries should be isolated and handled by qualified personnel.

Do not puncture, crush, incinerate, or disassemble batteries.

Dispose of damaged batteries according to applicable hazardous waste and transportation regulations.

13.3 Packaging Disposal

Dispose of packaging materials according to local waste management requirements.

SECTION 14 — TRANSPORT INFORMATION

14.1 UN Number

UN3480

UN3481 (depending on shipping configuration)

14.2 UN Proper Shipping Name

Lithium-ion batteries

14.3 Transport Hazard Class(es)

Class 9 — Miscellaneous dangerous goods

Hazard Label — Class 9 Lithium Battery Label:



14.4 Packing Group

Packing group (DOT): Not applicable

Packing group (IMDG): Not applicable

Packing group (IATA): Not applicable

14.5 Environmental Hazards

Not classified as an environmentally hazardous substance.

14.6 Special Precautions for User

Handle with care to prevent:

- Short circuit, physical damage, heat, or fire exposure.
- Improper handling during transportation.

Transport only in accordance with applicable regulations.

14.7 Transport in Bulk According to Annex II of MARPOL and the IBC Code

Not applicable.

14.8 Additional Transport Information

Lithium-ion batteries must comply with applicable transport regulations, including:

- UN Recommendations on the Transport of Dangerous Goods (UN Model Regulations).
- DOT Hazardous Materials Regulations (HMR).
- IATA Dangerous Goods Regulations (DGR).
- International Maritime Dangerous Goods (IMDG) Code.

The battery has been tested in accordance with UN38.3 requirements for transportation of lithium batteries.

SECTION 15 — REGULATORY INFORMATION

15.1 U.S. Federal Regulations

All applicable components contained in this product are listed on the TSCA Inventory or are otherwise exempt. This product complies with applicable requirements of OSHA Hazard Communication Standard (29 CFR 1910.1200).

15.2 U.S. State Regulations

No additional state-specific regulatory information is available.

15.3 Chemical Safety Assessment

Not applicable for a manufactured article.

SECTION 16 — OTHER INFORMATION

16.1 Revision Information

Issue Date: May 15, 2026
Revision Number: Version 1.2
Prepared By: HIO Battery

16.2 Abbreviations

SDS — Safety Data Sheet
GHS — Globally Harmonized System of Classification and Labelling of Chemicals
DOT — U.S. Department of Transportation
IATA — International Air Transport Association
IMDG — International Maritime Dangerous Goods
UN38.3 — United Nations Manual of Tests and Criteria, Part III, Subsection 38.3

