IQ Battery C80 safety data sheet

Applicable regions: North America, LAC

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Other information

Product information is subject to change without notice. All trademarks are recognized as the property of their respective owners.

User documentation is updated frequently. Check the Enphase website for the latest information: https://enphase.com/contact/support.

To ensure optimal reliability and to meet warranty requirements, the Enphase microinverter must be installed according to the instructions in this manual. For warranty text, refer to https://enphase.com/installers/resources/warranty.

For Enphase patent information, refer to https://enphase.com/patents.

Audience

This manual is intended for professional installation and maintenance personnel.

1. Product and company identification

This section provides essential identification and reference details for the IQ Battery C80 to enable users to clearly understand the product, its intended use, and its supplier.

Table 1: Product identifier

Parameter	Value
Product name	IQ Battery C80
Model numbers/SKUs	IQ-BT-C80-V5-R3 and IQ-BT-C80-V6-R3
Product type	Lithium-ion Battery Energy Storage System (BESS)
Chemistry	Lithium iron phosphate (LiFePO4/LFP)
Cell type	314 Ah prismatic
Nominal system voltage	51.2 V DC per module
System energy	80 kWh (80,320 Wh)
Watt-hour rating	80,320 Wh
Configuration	5 modules × 16S1P (16 cells per module, 80 cells in total)

Table 2: Relevant identified uses and restricted uses

Usage	Description
Recommended uses	For commercial and industrial stationary energy storage—grid-tied self-consumption, peak shaving, time-of-use optimization, demand charge management, backup power, and grid services.
Uses advised against	Do not disassemble, short-circuit, dispose in fire, expose to high temperatures (greater than 140°F or 60°C) or low temperatures (less than -22°F or -30°C), immerse in liquid, use as motive power, or modify in any way.

Details of the supplier of the safety data sheet

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2. Hazards identification

This section outlines the hazard classification, potential risks, and key safety considerations for IQ Battery C80, with emphasis on conditions involving damage, misuse, or system failure.

Classification

The IQ Battery C80 is a sealed, turnkey lithium-ion battery energy storage system. Under normal conditions of use, handling, service, and storage, this product is considered an "article" as defined by:

- OSHA Hazard Communication Standard (29 CFR 1910.1200(b)(6)(v))
- GHS Rev.9—not classified as hazardous under normal use

As a manufactured article, this product does not result in exposure to hazardous chemicals under normal conditions of use and is therefore exempt from full safety data sheet requirements. This safety data sheet is provided voluntarily to communicate safety information for handling, storage, transport, service, and emergency scenarios.

Transport classification: Class 9—Miscellaneous Dangerous Goods (Lithium-Ion Batteries, UN 3480).

Table 3: Hazard label

Parameter	Value
UN number	UN 3480
Hazard class	9 (Miscellaneous Dangerous Goods)
Hazard label	Class 9A Lithium Battery Hazard Label
Signal word	None (article exemption)
Pictograms	None required under GHS (article exemption)

Table 4: NFPA 704 rating (under normal conditions)

Parameter	Rating	Description
Health	1	Slightly hazardous—exposure may cause irritation only if battery integrity is compromised
Flammability	1	Must be preheated to burn; will not self-ignite under normal conditions
Reactivity	0	Stable under normal conditions
Special	—	None

Hazard statements (abnormal conditions)

Under conditions of mechanical damage, fire, overcharge, short-circuit, or thermal abuse:

- Battery modules may vent, releasing a gas mixture containing hydrogen (H_2) at concentrations exceeding 40% by volume—creating an explosion hazard in enclosed or poorly ventilated spaces.
- Electrolyte may leak, causing skin and eye irritation.
- Thermal runaway may occur at temperatures exceeding 338°F (170°C).

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- Vent gases and combustion products may include hydrogen (H_2), carbon monoxide (CO), carbon dioxide (CO_2), methane (CH_4), ethylene (C_2H_4), hydrogen fluoride (HF), and other flammable hydrocarbons—total flammable gas content exceeds 66% by volume (see Firefighting measures on page 8 and Stability and reactivity on page 15 for UL 9540A-measured vent gas composition).

Precautionary statements

- P234: Keep only in original container/packaging.
- P264: Wash hands thoroughly after handling.
- P280: Wear protective gloves/eye protection if battery is damaged.
- P370 + P378: In case of fire—use water for cooling, water-based foam for extinguishing.
- P501: Dispose of contents/container in accordance with local/regional/national regulations.

3. Composition information on ingredients

This section provides a detailed breakdown of the material composition of IQ Battery C80, focusing on the internal chemistry of the battery cells and how these materials are contained within the system.

Product description

The IQ Battery C80 is a manufactured article consisting of sealed lithium-ion battery cells assembled into modules within a steel enclosure. Under normal conditions of use, the chemical components are not released.

Cell-level composition

The following composition is derived from the cell supplier. Percentages are by weight of the cell.

Table 5: Cell-level composition

Component	Chemical formula	Mass%	CAS no.	EC no.
Lithium iron phosphate	LiFePO4	37	15365-14-7	921-062-3
Graphite	C	19	7782-42-5	231-955-3
Lithium hexafluorophosphate	LiPF6	<13.5	21324-40-3	244-334-7
Diethyl carbonate (DEC)	C5H10O3	<10	105-58-8	203-311-1
Copper foil	Cu	6.5	7440-50-8	231-159-6
Ethyl methyl carbonate (EMC)	C4H8O3	<5	623-53-0	208-760-7
Ethylene carbonate (EC)	C3H4O3	<5	96-49-1	202-510-0
Aluminum foil	Al	3	7429-90-5	231-072-3
PVDF (Polyvinylidene fluoride)	(C2H2F2)n	0.8	24937-79-9	607-458-6

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Component	Chemical formula	Mass%	CAS no.	EC no.
Carbon black	C	0.2	1333-86-4	215-609-9
Separator	PE/PP	Balance	—	—

Source: Cell-level safety data sheet

Additional materials

Additional materials and their respective percentage weights will be finalized and furnished as part of final product safety data sheet prior to product launch.

4. First-aid measures

This section provides guidelines on first-aid response in case of exposure to hazardous materials from IQ Battery C80, specifically when the battery system is damaged or compromised.

NOTE: Under normal conditions of use, the sealed battery system presents no chemical exposure hazard and no first-aid measures are required. The following applies only if battery integrity is compromised (mechanical damage, thermal runaway, and electrolyte leak).

Table 6: First-aid measures

Exposure route	Action
Eye contact	Flush eyes immediately with copious amounts of clean water for at least 15 minutes, lifting upper and lower eyelids periodically. Seek medical attention immediately.
Skin contact	Remove contaminated clothing and shoes immediately. Wash affected skin thoroughly with soap and water for at least 15 minutes. If irritation or chemical burns develop, seek medical attention.
Inhalation	Move the affected person to fresh air immediately. If breathing is difficult, administer oxygen. If the person is not breathing, perform CPR. Seek medical attention immediately.
Ingestion	Do not induce vomiting. Rinse mouth with water. Drink 2 glasses of water or milk if conscious. Seek medical attention immediately.

Important symptoms and effects

- Electrolyte contact may cause severe irritation and chemical burns to eyes, skin, and mucous membranes.
- Inhalation of fumes from a venting battery may cause respiratory irritation, coughing, and difficulty in breathing. For more information, see Firefighting measures on page 8.
- Hydrogen fluoride (HF) gas released during thermal event is highly toxic; inhalation may cause delayed pulmonary edema.

Indication of medical attention and special treatment

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- Inform treating physician that exposure involved lithium-ion battery electrolyte containing lithium hexafluorophosphate (LiPF6) and organic carbonate solvents.
- HF exposure requires immediate treatment with calcium gluconate gel (for skin) or nebulized calcium gluconate (for inhalation).
- Treat symptomatically; no specific antidote for electrolyte exposure.

5. Firefighting measures

This section provides detailed guidance for preventing fire, understanding hazards, and firefighting measures related to IQ Battery C80 in the event of battery failure or thermal runaway.

Suitable extinguishing media

- Primary: Large quantities of water (for cooling and preventing thermal runaway propagation).
- Secondary: Water-based foam, CO_2, dry chemical powder (ABC type), and wet sand.
- Water is the most effective agent for cooling battery fire and preventing cell-to-cell propagation.

Unsuitable extinguishing media

Do not use Halon-based extinguishers (environmental restrictions).

Special hazards arising from the product

Explosion hazard—hydrogen and hydrocarbon gas release

LFP lithium-ion cells undergoing thermal runaway or venting release a gas mixture in which hydrogen (H_2) can account for greater than 40% by volume. Other flammable hydrocarbons such as methane and ethylene are also released in substantial quantities, resulting in a venting gas mixture which is highly flammable. In enclosed or poorly ventilated spaces such as indoor battery rooms, mechanical closets, or containers, vented gases can rapidly accumulate to explosive concentrations. A single ignition source (spark, arc, hot surface, or static discharge) can trigger a deflagration or explosion with severe overpressure effects.

⚠ **WARNING:** The explosion hazard from accumulated hydrogen and hydrocarbons is the primary life-safety risk in an LFP battery thermal event in an enclosed space.

Thermal runaway and fire hazards

- Lithium-ion cells begin venting flammable and toxic gases at ~338°F (170°C) (average cell vent temperature per UL 9540A).
- Thermal runaway onset occurs at ~444°F (229°C) (on average), with peak cell temperatures reaching 917°F (492°C) (per UL 9540A).
- Thermal runaway and fire may propagate from cell to cell within a module, and from module to module within a cabinet.

Vent gas composition

The following gases may be released during thermal runaway, venting, or fire. Concentrations are from UL 9540A cell-level testing of cell. Refer to the section Stability and reactivity on page 15 for complete measured composition and flammability properties.

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Table 7: Vent gas composition

Gas	Measured percentage volume	Hazard
Hydrogen (H_2)	41.99	Explosive—LEL 4%, UEL 75%; primary explosion risk
Carbon dioxide (CO_2)	33.42	Asphyxiant at high concentrations
Carbon monoxide (CO)	11.51	Toxic, flammable—IDLH 1,200 ppm
Methane (CH_4)	5.80	Flammable—LEL 5%, UEL 15%
Ethylene (C_2H_4)	4.93	Flammable—LEL 2.7%, UEL 36%
Other hydrocarbons	2.35	Ethane, propylene, butylene, acetylene, propane, butadiene, butane, propyne—all flammable
Hydrogen fluoride (HF)	Not in GC	Highly toxic, corrosive—IDLH 30 ppm; from LiPF6 and PVDF
Phosphorus pentoxide (P_2O_5)	Not in GC	Toxic, irritating—from LiPF6 decomposition

Source: Cell-level UL9540A thermal runaway test

NOTE: Total flammable gas content is 66.6% by volume. Vent gas LFL is 8.1% in air (ambient)/ 7.3% (vent temp). Maximum explosion pressure (Pmax) is 0.782 MPa.

Other hazards

- Hydrogen fluoride is extremely toxic and corrosive—Immediately Dangerous to Life and Health (IDLH) at 30 ppm.
- Contaminated fire water may contain dissolved fluoride compounds.
- Do not attempt to fight a fully involved lithium-ion battery fire in an enclosed space without SCBA and explosive atmosphere precautions.

Advice for fire fighters

Immediate actions

1. Evacuate all non-essential personnel and establish an exclusion zone.
2. Ventilate if the battery is in an enclosed space, provide maximum ventilation before entry to disperse accumulated hydrogen. Do not enter an enclosed space with a suspected hydrogen atmosphere without continuous gas monitoring (LEL detector).
3. Eliminate ignition sources, de-energize non-intrinsically-safe electrical equipment in the vicinity. Avoid sparks, open flames, and static discharge.
4. Approach from upwind at all times.

Personal protective equipment

- Wear full protective turnout gear and self-contained breathing apparatus (SCBA) in positive-pressure mode.
- SCBA is required due to both HF toxicity (IDLH 30 ppm) and oxygen-displacement risk from CO_2/H_2 accumulation.

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Suppression

- Apply large quantities of water for cooling from maximum safe distance. Water is the most effective agent for preventing thermal runaway propagation between cells.
- Do not use water jets in a confined space with suspected hydrogen accumulation until the space has been ventilated and LFL readings confirm <25% LFL. Water application can generate steam that displaces remaining oxygen, and disturbed airflow can mix a marginally lean atmosphere into the explosive range.
- CO_2 and dry chemical powder (ABC type) may be used as secondary agents but are less effective at preventing cell-to-cell propagation.

Post fire

- Continue cooling for a minimum of 24 hours after visible fire is extinguished to prevent reignition.
- Monitor for reignition and hydrogen accumulation for at least 48 hours post event using continuous LEL and HF gas monitoring.
- Contaminated fire water may contain dissolved fluoride compounds. Contain and prevent the fire water from entering drains, waterways, or soil as per NFPA regulations.
- Do not move or disassemble damaged battery modules until temperatures have stabilized and gas monitoring confirms safe atmosphere.

NFPA 704 diamond

Health: 1 | Flammability: 1 | Reactivity: 0 | Special: None



6. Accidental release measures

This section provides guidance on responding to accidental gas releases or electrolyte leaks when the battery is damaged.

Personal precautions, protective equipment, and emergency procedures

- Evacuate personnel from the immediate area if battery is venting or smoking.
- Ensure adequate ventilation. Avoid confined spaces with venting batteries.
- Wear appropriate PPE, chemical-resistant gloves, safety goggles, and respiratory protection. For more information, see Exposure controls and personal protection on page 12.
- Keep area clear of all sources of ignition (sparks, open flames, and hot surfaces).
- Do not attempt to disassemble or move a swelling and venting battery unless trained.

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Environmental precautions

- Prevent leaked electrolyte from entering drains, waterways, sewers, and soil.
- Leaked electrolyte is toxic to aquatic organisms. Contain and collect it for proper disposal.
- Notify local environmental authorities if significant spill occurs.

Methods and materials for containment and cleaning

- Absorb leaked electrolyte with inert, non-combustible absorbent material (sand, diatomite, or vermiculite).
- Place damaged battery and contaminated absorbent into a labeled, sealable steel, or plastic container.
- Clean contaminated surfaces thoroughly with water.
- Dispose of all contaminated materials as hazardous waste as per section Disposal considerations on page 19.

7. Handling and storage

This section provides guidelines for the safe handling, operation, and storage of IQ Battery C80 to prevent damage, hazard, and premature degradation.

Precautions for safe handling

- Handle the IQ Battery C80 battery only as a complete sealed system. Do not open, modify, or disassemble.
- Do not short-circuit battery terminals.
- Do not overcharge or force-discharge the system.
- Do not crush, puncture, drop, or mechanically damage the unit.
- Do not expose to fire, open flame, or temperatures above 140°F (60°C).
- Avoid mechanical or electrical abuse.
- Ensure terminal covers and protective caps are in place during transport.
- Use forklift pockets and lifting eye bolts for unit handling (weight - 2 315 lb/1 050 kg).
- If a module is unintentionally damaged, use rubber/nitrile gloves to handle all components.
- Avoid contact with eyes and skin. Avoid inhalation of any released vapors.

Conditions for safe storage

Table 8: Safe storage requirements

Parameter	Requirement
Temperature	-22°F to 131°F (-30°C to 55°C) is the safe range for short-term storage 59°F to 77°F (15°C to 25°C) is recommended for long-term storage
Humidity	<95% RH, non-condensing
Ventilation	Well-ventilated area
Environment	Indoor or outdoor (NEMA 3R rated enclosure)
Separation	Keep away from heat sources, direct sunlight, open flames
Incompatible materials	Strong oxidizers, strong acids, strong alkalis, halogenated hydrocarbons

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Parameter	Requirement
Storage SOC	30–50% SOC recommended for periods exceeding 30 days. Unit should be powered on at least once every 6 months to check SOC and recharge when necessary
Stacking	Do not stack cabinets, use floor or pad mount only. Should be stored upright only

Specific end uses

This product is designed exclusively for stationary commercial/industrial energy storage applications. Do not use for motive power, marine, aviation, or portable applications.

8. Exposure controls and personal protection

This section outlines the exposure limits, engineering controls, and personal protective equipment (PPE) required to ensure safe handling of IQ Battery C80, particularly when the battery is damaged and internal materials are exposed.

Control parameters—occupational exposure limits

The following exposure limits apply only if battery integrity is compromised and internal materials are released:

Table 9: Occupational exposure limits

Component	OSHA PEL (8 hr TWA)	ACGIH TLV (8 hr TWA)	NIOSH REL	IDLH
Copper (fume)	0.1 mg/m^3	0.2 mg/m^3	0.1 mg/m^3	100 mg/m^3
Copper (dust)	1 mg/m^3	1 mg/m^3	1 mg/m^3	100 mg/m^3
Aluminum (metal dust)	15 mg/m^3 (total)/ 5 mg/m^3 (resp.)	1 mg/m^3 (resp.)	10 mg/m^3 (total)	N/E (not established)
Graphite (natural)	15 mg/m^3 (total)	2 mg/m^3 (resp.)	2.5 mg/m^3 (resp.)	N/E (not established)
Carbon black	3.5 mg/m^3	3 mg/m^3 (inhalable)	3.5 mg/m^3	1 750 mg/m^3
Hydrogen fluoride (HF)	3 ppm (ceiling)	0.5 ppm (C)	3 ppm (ceiling)	30 ppm
Lithium hexafluorophosphate	N/E	N/E	N/E	N/E

Table 10: Exposure limit sources

Exposure limits	Source	Specific reference
OSHA PEL	Occupational Safety and Health Administration	29 CFR 1910.1000, Table Z-1—limits for air contaminants

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Exposure limits	Source	Specific reference
ACGIH TLV	American Conference of Governmental Industrial Hygienists	TLVs and BEIs booklet, 2024 edition—annual publication
NIOSH REL/IDLH	National Institute for Occupational Safety and Health	NIOSH Pocket Guide to Chemical Hazards—current online edition

Engineering controls

- Normal operation: No special engineering controls required. IQ Battery C80 is a sealed NEMA 3R system with integrated ventilation.
- Damaged/Venting battery: Ensure maximum ventilation. Use local exhaust ventilation or operate in open air. Do not enter confined spaces with venting batteries without supplied-air respiratory protection.

Personal protective equipment (PPE)

Table 11: PPE requirement

Condition	PPE required
Normal handling/installation	Standard work gloves, safety footwear (unit weight - 1 050 kg)
Damaged/Venting battery	Chemical-resistant gloves (nitrile), splash-proof safety goggles, full-face shield, SCBA or supplied-air respirator, chemical-resistant protective clothing
Post-fire/Cleanup	Full hazmat suit, SCBA, chemical-resistant boots and gloves

General hygiene measures

- Wash hands thoroughly after handling battery, especially if any contact with battery internals occurs.
- Do not eat, drink, or smoke while handling damaged batteries.
- Remove contaminated clothing immediately and wash before reuse.

9. Physical and chemical properties

This section provides a comprehensive description of the physical and chemical characteristics of IQ Battery C80 and its individual battery cells.

Table 12: System properties

Property	Value
Appearance	Rectangular cabinet, powder-coated steel enclosure
Color	Pantone 10101C
Dimensions (W × H × D)	36.2 in × 78.7 in × 31.5 in (920 mm × 2 000 mm × 800 mm)
Weight	2 315 lb (1 050 kg)

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Property	Value
Module weight	~290 lb (130 kg) each
Odor	None under normal conditions
pH	Not applicable (sealed article)
Flash point	Not applicable (sealed article)
Flammability	Not applicable unless individual components exposed
Auto ignition temperature	Product is not self-igniting
Decomposition temperature	Average cell venting onset: ~338°F (170°C); average thermal runaway onset: ~444°F (229°C)—per UL 9540A testing
Solubility (water)	Not applicable (sealed article)
Density	~0.06 lb/in^3 (1 700 kg/m^3) (system-level)
Vapor pressure	Not applicable (sealed article)

Table 13: Cell properties

Property	Value
Form	Prismatic
Color	Blue wrapping
Nominal voltage	3.2 V
Capacity	314 Ah
Energy	1 005 Wh
Cell weight	12.3 ±0.2 lb (5.6 ±0.1 kg)
Odor (if leaking)	Ether-like (organic carbonate solvents)
Cell vent temperature	Average ~338°F (170°C); 329°F to 343°F (165°C to 173°C range) as per UL 9540A report
Thermal runaway onset	Average ~444°F (229°C); 428°F to 450°F (220°C to 232°C range) as per UL 9540A
Maximum cell temperature	917.6°F (492°C) (peak observed) as per UL 9540A
Vent gas volume (per cell)	190 L (std) as per UL 9540A
Cell mass loss	~2.6 lb (1.2 kg) (21% of cell mass) as per UL 9540A

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10. Stability and reactivity

This section describes the chemical stability of IQ Battery C80 and the conditions that could lead to hazardous reactions.

Reactivity

Stable under recommended storage and handling conditions. For more information, see Handling and storage on page 11.

Chemical stability

Stable under normal conditions of use, storage, and transport.

Possibility of hazardous reactions

None under normal processing. Hazardous reactions may occur if the battery is subjected to fire, mechanical damage, overcharge, short-circuit, or other abusive conditions.

Conditions to avoid

- Temperatures above 60°C or exposure to fire
- Mechanical deformation, crushing, or puncture
- Disassembly
- Overcharge or forced over-discharge
- Overcurrent
- Short-circuit (external or internal)
- Prolonged exposure to high humidity or immersion in liquid
- Exposure to strong oxidizers, acids, or alkalis
- Dropping of the module from heights

Incompatible materials

- Strong oxidizing agents
- Strong mineral acids (sulfuric, hydrochloric, nitric)
- Strong alkalis (sodium hydroxide, potassium hydroxide)
- Halogenated hydrocarbons
- Water (contact with exposed electrolyte salt LiPF6 generates HF)

Hazardous decomposition products

Under thermal abuse or fire conditions, the following decomposition products may be released. The following vent gas composition is from UL 9540A cell-level testing report. Total vent gas produced per cell: 190 L (std), cell mass loss: 2.6 lb (1.18 kg) (12.4 to 9.8 lb (5.65 to 4.47 kg)).

Table 14: Measured vent gas composition (UL 9540A, % vol)

Gas	Formula	Concentration (% vol)	Hazard classification
Hydrogen	H_2	41.989	Explosive—LEL 4%, UEL 75%; primary explosion risk

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Gas	Formula	Concentration (% vol)	Hazard classification
Carbon dioxide	CO_2	33.421	Asphyxiant at high concentrations
Carbon monoxide	CO	11.505	Toxic, flammable—IDLH 1,200 ppm
Methane	CH_4	5.802	Flammable—LEL 5%, UEL 15%
Ethylene	C_2H_4	4.931	Flammable—LEL 2.7%, UEL 36%
Ethane	C_2H_6	0.682	Flammable—LEL 3%, UEL 12.4%
Propylene	C_3H_6	0.611	Flammable—LEL 2%, UEL 11.1%
Butylene	C_4H_8	0.462	Flammable
Acetylene	C_2H_2	0.191	Flammable—LEL 2.5%, UEL 81%
Propane	C_3H_8	0.165	Flammable—LEL 2.1%, UEL 9.5%
Butadiene	C_4H_6	0.160	Flammable, suspected carcinogen
Butane	C_4H_{10}	0.057	Flammable—LEL 1.8%, UEL 8.4%
Propyne	C_3H_4	0.024	Flammable

Source: Cell-level UL9540A thermal runaway test

NOTE: Total flammable gas content is 66.6% by volume (H_2 + CO + all hydrocarbons). The vent gas is a severe explosion hazard in any enclosed or poorly ventilated space.

Table 15: Vent Gas Flammability Properties (UL 9540A/ASTM E918/ISO 817/EN 15967)

Property	Value	Test method
Lower flammability limit (LFL), ambient	8.1% vol in air	ASTM E918-19
Lower flammability limit (LFL), vent temp	7.3% vol in air	ASTM E918-19
Burning velocity (Su)	0.486 m/s	ISO 817:2014/Amd 2:2021
Maximum explosion pressure (Pmax)	0.782 MPa	EN 15967:2022

Source: Cell-level UL 9540A thermal runaway test

Table 16: Additional decomposition products (not captured in gas chromatography)

Product	Source
Hydrogen fluoride (HF)	LiPF6 electrolyte salt decomposition; PVDF binder decomposition—IDLH 30 ppm
Phosphorus pentoxide (P2O5)	LiPF6 decomposition
Lithium oxide fumes	Cathode/electrolyte decomposition
Organic vapors (carbonates)	Electrolyte solvent evaporation (DEC, EMC, EC)

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11. Toxicological information

This section outlines the potential health effects and toxicological risks associated with IQ Battery C80 in scenarios where internal battery materials are released due to damage or failure.

General

Under normal conditions of use, IQ Battery C80 presents no toxicological hazard. The battery components are sealed within the cells, modules, and cabinet enclosure. Risk of exposure to internal components exists only if the battery is mechanically or electrically abused, resulting in breach of the sealed cell casing.

Table 17: Likely routes of exposure (abnormal conditions only)

Route	Symptoms
Eye contact	Severe irritation, chemical burns from electrolyte; potential permanent damage
Skin contact	Irritation, burning, dryness; chemical burns from concentrated electrolyte
Inhalation	Respiratory irritation, coughing, difficulty breathing; HF exposure may cause delayed pulmonary edema
Ingestion	Poisoning if internal materials swallowed; gastrointestinal irritation

Target organs

The organs that are most affected in the event of chronic or significant exposure to internal battery materials are nervous system, liver, and kidneys.

Acute toxicity data (electrolyte components)

Table 18: Acute toxicity data

Component	LD50 (oral, rat)	LD50 (dermal, rabbit)	LC50 (inhalation, 4h, rat)
Ethylene carbonate	10,000 mg/kg	>3,000 mg/kg	No data
Diethyl carbonate	>5,000 mg/kg	No data	No data
Dimethyl carbonate	13,000 mg/kg	>5,000 mg/kg	No data
LiPF6	No data	No data	No data

Source: ECHA/REACH

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Carcinogenicity

Table 19: Carcinogenicity data

Agency	Listed components	Classification
IARC	Carbon black (CAS 1333-86-4)	Group 2B—possibly carcinogenic to humans
NTP	None listed	—
OSHA	None listed	—
California Prop 65	Carbon black	Known to cause cancer (for more information, see Regulatory information on page 21)

NOTE: Listed substance is encapsulated within sealed cells (carbon black) and is not accessible during normal use. IARC Group 2B classification is based on inhalation exposure to airborne particulates—a route relevant only if battery integrity is compromised.

12. Ecological information

This section evaluates the environmental impact of IQ Battery C80, focusing on potential ecological risks if the battery is damaged and internal materials are released.

Toxicity

Under normal conditions, the sealed battery system presents no ecological hazard. If battery integrity is compromised, released electrolyte may be harmful to aquatic organisms.

Aquatic toxicity data (key components)

Component	Fish LC50 (96h)	Daphnia EC50 (48h)	Notes
Copper	0.665 mg/L	0.02 mg/L	Most toxic component if released
Aluminum	1.55 mg/L	No data	
Lithium iron phosphate	>28 mg/L	>28 mg/L	Low toxicity
Ethylene carbonate	>100 mg/L	>100 mg/L	Low toxicity

Source: ECHA/REACH

Persistence and degradability

- Organic electrolyte solvents (carbonates): slowly biodegradable.
- Metal components (copper, aluminum, lithium compounds): not biodegradable; persist in environment.

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Bioaccumulative potential

- Organic solvents: low bioaccumulation potential (Log Kow <1.3).
- Metals: may accumulate in soil and sediment.

Mobility in soil

- Low mobility for solid components.
- Liquid electrolyte may migrate through soil if released in quantity.

Other adverse effects

No additional known adverse environmental effects under normal conditions of use.

13. Disposal considerations

This section provides guidance on the safe and compliant disposal of IQ Battery C80, emphasizing environmental protection and adherence to regulatory requirements.

Waste treatment methods

- Do not incinerate the battery system or any of its components.
- Do not expose to temperatures exceeding 158°F (70°C) during disposal.
- Do not dispose of as regular municipal waste.
- Fully or partially discharge the system before disposal when it is safe to do so.
- Dispose of in accordance with all applicable federal, state, and local regulations.

Disposal recommendations

Method	Details
Preferred	Recycle through certified battery recycling programs (for example, Call2Recycle, Li-Cycle, Redwood Materials) Defective/damaged units may require additional precautions in accordance with local laws/standards
Alternative	Contact a licensed professional hazardous waste disposal service
Regulations	EPA RCRA (40 CFR 261, 262, 263, 264, 265); state-specific battery disposal regulations

Contaminated packaging

- Empty containers and packaging may retain residual chemical hazard.
- Keep away from heat and ignition sources.
- Recycle packaging where possible; otherwise dispose as industrial waste.

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14. Transport information

This section provides the classification, regulatory requirements, and handling guidelines for transport of IQ Battery C80 in compliance with applicable safety standards.

Classification

The IQ Battery C80 contains lithium-ion batteries classified as Class 9 Dangerous Goods for transport purposes.

Parameter	Value
UN number	UN 3480
Proper shipping name	Lithium-ion batteries
Hazard class	9 (Miscellaneous Dangerous Goods)
Subsidiary hazard	None
Packing group	II
Watt-hour rating (system)	80 320 Wh
Watt-hour rating (Cell)	1 005 Wh

UN 38.3 Compliance

The lithium-ion cells used in this product have been tested in accordance with the UN Manual of Tests and Criteria, Part III, Subsection 38.3.

Mode-specific requirements

Air transport (ICAO/IATA)

Not applicable. This product is not approved or intended for air transport to the US market.

Sea transport (IMDG Code)

Not applicable. This product is not approved or intended for sea transport to the US market.

Road transport (DOT/ADR)

Parameter	Value
US DOT	49 CFR 173.185
Packing instruction	P903
Label	Class 9 Lithium Battery Hazard Label

Special transport precautions

- System weight: 2 315 lb (1 050 kg)—requires forklift or crane for handling.
- Protect terminals from short-circuit during transport.
- Secure unit to prevent movement, tipping, or mechanical damage.

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- Transport at ambient temperature (avoid extremes).
- Ship at 30% to 50% SOC when practical.

15. Regulatory information

This section provides the applicable regulatory frameworks, compliance status, and legal disclosures in alignment with U.S. and international safety and environmental regulations.

United States regulations

Regulations	Status
OSHA HCS (29 CFR 1910.1200)	Article exemption applies; SDS provided voluntarily
TSCA (Toxic Substances Control Act)	All components listed or exempt
DOT (49 CFR 100-185)	Class 9, UN 3480
RCRA (Resource Conservation and Recovery Act)	Battery waste—consult state regulations
California Proposition 65	This product contains chemicals known to the State of California to cause cancer: carbon black (CAS 1333-86-4). For more information, see California Prop 65 disclosure
CPSA (Consumer Product Safety Act)	Applicable to consumer-facing products; C&I product — limited applicability
UL Listing	UL 1741 SA/SB, UL 9540, UL 9540A, UL 1973, UL 1642, UL 3141

California Prop 65 disclosure

NOTE: This product can expose you to chemicals including carbon black, which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Prop 65 chemical	CAS no.	Listing category	Date listed	Present in
Carbon black	1333-86-4	Cancer	2003-02-21	Cell anode (conductive additive, 0.2 wt% of cell)

NOTE:

- Under normal conditions of use, the listed chemicals are fully encapsulated within sealed battery cells or plated onto metallic components and are not accessible to the user. Exposure may occur only if battery integrity is compromised (mechanical damage, fire, thermal runaway) or during end-of-life disassembly. Enphase Energy provides this warning in accordance with Proposition 65 requirements regardless of actual exposure risk.
- Any additional chemical/material that may pose a risk shall be detailed in the final product safety data sheet prior to product launch.

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Product certifications

Standard	Status
UL 9540	Q1 2027
UL 9540A	Q1 2027
UL 1741/IEEE 1547	Q1 2027
UN 38.3	Passed
FCC Part 15	Q1 2027

16. Other information

This section provides supplementary details that support the use and interpretation of the safety data sheet for IQ Battery C80.

Abbreviations and acronyms

Abbreviation	Definition
ABC	Class A/B/C dry chemical fire extinguisher type
ACB	AC Breaker (cabinet-level power electronics)
ACGIH	American Conference of Governmental Industrial Hygienists
ASTM	American Society for Testing and Materials
BESS	Battery Energy Storage System
BMU	Battery Management Unit
C&I	Commercial and Industrial
CAS	Chemical Abstracts Service
CFR	Code of Federal Regulations (US)
CH_4	Methane
CHEMTREC	Chemical Transportation Emergency Center
CO	Carbon monoxide
CO_2	Carbon dioxide
CPSA	Consumer Product Safety Act
C_2H_2	Acetylene
C_2H_4	Ethylene
C_2H_6	Ethane
C_3H_4	Propyne
C_3H_6	Propylene

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Abbreviation	Definition
C_3H_8	Propane
C_4H_6	Butadiene
C_4H_8	Butylene
C_4H_{10}	Butane
DC	Direct Current
DEC	Diethyl carbonate (electrolyte solvent)
DGR	Dangerous Goods Regulations
DOT	Department of Transportation (US)
EC	Ethylene carbonate (electrolyte solvent)/European Commission (regulatory context)
EMC	Ethyl methyl carbonate (electrolyte solvent)
EmS	Emergency Schedule (maritime transport)
EPA	Environmental Protection Agency (US)
FCC	Federal Communications Commission
GC	Gas Chromatography
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H_2	Hydrogen
HCS	Hazard Communication Standard (OSHA)
HF	Hydrogen fluoride
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life and Health
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IMDG	International Maritime Dangerous Goods
ISO	International Organization for Standardization
LC50	Lethal Concentration, 50% (inhalation toxicity measure)
LD50	Lethal Dose, 50% (oral/dermal toxicity measure)
LEL	Lower Explosive Limit
LFL	Lower Flammability Limit
LFP	Lithium iron phosphate (LiFePO4)

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Abbreviation	Definition
LiPF6	Lithium hexafluorophosphate (electrolyte salt)
MPa	Megapascal (unit of pressure)
MSDS	Material Safety Data Sheet
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
P_2O_5	Phosphorus pentoxide
PCB	Printed Circuit Board
PCU	Power Conversion Unit
PE/PP	Polyethylene/Polypropylene (separator material)
PEL	Permissible Exposure Limit (OSHA)
Pmax	Maximum Explosion Pressure
PPE	Personal Protective Equipment
PVDF	Polyvinylidene fluoride (binder material)
RCRA	Resource Conservation and Recovery Act
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals (EU)
REL	Recommended Exposure Limit (NIOSH)
RH	Relative Humidity
SARA	Superfund Amendments and Reauthorization Act
SCBA	Self-Contained Breathing Apparatus
SDS	Safety Data Sheet
SOC	State of Charge
Su	Burning Velocity (laminar flame speed)
SVHC	Substance of Very High Concern (EU REACH)
TLV	Threshold Limit Value (ACGIH)
TSCA	Toxic Substances Control Act
TÜV	Technischer Überwachungsverein (German testing/certification body)
TWA	Time-Weighted Average
UEL	Upper Explosive Limit
UL	Underwriters Laboratories

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Abbreviation	Definition
UN	United Nations
UN 38.3	UN Manual of Tests and Criteria, Part III, Subsection 38.3 (lithium battery transport test)
Wh	Watt-hour (unit of energy)

Disclaimer

This safety data sheet has been prepared by Enphase Energy, Inc. based on available information from the cell supplier, internal product specifications, and publicly available hazard data. The information is believed to be accurate as of the revision date, but Enphase Energy makes no warranty, express or implied, regarding its accuracy or completeness.

This safety data sheet is provided for informational purposes to support safe handling, storage, transport, and emergency response. Users are responsible for determining the suitability of this information for their specific application and must comply with all applicable local, state, federal, and international regulations.

Enphase Energy, Inc. assumes no liability for any injury, loss, or damage resulting from the handling, storage, use, or disposal of this product, provided it is used in accordance with the instructions and precautions contained herein and in the product documentation.

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17. Revision history

Revision	Date	Description
DSH-01024-2.0	August 2026	Editorial updates.
DSH-01024-1.0		Preliminary release.

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