

Safety Data Sheet (SDS)

Revision date: December 15, 2021

SECTION 1: Identification of the substance / mixture and the company / undertaking

1.1 Product Identifier

Lithium-ion cells and battery packs, LiFePO₄

Product brand: Discover

| Product Model | Marketing Name |
|---------------|-------------------------|
| 12-48-6650 | 12-48-6650 |
| 42-48-6650 | 42-48-6650 |
| 12-36-6700 | 12-36-6700 |
| 14-24-2800 | 14-24-2800 |
| 44-24-2800 | 44-24-2800 |
| 15-24-1000 | 15-24-1000 |
| 15-36-1000 | 15-36-1000 |
| 900-0041 | 14-48-3000 / 44-48-3000 |
| 900-0042 | 14-36-3000 |
| 900-0043 | 14-24-3000 |
| 900-0044 | 14-12-3000 |
| 590-0080 | n/a |
| 590-0086 | n/a |
| 590-0090 | n/a |
| 590-0097 | n/a |
| IFR 26650P | n/a |
| IFR 32650 | n/a |

| Product Model | Marketing Name |
|-------------------|----------------|
| 900-0046 | DLB-G24-12V |
| 900-0047 | DLB-G24-24V |
| 900-0048 | DLB-G24-36V |
| 900-0049 | DLB-GC12-12V |
| 900-0050 | DLB-GC12-24V |
| 900-0051 | DLP-GC2-12V |
| 900-0052 | DLP-GC2-24V |
| 900-0053 | DLP-GC2-36V |
| 900-0054 | DLP-GC2-48V |
| 900-0065 | 46-48-1540 |
| 900-0066 | 46-24-1540 |
| GSP34135214F | n/a |
| 2770180E_30Ah_LFP | n/a |
| | |
| | |
| | |
| | |

Other means of identification:

Discover Energy Advanced Energy Systems (AES)
Discover LITHIUM BLUE Premium Series Lithium Battery
Discover LITHIUM PROFESSIONAL Series Lithium Battery
Discover HELIOS Energy Storage Lithium Battery
Discover Energy lithium / lithium ion
Discover Energy cell / module / battery / pack / system
Battery module / battery / pack / system

1.2 Relevant identified uses of the substance or mixture and uses advised against

Recommended Use: Electrochemical energy storage - industrial use
Uses advised against: Not applicable

1.3 Details of the supplier of the safety data sheet

Company: Discover Energy Corp.
Address: #4 Crestwood Place, Richmond, BC V6V 2E9 Canada
Telephone: +1 (778) 776 3288 Website: www.discoverbattery.com

03-830-0002 SDS Discover Lithium Battery LiFePO₄ Safety Data Sheet REV H

1.4 Emergency telephone number

Emergency phone: 1-800-535-5053 (Account# 84774)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]

This product is considered as a manufactured article, and not classified as hazardous according to EC 1272/2008.

Classification according to Directive 67/548/EEC

This product is not classified as hazardous according to Directive 67/548/EEC.

Classification according to Directive 1999/45/EC

This product is not classified as hazardous according to Directive 1999/45/EC.

2.2 Label elements

| | |
|--------------------------|------------------------|
| Symbols / Pictograms | No pictogram is used |
| Signal word | No signal word is used |
| Hazard statements | Not classified |
| Precautionary statements | Not classified |

2.3 Other hazards

Primary route(s) to exposure

This product is safe with normal use. Exposure to the ingredients contained within and/or their combustion products could be harmful. Risk of exposure occurs only if the battery is mechanically, thermally, or electrically abused and the enclosure is ruptured. If this occurs, exposure to electrolyte can occur by inhalation, ingestion, eye contact, and skin contact. The battery should not be opened or burned.

Inhalation

Inhalation of material from a sealed battery/cell is not an expected route of exposure. Vapors or mists from a ruptured battery/cell may cause respiratory irritation.

Ingestion

Swallowing of material from a sealed battery/cell is not an expected route of exposure. Swallowing the contents of a ruptured cell may cause serious chemical burns of the mouth, esophagus, and gastrointestinal tract.

Skin

Contact between the skin and battery will not cause harm. Contact with the contents of a ruptured cell/battery can cause severe irritation or burns to the skin.

Eye

Contact between the eye and battery will not cause harm. Contact with the contents of a ruptured cell/battery can cause severe irritation or burns to the eye.

SECTION 3: Composition/information on ingredients

3.1 Substances

Product is a manufactured article. Exposure to interior of article is not expected with normal use.

3.2 Mixture

Product is a manufactured article. Exposure to hazardous ingredients is not expected with normal use.

Composition for Li-ion Cell (Model: IFR32650) used inside product.

| Chemical Name | EC No | CAS No. | Weight (%) | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|-----------|------------|------------|---|
| Lithium Iron Phosphate | --- | 15365-14-7 | 27.04 | Not classified |
| Graphite (C) | 231-955-3 | 7782-42-5 | 12.78 | Carc. 1A, H350 Carc. 2, H351 STOT RE 1, H372 Comb. Dust |
| Aluminium (Al) | 231-072-3 | 7429-90-5 | 6.44 | Flam. Sol. 1 (H228) Water-react. 2 (H261) |
| Copper (Cu) | 231-159-6 | 7440-50-8 | 9.22 | Acute Tox. 4 (Oral), H302 Comb. Dust |
| Iron | 231-096-4 | 7439-89-6 | 23.52 | Comb. Dust |
| Nickel (Ni) | 231-111-4 | 7440-02-0 | 1.18 | Skin Sens. 1; Carc. 2; STOT RE 1; Aquatic Chronic 3; H317, H351, H372, H412 |
| Polyethylene (C ₂ H ₄) _n | --- | 9002-88-4 | 4.37 | Comb. Dust |
| Lithium, Hexafluorophosphate (LiPF ₆) | 244-334-7 | 21324-40-3 | 2.01 | Acute Tox. 3; Skin Corr. 1A; STOT RE 1; H301, H314, H372 |
| Organic Solvent | --- | --- | 13.44 | Not classified |

Composition for Li-ion Cell (Model: IFR26650P) used inside product.

| Chemical Name | EC No | CAS No. | Weight (%) | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|-----------|------------|------------|--|
| Lithium Iron Phosphate | --- | 15365-14-7 | 27.04 | Not classified |
| Graphite (C) | 231-955-3 | 7782-42-5 | 12.78 | Carc. 1A, H350 Carc. 2, H351 STOT RE 1, H372 Comb. Dust |
| Aluminium (Al) | 231-072-3 | 7429-90-5 | 6.44 | Flam. Sol. 1 (H228) Water-react. 2 (H261) |
| Copper (Cu) | 231-159-6 | 7440-50-8 | 9.22 | Acute Tox. 4 (Oral), H302 Comb. Dust |
| Iron | 231-096-4 | 7439-89-6 | 23.52 | Comb. Dust |
| Polyethylene (C ₂ H ₄) _n | --- | 9002-88-4 | 4.37 | Comb. Dust |
| Organic Solvent | --- | --- | 13.44 | Not classified |

Composition for Li-ion Cell (Model: 2770180E_30Ah_LFP) used inside product.

| Chemical Name | EC No | CAS No. | Weight (%) | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|-----------|------------|------------|--|
| Lithium Iron Phosphate | --- | 15365-14-7 | 28-32 | Not classified |
| Graphite (C) | 231-955-3 | 7782-42-5 | 13-17 | Carc. 1A, H350 Carc. 2, H351 STOT RE 1, H372 Comb. Dust |
| Aluminium (Al) | 231-072-3 | 7429-90-5 | 15-19 | Flam. Sol. 1 (H228) Water-react. 2 (H261) |
| Copper (Cu) | 231-159-6 | 7440-50-8 | 16-20 | Acute Tox. 4 (Oral), H302 Comb. Dust |
| Iron | --- | --- | --- | --- |
| Polyethylene (C ₂ H ₄) _n | --- | --- | --- | --- |
| Organic Solvent | --- | --- | 15-18 | Not classified |

Composition for Li-ion Cell (Model: GSP34135214F) used inside product.

| Chemical Name | EC No | CAS No. | Weight (%) | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|--|-----------|------------|------------|--|
| Lithium Iron Phosphate | --- | 15365-14-7 | 23 | Not classified |
| Graphite (C) | 231-955-3 | 7782-42-5 | 11.5 | Carc. 1A, H350 Carc. 2, H351 STOT RE 1, H372 Comb. Dust |
| Aluminium (Al) | 231-072-3 | 7429-90-5 | 5.5 | Flam. Sol. 1 (H228) Water-react. 2 (H261) |
| Copper (Cu) | 231-159-6 | 7440-50-8 | 6.7 | Acute Tox. 4 (Oral), H302 Comb. Dust |
| Iron | --- | --- | --- | --- |
| Polyethylene (C ₂ H ₄) _n | --- | 9002-88-4 | 2 | Comb. Dust |
| Organic Solvent | --- | --- | 13.2 | Not classified |

Weight of metallic lithium per cell: 0g. There is no metallic lithium in the lithium polymer battery.

These chemicals are contained in a sealed can, inside a sealed container. Risk of exposure only occurs if battery is mechanically, thermally or electrically abused.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice

In all cases of doubt, or when symptoms persist, seek medical attention. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Eyes

Not an expected route of exposure. Following eye contact, cautiously rinse affected eye with clean lukewarm water for at least 30 minutes. Remove contact lenses, if present and easy to do. If eye irritation persists, seek medical attention.

Skin

Not expected to present as skin hazard under anticipated conditions of normal use. Following skin contact, immediately remove contaminated clothing and wash skin with copious amounts of soap and water. If irritation or pain persists, seek medical attention.

Ingestion

Following ingestion, rinse out mouth with water. DO NOT INDUCE VOMITING. Seek immediate medical attention.

Inhalation

Not an expected route of exposure. If inhaled electrolyte, remove victim to fresh air and remove source of contamination from area. Keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms, seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Acute effects

Direct contact of internal electrolyte gel with eyes may cause severe burns or blindness

Direct contact of internal electrolyte gel with the skin may cause skin irritation or damaging burns.

Vapor or mist can irritate the eyes, mucous membranes and respiratory tract. Exposure can cause nausea, dizziness and headache.

Chronic/delayed effects

Overexposure to the internal electrolyte gel may cause reproductive disorder(s) based on tests with laboratory animals. Target organs affected could be kidneys, central nervous system, eyes, and male reproductive system. Overexposure may cause cancer. Target organs are the brain, intestine, mammary gland, haematopoietic system and kidneys.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, dry chemical powder, carbon dioxide (CO₂) and foam are most effective to extinguish a battery fire.

For small fires use only sand, dry chemical powder, CO₂ or regular foam. Continuously apply media until fire is extinguished.

For large fires, use copious quantities of water spray. Continuously apply media until fire is extinguished. Large fires should only be extinguished by trained fire fighters.

Unsuitable extinguishing media

Do not use small quantities of water. If water spray is used, it must be continually applied until fire is extinguished.

5.2 Special hazards arising from the substance or mixture

Battery may vent when subjected to excessive heat-exposing, fire or over voltage condition. Risk of explosion by fire is anticipated if batteries are disposed of in fire. Firefighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

The interaction of water or water vapour with electrolyte may result in the generation of hydrogen and hydrogen fluoride (HF) gas.

Contact with battery electrolyte may be irritating to the skin, eyes and mucous membranes. Fire will produce irritating, corrosive and/or toxic gases. Fumes may cause dizziness or suffocation.

Lithium-ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures, when damaged or abused.

Burning cells may ignite other cells or objects within close proximity.

5.3 Advice for firefighters

Large lithium-ion battery fires should only be extinguished by properly equipped fire fighters with training specific to lithium ion battery fires.

Wear NIOSH/MSHA/EN469-approved self-contained breathing apparatus (SCBA) and protective clothing when fighting chemical fires.

SECTION 6: Accidental release measures

The material contained within the batteries is only released if the battery is mechanically, thermally, or electrically abused and the enclosure is ruptured.

6.1 Personal precautions, protective equipment and emergency procedures

- Evacuate personnel to safe areas
- Ensure adequate ventilation, especially in confined areas
- Remove all sources of ignition
- Avoid contact with skin, eyes and inhalation of vapours
- User personal protection recommended in Section 8.3

6.2 Environmental precautions

- Prevent further leakage or spillage if safe to do so
- Do not allow electrolyte to flow into any sewer, on the ground or into any body of water

6.3 Methods and material for containment and cleaning up

Add neutralizer/absorbent, e.g. sand or vermiculite, to spill area. Sweep or shovel spilled material and absorbent and place in approved container. Dispose of any non-recyclable materials in accordance with local, state, provincial or federal regulations.

6.4 Reference to other sections

See Section 7 for more information

See Section 8 for more information

See Section 13 for more information

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not open, disassemble, crush, puncture, or burn product. If battery case is broken, avoid contact with internal components. Do not handle near heat, sparks, or open flames.

Remove metallic accessories, rings and other jewelry when handling live batteries.

Protect containers from physical damage to avoid leaks and spills.

Place cardboard between layers of stacked batteries to avoid damage and short circuits,

Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire.

7.2 Conditions for safe storage, including any incompatibilities

Insulate positive and negative terminals to avoid short circuit. Avoid mechanical or electrical abuse.

Store product in a cool, dry and ventilated area, which is subjected to little temperature changes. Storage at high temperatures, or exposure to direct sunlight for long periods, should be avoided. The recommended storage temperature is -20°C–45°C, not to exceed 60°C. Elevated temperatures can result in shortened battery life.

Keep out of reach of children.

Store in accordance with local regulations.

7.3 Specific end use(s)

Apart from the uses mentioned in SECTION 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls / personal protection

8.1 Control parameters

Occupational exposure limits

Exposures to hazardous substances are not expected when product is used for its intended purpose.

See Section 8.2 for ingredients with limit values that require monitoring at the workplace if a battery case has been compromised or damaged.

Biological limit values

Exposures to hazardous substances are not expected when product is used for its intended purpose.

Exposure limits at intended use

Exposures to hazardous substances are not expected when product is used for its intended purpose.

Derived No Effect Level (DNEL) / Predicted No Effect Concentration (PNEC) values

Not applicable.

Risk management measures according to used control banding approach

Not applicable.

8.2 Ingredients with limit values

| Chemical Name Region | Graphite (CAS #: 7782-42-5) | Copper (CAS #: 7440-50-8) | Aluminium (CAS #: 7429-90-5) | Lithium, Hexafluorophosphate (LiPF ₆) (CAS #: 21324-40-3) |
|-------------------------|--|--|---|---|
| Australia | 3 mg/m ³ | 1 mg/m ³ 0.2 mg/m ³ | 10 mg/m ³ 5mg/m ³ | 2.5 mg/m ³ |
| Austria | STEL: 10 mg/m ³ TWA: 5 mg/m ³ | STEL: 4mg/m ³ STEL: 0.4 mg/m ³ TWA: 1 mg/m ³ TWA: 0.1 mg/m ³ | STEL 20 mg/m ³ TWA: 10 mg/m ³ | --- |
| Belgium | --- | --- | --- | --- |
| Denmark | TWA: 2.5 mg/m ³ | TWA: 1.0 mg/m ³ TWA: 0.1 mg/m ³ | TWA: 5 mg/m ³ TWA: 2 mg/m ³ | TWA: 2.5 mg/m ³ |
| European Union | --- | --- | --- | --- |
| France | --- | TWA: 0.2 mg/m ³ TWA: 1 mg/m ³ STEL: 2 mg/m ³ | TWA: 10 mg/m ³ TWA: 5 mg/m ³ | --- |
| Finland | --- | TWA: 1 mg/m ³ TWA: 0.1 mg/m ³ | TWA: 1.5 mg/m ³ | --- |
| Germany | --- | TWA: 0.01 mg/m ³ Ceiling/peak: 0.02 mg/m ³ Ceiling/peak: 0.2 mg/m ³ | TWA: 4 mg/m ³ TWA: 1.5 mg/m ³ | TWA: 1 mg/m ³ Skin |
| Italy | --- | --- | --- | --- |
| Latvia | --- | TWA: 0.5 mg/m ³ STEL: 1 mg/m ³ | TWA: 2 mg/m ³ | --- |
| Netherlands | --- | TWA: 0.1 mg/m ³ | --- | --- |
| Norway | --- | TWA: 0.1 mg/m ³ TWA: 1 mg/m ³ STEL: 0.1 mg/m ³ STEL: 1 mg/m ³ | TWA: 5 mg/m ³ STEL: 5 mg/m ³ | --- |
| Poland | --- | --- | TWA: 2.5 mg/m ³ TWA: 1.2 mg/m ³ | --- |
| Portugal | --- | --- | TWA: 10 mg/m ³ TWA: 5 mg/m ³ | --- |
| Spain | --- | --- | TWA: 10 mg/m ³ TWA: 5 mg/m ³ | --- |
| Switzerland | --- | --- | TWA: 3 mg/m ³ | --- |
| United Kingdom | --- | --- | STEL: 30 mg/m ³ STEL: 12 mg/m ³ TWA: 10 mg/m ³ TWA: 4 mg/m ³ | --- |
| Other: | | | | |
| ACGIH TLV | TWA: 2.0 mg/m ³ Respirable fraction all forms except graphite fibers | TWA: 0.2 mg/m ³ fume TWA: 1 mg/m ³ Cu dust and mist | TWA: 1mg/m ³ respirable fraction | TWA: 2.5 mg/m ³ F |

| Chemical Name Region | Graphite (CAS #: 7782-42-5) | Copper (CAS #: 7440-50-8) | Aluminium (CAS #: 7429-90-5) | Lithium, Hexafluorophosphate (LiPF ₆) (CAS #: 21324-40-3) |
|-------------------------|-----------------------------|---|---|---|
| OSHA PEL | --- | --- | TWA: 15 mg/m ³ total dust TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 15 mg/m ³ total dust (vacated) TWA: 5 mg/m ³ respirable fraction (vacated) TWA: 5 mg/m ³ Al | --- |
| NIOSH IDLH | --- | IDLH: 100 mg/m ³ dust, fume and mist IDLH: 100 mg/m ³ Cu dust and mist TWA: 1 mg/m ³ dust and mist TWA: 0.1 mg/m ³ fume TWA: 1 mg/m ³ Cu dust and mist | TWA: 10 mg/m ³ total dust TWA: 5 mg/m ³ respirable dust TWA: 5 mg/m ³ Al | --- |

8.3 Exposure controls

Appropriate engineering controls

Not necessary under normal conditions. Broken or leaking batteries should be handled in accordance with good industrial hygiene and safety practices. Wash hands before work breaks and at the end of workday. Do not eat, drink or smoke while handling leaking batteries.

Personal protective equipment

Eye/face protection: Not necessary under conditions of normal use. In case of battery rupture or leakage, wear safety goggles or side shields when handling.

Skin protection: Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron and nitrile, neoprene, or natural rubber gloves when handling an open or leaking battery. Inspect gloves prior to use. Change disposable gloves within 30 minutes of obvious contamination by electrolyte. Remove dirty gloves by appropriate technique. Do not touch outer surface of glove.

Respiratory protection: Not necessary under conditions of normal use. In case of battery venting or rupture, inside an enclosed space, use NIOSH approved or equivalent self-contained breathing apparatus.

8.4 Environmental exposure controls

Comply with the handling and storage guidelines in Section 7. Do not allow any spilled electrolyte from damaged product in any sewer, on the ground, or into any body of water.

SECTION 9: Physical and Chemical Properties

9.1 Information on the basic physical and chemical properties

Appearance

Solid. Battery system, battery module, or cell.

| | |
|--|----------------|
| Color | Grey |
| Odor | Odourless |
| Odor threshold | Not applicable |
| pH | Not applicable |
| Melting point / freezing point | Not applicable |
| Initial boiling point / boiling range | Not applicable |
| Flash point | Not applicable |
| Evaporation rate | Not applicable |
| Flammability | Not applicable |
| Flammability limit in air | Not applicable |
| Vapor pressure | Not applicable |
| Vapor density | Not applicable |
| Density | Not applicable |
| Specific gravity | Not available |
| Solubility in water | Insoluble |
| Partition coefficient: n-octanol/water | Not applicable |
| Auto-ignition temperature | Not applicable |
| Decomposition temperature | Not applicable |
| Viscosity | Not applicable |
| Explosive properties | Not applicable |
| Oxidizing properties | Not applicable |

9.2 Other information

Electrical specifications

| Product Model | Nominal Voltage (V) | Electric Capacity (Ah) | Electric Energy (Wh) | Marketing Name |
|---------------|---------------------|------------------------|----------------------|----------------|
| 12-48-6650 | 51.2 | 130 | 6656 | 12-48-6650 |
| 42-48-6650 | 51.2 | 130 | 6656 | 42-48-6650 |
| 14-24-2800 | 25.6 | 110 | 2816 | 14-24-2800 |
| 44-24-2800 | 25.6 | 110 | 2816 | 44-24-2800 |
| 15-24-1000 | 25.6 | 40 | 1024 | 15-24-1000 |
| 12-36-6700 | 38.4 | 175 | 6720 | 12-36-6700 |
| 15-36-1000 | 38.4 | 25 | 960 | 15-36-1000 |
| IFR32650 | 3.2 | 5 | 16 | n/a |
| 900-0066 | 51.2 | 30 | 1536 | 46-48-1540 |
| 900-0065 | 25.6 | 60 | 1536 | 46-24-1540 |
| 900-0054 | 51.2 | 30 | 1536 | DLP-GC2-48V |
| 900-0053 | 38.4 | 30 | 1152 | DLP-GC2-36V |
| 900-0052 | 25.6 | 60 | 1536 | DLP-GC2-24V |
| 900-0051 | 12.8 | 120 | 1536 | DLP-GC2-12V |
| 900-0050 | 25.6 | 100 | 2560 | DLB-GC12-24V |
| 900-0049 | 12.8 | 200 | 2560 | DLB-GC12-12V |
| 900-0048 | 38.4 | 30 | 1152 | DLB-G24-36V |
| 900-0047 | 25.6 | 45 | 1152 | DLB-G24-24V |
| 900-0046 | 12.8 | 100 | 1280 | DLB-G24-12V |
| 900-0044 | 12.8 | 228 | 2918 | 14-12-3000 |

| | | | | |
|-----------|------|-----|------|----------------------------|
| 900-0043 | 25.6 | 114 | 2918 | 14-24-3000 |
| 900-0042 | 38.4 | 76 | 2918 | 14-36-3000 |
| 900-0041 | 51.2 | 57 | 2918 | 14-48-3000 / 44-48-3000 |
| 590-0080 | 51.2 | 57 | 2918 | n/a |
| 590-0086 | 38.4 | 76 | 2918 | n/a |
| 590-0090 | 25.6 | 114 | 2918 | n/a |
| 590-0097 | 12.8 | 228 | 2918 | n/a |
| IFR26650P | 3.2 | 3.8 | 12 | n/a |

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage and handling conditions (see Section 7, Handling and storage)

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

A shorted lithium battery can cause thermal and chemical burns upon contact with the skin.

If a battery is severely heated by a surrounding fire, acrid or harmful fumes may be emitted.

If leaked, do not allow contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

10.4 Conditions to avoid

Avoid mechanical or electrical abuse, including: external short circuit of battery, deformation by crush, direct sunlight, high humidity, temperatures exceeding 60°C, puncture, sources of ignition, or installation with incorrect polarity.

10.5 Incompatible materials

Strong bases, combustible organic materials, reducing agents, strong oxidizers, and sea water or other electrically conductive liquids.

10.6 Hazardous decomposition products

A compromised battery may emit irritating or toxic fumes and gases, including metallic oxide, hydrogen fluoride, carbon monoxide, and carbon monoxide.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute Toxicity

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|------------------------------|-----------------------|-----------------------|------------------------|
| Copper (CAS #: 7440-50-8) | > 2500 mg/kg bw (rat) | > 2000 mg/kg bw (rat) | = 1.03 mg/L/4 h (rat) |
| Aluminium (CAS #: 7429-90-5) | > 15900 mg/kg bw(rat) | --- | > 0.888 mg/L/4 h (rat) |
| Ferrum (CAS # 7439-89-6) | > 7500 mg/kg bw (rat) | --- | --- |

| | |
|-----------------------------------|---|
| Skin corrosion/irritation | Non-irritating to the skin under normal conditions |
| Serious eye damage/irritation | No eye irritation under normal conditions |
| Respiratory or skin sensitization | No information available. |
| Germ cell mutagenicity | No information available. |
| Carcinogenicity | Risk of exposure occurs only if the battery enclosure is compromised. |
| Reproductive toxicity | Risk of exposure occurs only if the battery enclosure is compromised. |
| STOT-single exposure | No information available. |
| STOT-repeated exposure | No information available. |
| Aspiration hazard | No information available. |

SECTION 12: Ecological information

When properly used or disposed, the batteries do not present environmental hazard.

12.1 Toxicity

| Chemical Name | Algae/aquatic plants EC50 | Fish LC50 | Crustacea EC50 |
|------------------------------|---|--|----------------|
| Copper (CAS #: 7440-50-8) | 0.031 – 0.054 mg/L/96h Pseudokirchnerilla subcapitata static 0.0426 – 0.0535 mg/L/72h Pseudokirchneriella subcapitata static | 1.25: 96h Lepomis macrochirus mg/L LC50 static 0.3: 96h Cyprinus carpio mg/L LC50 semi-static 0.8: 96h Cyprinus carpio mg/L LG50 Static 0.112: 96 h Poecilia reticulata mg/L LC50 Flow-through 0.0068 – 0.0156: 96 h Pimephales promelas mg/L LC50 0.3: 96h Pimephales promelas mg/L LC50 static 0.2: 96h Pimephales promelas mg/L LC50 flow-through 0.052: 96h Orcorhynchus mykiss mg/L LC50 flow-through | --- |
| Aluminium (CAS #: 7429-90-5) | --- | > 50 mg/L/96h | --- |

12.2 Persistence and degradability

Not readily biodegradable.

12.3 Bioaccumulative potential

No information available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

Not applicable.

12.6 Other adverse effects

Batteries and cells released in the environment will slowly degrade and may release toxic or harmful substances. Batteries should be disposed or recycled according to local regulations.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recycling is encouraged. Do not throw out a used battery or cell in the landfill. Electrolyte should not be dumped into any sewers, on the ground, or into any body of water. Recycle through a qualified recycling company.

| | |
|---------------|---|
| Canada | Dispose of in accordance with local, state and federal laws and regulations. |
| Europe | Dispose of in accordance with relevant EC Directives and national, regional, and local environmental control regulations. For disposal within the EC, the appropriate code according to the European List of Wastes (LoW) should be used. |
| USA | Dispose of in accordance with local, state and federal laws and regulations. |

Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics is the responsibility of the end user. Store material for disposal as indicated in Section 7.

SECTION 14: Transport information

All Discover AES battery models (and their internal cells) have independently passed testing required by Section 38.3 of the UN Manual of Tests and Criteria.

14.1 UN number

| | |
|---------------------------------|---|
| Air transport (ICAO/IATA) | UN3480 (only for 15-24-1000, 15-36-1000, IFR32650, IFR26650P, 900-0046, 900-0047, 900-0048, 900-0049, 900-0050, 900-0051, 900-0052, 900-0053, 900-0054, 900-0065, 900-0066) |
| Sea transport (IMDG) | UN3480 |
| Inland waterway transport (ADN) | UN3480 |
| Land transport (ADR/RID) | UN3480 |

14.2 Proper shipping name

| | |
|---------------------------------|--|
| Air transport (ICAO/IATA) | Lithium Ion Batteries (only for 15-24-1000, 15-36-1000, IFR32650, IFR26650P, 900-0046, 900-0047, 900-0048, 900-0049, 900-0050, 900-0051, 900-0052, 900-0053, 900-0054, 900-0065, 900-0066) |
| Sea transport (IMDG) | Lithium Ion Batteries |
| Inland waterway transport (ADN) | Lithium Ion Batteries |
| Land transport (ADR/RID) | Lithium Ion Batteries |

14.3 Hazard Class

| | |
|---------------------------------|--|
| Air transport (ICAO/IATA) | 9 (only for 15-24-1000, 15-36-1000, IFR32650, IFR26650P, 900-0046, 900-0047, 900-0048, 900-0049, 900-0050, 900-0051, 900-0052, 900-0053, 900-0054, 900-0065, 900-0066) |
| Sea transport (IMDG) | 9 |
| Inland waterway transport (ADN) | 9 |
| Land transport (ADR/RID) | 9 |

14.4 Packing Group

| | |
|---------------------------------|---|
| Air transport (ICAO/IATA) | II (only for 15-24-1000, 15-36-1000, IFR32650, IFR26650P, 900-0046, 900-0047, 900-0048, 900-0049, 900-0050, 900-0051, 900-0052, 900-0053, 900-0054, 900-0065, 900-0066) |
| Sea transport (IMDG) | II |
| Inland waterway transport (ADN) | II |
| Land transport (ADR/RID) | II |

14.5 Environmental Hazards

Dangerous goods

14.6 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Worldwide air transportation: The goods are packaged according to Section 1A of PACKING INSTRUCTION 965 of the 2016 IATA Dangerous Goods. Lithium-ion batteries may be air transported on CARGO AIRCRAFT ONLY and are forbidden in passenger aircraft.

Worldwide sea transportation: The goods are packaged according to the special provision 188 of IMDG. IMO-IMDG Code [P903]

14.7 Labeling

Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium-ion batteries which are assigned Class 9. Refer to relevant transportation documents. Lithium and lithium-ion cells and batteries are regulated in the USA in accordance with Part 49 Regulations of the Code of Federal Regulations, (49 CFR Sections 105-180) of the U.S. Hazardous Materials Regulations.

Lithium-ion batteries, under UN3480, PI 965, Section 1A, must be declared as CARGO AIRCRAFT ONLY (CAO) if shipped by air.



SECTION 16: Other information

This material Safety Data Sheet (SDS) complies with the requirements of Regulation (EC) No. 1907/2006.

16.1 Revision summary

| | |
|-------------------|--|
| August 26, 2016 | New document |
| November 1, 2016 | Updated 24-hour emergency contact number |
| November 10, 2017 | Added new models 15-36-1000, 12-36-6700; updated Discover logo |
| January 23, 2019 | Updated Packing Group, Labelling |
| December 19, 2019 | Added new models 14-3k series batteries and 26650 cell |
| July 28, 2020 | Clarification of Product Names and Models. |
| December 15, 2021 | Added new models (900-0046, 900-0047, 900-0048, 900-0049, 900-0050, 900-0051, 900-0052, 900-0053, 900-0054, 900-0065, 900-0066); Updated Sections 9.2 and 14 to reflect the additions of these models. |

16.2 Terms & Definitions

Key or legend to abbreviations and acronyms used in the SDS:

| | |
|---------------|--|
| AICS | Australian Inventory of Chemical Substances |
| Ceiling | Maximum limit value |
| DSL/NDSL | Canadian Domestic Substances List / Non-Domestic Substances List |
| ENCS | Japan Existing and New Chemical Substances |
| EINECS/ELINCS | European Inventory of Existing Chemical Substances / European List of Notified |
| IATA | International Air Transport Association |
| IECSC | China Inventory of Existing Chemical Substances |
| IMDG | International Maritime Dangerous Goods |
| KECL | Korean Existing and Evaluated Chemical Substances |
| NPRI | National Pollutant Release Inventory |
| STEL | Short Term Exposure Limit |
| TSCA | United States Toxic Substances Control Act Section 8(b) Inventory |
| STOT RE | Specific Target Organ Toxicity – repeated exposure |
| TWA | Time Weighted Average |
| WHMIS | Workplace Hazardous Materials Information System |

Full text of H-Statements referred to under Section 3

| | |
|------|---|
| H228 | Flammable solid |
| H261 | Contact with water releases flammable gases |
| H301 | Toxic if swallowed |
| H314 | Causes severe skin burns and eye damage |
| H317 | May cause an allergic reaction |
| H351 | Suspected of causing cancer |
| H372 | Causes damage to organs through prolonged or repeated exposure if inhaled |
| H412 | Harmful to aquatic life with long lasting effects |

16.3 Manufacturer disclaimer

THE INFORMATION ABOVE IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, DISCOVER ENERGY BATTERY MAKES NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES. ALTHOUGH REASONABLE PRECAUTIONS HAVE BEEN TAKEN IN THE PREPARATION OF THE DATA CONTAINED HEREIN, IT IS OFFERED SOLELY FOR YOUR INFORMATION, CONSIDERATION AND INVESTIGATION. THIS SAFETY DATA SHEET PROVIDES GUIDELINES FOR THE SAFE HANDLING AND USE OF THIS PRODUCT; IT DOES NOT AND CANNOT ADVISE ON ALL POSSIBLE SITUATIONS, THEREFORE, YOUR SPECIFIC USE OF THIS PRODUCT SHOULD BE EVALUATED TO DETERMINE IF ADDITIONAL PRECAUTIONS ARE REQUIRED.