

# Safety Data Sheet (SDS)

Revision date: October 23rd, 2024

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

### 1.1 Product Identifier

Lithium-ion cells and battery packs, LiFePO<sub>4</sub>

Product brand: Discover

Product Model	Marketing Name	Product Model	Marketing Name	Product Model	Marketing Name
12-48-6650	12-48-6650	590-0086	n/a	900-0053	DLP-GC2-36V
42-48-6650	42-48-6650	590-0090	n/a	900-0054	DLP-GC2-48V
12-36-6700	12-36-6700	590-0097	n/a	900-0062	48-48-5120
14-24-2800	14-24-2800	IFR 26650P	n/a	900-0067	48-48-5120-H
44-24-2800	44-24-2800	IFR 32650	n/a	GSP34135214F	n/a
15-24-1000	15-24-1000	900-0046	DLB-G24-12V	TB-027070180-	n/a
				FE-30Ah-X	
15-36-1000	15-36-1000	900-0047	DLB-G24-24V	CB27173204EA	n/a
900-0041	14-48-3000/	900-0048	DLB-G24-36V	900-0072	AES-B-G24-12V-H
	44-48-3000				
900-0042	14-36-3000	900-0049	DLB-GC12-12V	900-0073	AES-B-G24-24V
900-0043	14-24-3000	900-0050	DLB-GC12-24V	900-0075	AES-B-GC12-12V-H
900-0044	14-12-3000	900-0051	DLP-GC2-12V	900-0076	AES-B-GC12-24V
590-0080	n/a	900-0052	DLP-GC2-24V		

### Other means of identification:

Discover Advanced Energy System (AES)

Discover AES BLUE Premium Series Lithium Battery
Discover AES PROFESSIONAL Series Lithium Battery

Discover AES RACKMOUNT Lithium Battery

Discover lithium / lithium ion

Discover cell / module / battery / pack / system

Discover module / battery / pack / system

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

Recommended Use: Electrochemical energy storage - industrial

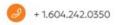
use Uses advised against: Not applicable

# 1.3 Details of the supplier of the safety data sheet

Company: Discover Energy Systems Corp.

830-0002 SDS Discover Lithium Battery LiFePO<sub>4</sub> Safety Data Sheet REV R









Name: Discover Energy Systems

Address: 13711 International Pl Unit 320, Richmond, BC V6V 2Z8 Canada

Telephone: +1 (604) 242-0350

Website: discoverenergysys.com

Emergency telephone number

**Emergency phone:** 1-800-535-5053 (Account# 115375)

# 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

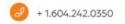
This product is safe with normal use. Exposure to the ingredients contained within and/or their combustion products could be harmful. Risk of exposure occurs only if the battery is mechanically, thermally, or electrically abused and the enclosure is ruptured. If this occurs, exposure to electrolyte can 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 the 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 the 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

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

#### 3.2 Mixture

The 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 <sub>2</sub> H <sub>4</sub> )n)		9002-88-4	4.37	Comb. Dust
Lithium,	244-334-7	21324-40-3	2.01	Acute Tox. 3; Skin Corr. 1A;
Hexafluorphosphate (LiPF <sub>6</sub> )				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 <sub>2</sub> H <sub>4</sub> )n)		9002-88-4	4.37	Comb. Dust
Organic Solvent			13.44	Not classified
		-		

# Composition for Li-ion Cell (Model: TB-027070180-FE-30Ah-X) 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-	7782-42-5	13-17	Carc. 1A, H350 Carc. 2,
	3			H351 STOT RE 1, H372
				Comb. Dust
Aluminum (Al)	231-072-	7429-90-5	15-19	Flam. Sol. 1 (H228)
	3			Water-react. 2 (H261)
Copper (Cu)	231-159-	7440-50-8	16-20	Acute Tox. 4 (Oral), H302 Comb. Dust
	6			
Lithium		7439-92-1	1.6-2	
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-	7782-42-5	11.5	Carc. 1A, H350 Carc. 2,
	3			H351 STOT RE 1, H372
				Comb. Dust





Chemical Name	EC No	CAS No.	Weight	Classification according to Regulation
			(%)	(EC) No.
				1272/2008 [CLP]
Aluminium (Al)	231-072-	7429-90-5	5.5	Flam. Sol. 1 (H228)
	3			Water-react. 2 (H261)
Copper (Cu)	231-159-	7440-50-8	6.7	Acute Tox. 4 (Oral), H302
	6			Comb. Dust
Iron				
Polyethylene (C <sub>2</sub> H <sub>4</sub> )n)		9002-88-4	2	Comb. Dust
Organic Solvent			13.2	Not classified

Composition for Li-ion Cell (Model: CB27173204EA) 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	30.0	Not classified
Aluminum (Al) Foil	231-072- 3	7429-90-5	6.9	
Aluminum (Al) Alloy	231-072- 3	7429-90-5	5.5	
Copper (Cu) Foil	231-159- 6	7440-50-8	16.1	Acute Tox. 4 (Oral), H302 Comb. Dust
Carbon (C)		7782-42-5	13.5	
Separator (C <sub>3</sub> H <sub>6</sub> ) <sub>n</sub>		9003-07-7	3.9	
Electrolyte (LiPF <sub>6</sub> /EC + DEC)			24.1	

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. The risk of exposure only occurs if the 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 the 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 the skin with copious amounts of soap and water. If irritation or pain persists, seek medical attention.

# Ingestion

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

#### **Inhalation**

Not an expected route of exposure. If inhaled electrolyte, remove the victim to fresh air and remove the source of contamination from the 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 the 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 headaches.

# 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 the fire is extinguished.

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

### Unsuitable extinguishing media

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

1.

#### 6.3 Methods and material for containment and cleaning up

Add neutralizer/absorbent, e.g. sand or vermiculite, to the spill area. Sweep or shovel spilled material and absorbent and place in an 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 products. If the 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 circuits. Avoid mechanical or electrical abuse. Store the 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

Exposure to hazardous substances are not expected when the 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**

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

#### Exposure limits at the intended use

Exposures to hazardous substances are not expected when the 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	Graphite (CAS #:	Copper (CAS#:	Aluminium (CAS	Lithium, Hexa-
Name	7782-42-5)	7440-50-8)	#: 7429-90-5)	fluorphosphate
				(LiPF <sub>6</sub> ) (CAS #:
Region				21324-40-3)
Australia	3 mg/m3	1 mg/m3	10 mg/m3	2.5 mg/m3
		0.2 mg/m3	5mg/m3	
Austria	STEL: 10 mg/m3	STEL: 4mg/m3	STEL 20 mg/m3	
	TWA: 5 mg/m3	STEL: 0.4 mg/m3	TWA: 10 mg/m3	
		TWA: 1 mg/m3		
		TWA: 0.1 mg/m3		



Chemical	Graphite (CAS #:	Copper (CAS#:	Aluminium (CAS	Lithium, Hexa-
Name	7782-42-5)	7440-50-8)	#: 7429-90-5)	fluorphosphate
				(LiPF <sub>6</sub> ) (CAS #:
Region				, ,
				21324-40-3)
Belgium	TWA: 2.5			T\A/A - 2 F/ 2
Denmark	mg/m3	TWA: 1.0 mg/m3 TWA: 0.1 mg/m3	TWA: 5 mg/m3 TWA: 2 mg/m3	TWA: 2.5 mg/m3
European Union		1 VV A. U.1 Mg/M3		
·		TWA: 0.2 mg/m3	TWA: 10 mg/m3	
France		TWA: 0.2 mg/m3	TWA: 5 mg/m3	
		STEL: 2 mg/m3	TVVA. 5 mg/ms	
Finland		TWA: 1 mg/m3	TWA: 1.5 mg/m3	
Tillana		TWA: 0.1 mg/m3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Germany		TWA: 0.01 mg/m3	TWA: 4 mg/m3	TWA: 1 mg/m3 Skin
Cermany		Ceiling/peak: 0.02	TWA: 1.5 mg/m3	3
		mg/m3		
		Ceiling/peak: 0.2 mg/m3		
Italy				
Latvia		TWA: 0.5 mg/m3	TWA: 2 mg/m3	
		STEL: 1 mg/m3	_	
Netherlands		TWA: 0.1 mg/m3		
Norway		TWA: 0.1 mg/m3	TWA: 5 mg/m3	
, ,		TWA: 1 mg/m3	STEL: 5 mg/m3	
		STEL: 0.1 mg/m3		
		STEL: 1 mg/m3		
Poland			TWA: 2.5 mg/m3	
			TWA: 1.2 mg/m3	
Portugal			TWA: 10 mg/m3	
			TWA: 5 mg/m3	
Spain			TWA: 10 mg/m3	
0			TWA: 5 mg/m3	
Switzerland			TWA: 3 mg/m3	
United Kingdom			STEL: 30 mg/m3	
			STEL: 12 mg/m3	
			TWA: 10 mg/m3	
0.1			TWA: 4 mg/m3	
Other:				
ACGIH TLV	TWA: 2.0 mg/m3	TWA: 0.2 mg/m3 fume	TWA: 1mg/m3	TWA: 2.5 mg/m3 F
	Respirable fraction	TWA: 1 mg/m3 Cu	respirable	
	all forms except	dust and mist	fraction	
	graphite			
	fibers			





Chemical	Graphite (CAS#:	Copper (CAS#:	Aluminium (CAS	Lithium, Hexa-
Name	7782-42-5)	7440-50-8)	#: 7429-90-5)	fluorphosphate
				(LiPF6) (CAS #:
Region				21324-40-3)
OSHA PEL			TWA: 15 mg/m3 total	
			dust	
			TWA: 5 mg/m3	
			respirable fraction	
			(vacated)	
			TWA: 15 mg/m3 total	
			dust (vacated)	
			TWA: 5 mg/m3	
			respirable fraction	
			(vacated)	
			TWA: 5 mg/m3 Al	
NIOSH IDLH		IDLH: 100 mg/m3 dust,	TWA: 10 mg/m3 total	
		fume and mist	dust	
		IDLH: 100 mg/m3 Cu	TWA: 5 mg/m3	
		dust and mist	respirable dust	
		TWA: 1 mg/m3 dust	TWA: 5 mg/m3	
		and mist	Al	
		TWA: 0.1 mg/m3 fume		
		TWA: 1 mg/m3 Cu		
		dust		
		and mist		

### 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 the 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 Odorless Odor threshold Not applicable рН 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 Not applicable Vapor pressure Vapor density Not applicable Density Not applicable Not available

Specific gravity

Solubility in water

Partition coefficient: n-octanol/water

applicable Auto-ignition temperature

Not

Not

applicable

Decomposition temperature

Viscosity

Not applicable

Explosive properties

Not applicable

Oxidizing properties

Not applicable



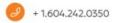




# 9.2 Other information

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
900-0054	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
900-0062	51.2	100	5120	48-48-5120
900-0067	51.2	100	5120	48-48-5120-H
IFR26650P	3.2	3.8	12	n/a
GSP34135214F	3.2	100	320	n/a
TB-027070180-FE- 30Ah-X	3.2	30	96	n/a
CB27173204EA	3.2	100	320	n/a
900-0072	12.8	100	1280	AES-B-G24-12V-H
900-0073	25.6	45.6	1167	AES-B-G24-24V
900-0075	12.8	200	2560	AES-B-GC12-12V-H
900-0076	25.6	100	2560	AES-B-GC12-24V





# **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.

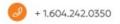
STOT-single exposure

STOT-repeated exposure

Aspiration hazard

No information available.

No information available.







# **SECTION 12: Ecological information**

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

### 12.1 Toxicity

Chemical Name	Algae/aquatic plants	Fish LC50	Crustacea EC50
	EC50		
Copper (CAS #: 7440-50-8)	0.031 – 0.054 mg/L/96h	1.25: 96h Lepomis	
	Pseudokirchnerilla	macrochirus mg/L LC50	
	subcapitata static	static 0.3: 96h Cyprinus	
		carpio mg/L	
	0.0426 - 0.0535	LC50 semi-static 0.8: 96h	
	mg/L/72h	Cyprinus carpio mg/L LG50	
	Pseudokirchneriella	Static 0.112: 96 h Poecilia	
	subcapitata static	reticulate 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 of 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, provincial 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, 900-0072, 900-0073, 900-0075, 900-0076)

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, 900-0072, 900-0073,

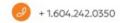
900-0075, 900-0076)

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
Sea transport (IMDG) 9
Inland waterway transport (ADN) 9
Land transport (ADR/RID) 9

# 14.4 Packing Group

Air transport (ICAO/IATA)

Sea transport (IMDG)

Inland waterway transport (ADN)

Land transport (ADR/RID)

None

#### 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 15: Regulatory information**

# 15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture

### Canada

This is not a controlled product under WHMIS. This product meets the definition of a "manufactured article" and is not subject to the regulations of the Hazardous Products Act.

All ingredients in the product are listed, as required, on the DSL/NDSL.

This product does not contain any NPRI Substances.

# **Europe**

Under normal use, this product is not classified as hazardous according to:

Regulation (EC) No 1272/2008

Directive 67/548/EEC

Directive 1999/45/EC

Risk phrases None

Safety phrases S2: Keep out of the reach of children.

#### **USA**

This product is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA hazard communication standard requirement.

TSCA Status All ingredients in the product are listed on the TSCA inventory.

SARA Title III

 Sec. 302/304
 None

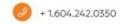
 Sec. 311/312
 None

 Sec. 313
 None

 CERCLA RQ
 None

California Prop 65 This product does not contain chemicals known to the State of California to

cause cancer or reproductive toxicity.





### **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 24-hour emergency contact number updated

November 10, 2017 New models 15-36-1000, 12-36-6700 added; updated Discover

logo January 23, 2019 Updated Packing Group, Labelling

December 19, 2019 New models 14-3k series batteries and 26650 cells added

July 28, 2020 Clarification of Product Names and Models.

December 15, 2021 New models added (900-0046, 900-0047, 900-0048, 900-0049, 900-

0050, 900-0051, 900-0052, 900-0053, 900-0054, 900-0065, 900-0066); Sections 9.2 and 14 reflect the additions of these models.

October 5, 2022 Updated Section 1.1 and Sections 9.2 to reflect the marketing name

46-12-1540 on an existing battery model.

January 30, 2023 New models added (900-0062, 900-0067). Sections 9.2 and 14 reflect

the additions of these models.

May 8, 2023 Removed 900-0065 and 900-0066 models. Sections 9.2 and 14

reflect changes.

July 5, 2023 Corporate entity update.

July 12, 2023 Product name update.

July 23, 2024 New models added (900-0072, 900-0073, 900-0075, 900-0076).

Sections 1.1, 9.2 and 14 reflect the addition of these models.

October 23, 2024 Brand update.

#### 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

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