SAFETY DATA SHEET

Regulation (EC) No 1907/2006 (REACH), Annex II
(COMMISSION REGULATION (EU) No 453/2010)
Rechargeable lithium iron phosphate battery pack

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

1.1. Product identifier

Product Name	Rechargeable lithium iron phosphate battery pack
Product Code	24V 10AH
REACH registration number	No information available

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

Recommended Use	Rechargeable lithium iron phosphate battery pack
Uses advised against	No information available

1.3. Details of the supplier of the safety data sheet

Supplier	OptimumNano Energy Co., Ltd
Address	No. 68, Lanjing North Road, Pingshan New District, Shenzhen, 518118, China
Postal Code	518118
Phone	0755 84630787
FAX	0755 84630785
E-mail	optlina@optimum-china.com
Importer	Roots Multiclean Ltd.
Address	RKG Industrial Estate, Ganapathy, Coimbatore 641006, India

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

The button cell is considered as an article, and this product is not classified as hazardous.

Classification according to Directive 67/548/EEC or 1999/45/EC

The button cell is considered as an article, and this product is not classified as hazardous.

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

No information available

SECTION 3: Composition/information on ingredients

3.1. Article

Chemical Name	EC No	CAS No	Weight-%	Classification according to Directive 67/548/EEC or 1999/45/EC	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Lithium iron phosphate	-	15365-14-7	27.04	Not classified	Not classified
Ferrum	231-096-4	7439-89-6	23.52	Not classified	Not classified
Organic solvent	-	-	13.44	Not classified	Not classified
Graphite	231-955-3	7782-42-5	12.78	Not classified	Not classified
Cuprum	231-159-6	7440-50-8	9.22	Not classified	Not classified
Aluminum	231-072-3	7429-90-5	6.44	Not classified	Not classified
Polyethylene	-	9002-88-4	4.37	Not classified	Not classified
Lithium hexafluorphosphate	244-334-7	21324-40-3	2.01	Not classified	Not classified
Nickel	-	14332-32-2	1.18	Not classified	Not classified

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice

If symptoms persist, call a physician.

Inhalation

Not an expected route of exposure.

If inhaled electrolyte, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor / physician.

Skin Contact

Not an expected route of exposure.

If contacted electrolyte, wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

Eye contact

Not an expected route of exposure.

If contacted electrolyte, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Ingestion

Not an expected route of exposure

If swallowed electrolyte, give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death.

4.2. Most important symptoms and effects, both acute and delayed

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.

4.3. Indication of any immediate medical attention and special treatment needed

May cause sensitization of susceptible persons. Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media — Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media — No information available

5.2. Special hazards arising from the substance or mixture

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.

5.3. Advice for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove all sources of ignition
Evacuate personnel to safe areas
Ensure adequate ventilation, especially in confined areas
Use personal protective equipment as required
Keep people away from and upwind of spill/leak

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so
Prevent product from entering drains
Do not flush into surface water or sanitary sewer system

6.3. Methods and material for containment and cleaning up

Add neutralizer/absorbent 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. Pick up and transfer to properly labeled containers

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

Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Do not handle near heat, sparks, or open flames. 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

Keep tightly closed in a dry and cool place
Keep in properly labeled containers
Keep containers tightly closed in a cool, well-ventilated place

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

Chemical Name	Australia	Austria	Belgium	Denmark	European Union
Graphite (CAS #: 7782-42-5)	3 mg/m^3	STEL 10 mg/m^3 TWA: 5 mg/m^3	-	TWA: 2.5 mg/m^3	-
Cuprum (CAS #: 7440-50-8)	1 mg/m^3 0.2 mg/m^3	STEL 4 mg/m^3 STEL 0.4 mg/m^3 TWA: 1 mg/m^3 TWA: 0.1 mg/m^3	-	TWA: 1.0 mg/m^3 TWA: 0.1 mg/m^3	-
Aluminum (CAS #: 7429-90-5)	10 mg/m^3 5 mg/m^3	STEL 20 mg/m^3 TWA: 10 mg/m^3	-	TWA: 5 mg/m^3 TWA: 2 mg/m^3	-
Lithium hexafluorphosphate (CAS #: 21324-40-3)	2.5 mg/m^3	-	-	TWA: 2.5 mg/m^3	-

Chemical Name	Latvia	France	Finland	Germany	Italy
Aluminum (CAS #: 7429-90-5)	TWA: 2 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	TWA: 1.5 mg/m^3	TWA: 4 mg/m^3 TWA: 1.5 mg/m^3	-

Chemical Name	Poland	Portugal	Spain	Switzerland	Netherlands
Aluminum (CAS #: 7429-90-5)	TWA: 2.5 mg/m^3 TWA: 1.2 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	TWA: 10 mg/m^3 TWA: 5 mg/m^3	TWA: 3 mg/m^3	TWA: 0.05 mg/m^3

Chemical Name	Norway	United Kingdom	ACGIH TLV	OSHA PEL	NIOSH IDLH
Graphite (CAS #: 7782-42-5)	-	-	TWA: 2 mg/m^3 respirable fraction all forms except graphite fibers	-	-
Cuprum (CAS #: 7440-50-8)	-	-	TWA: 0.2 mg/m^3 fume TWA: 1 mg/m^3 Cu dust and mist	-	-
Aluminum (CAS #: 7429-90-5)	TWA: 5 mg/m^3 STEL: 10 mg/m^3	STEL: 30 mg/m^3 STEL: 12 mg/m^3 TWA: 10 mg/m^3 TWA: 4 mg/m^3	TWA: 1 mg/m^3 respirable fraction	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 Aluminum	TWA: 10 mg/m^3 total dust TWA: 5 mg/m^3 respirable dust TWA: 5 mg/m^3 Al
Lithium hexafluorphosphate (CAS #: 21324-40-3)	-	-	TWA: 2.5 mg/m^3 F	-	-

Derived No Effect Level (DNEL)

No information available.

Predicted No Effect Concentration (PNEC)

No information available.

8.2. Exposure controls

Engineering Controls

Use with local exhaust ventilation. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection	Tight sealing safety goggles Face protection shield
Hand Protection	Wear protective gloves
Skin and body protection	Suitable protective clothing
Respiratory protection	In case of insufficient ventilation, wear suitable respiratory equipment

Environmental exposure controls

Do not allow into any sewer, on the ground or into any body of water

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Solid
Color	No information available
Odor	Odorless
Odor Threshold	Not applicable
pH	Not applicable
Melting point/freezing point	Not determined
Boiling point / boiling range	Not determined
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability (solid, gas)	Not determined
Flammability Limit in Air	Not determined
Vapor Pressure	Not applicable
Vapor density	Not applicable
Density	Not determined
Relative density	Not determined
Specific gravity	Not determined
Water solubility	Insoluble
Partition coefficient (LogPow)	Not determined
Autoignition temperature	Not determined
Decomposition temperature	Not determined
Kinematic viscosity	Not applicable
Dynamic viscosity	Not applicable
Explosive properties	Not predicted to be explosive.
Oxidizing properties	Not predicted to have oxidising properties.

9.2. Other information

No information available

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 normal conditions.

10.3. Possibility of hazardous reactions
When a battery is heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

10.4. Conditions to avoid
External short circuit of battery, deformation by crush, direct sunlight, high humidity, heating, sources of ignition.

10.5. Incompatible materials
Strong bases, combustible organic materials, reducing agents, strong oxidizers, and water.

10.6. Hazardous decomposition products
Irritating or toxic fumes and gases, metallic oxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ferrum (CAS #: 7439-89-6)	98.6 g/kg bw (rat)	-	-
Cuprum (CAS #: 7440-50-8)	> 2500 mg/kg bw(rat)	> 2000 mg/kg bw(rat)	=1.03 mg/L/4 h(rat)
Aluminum (CAS #: 7429-90-5)	LD50> 15900 mg/kg bw(rat)	-	LC50> 0.888 mg/L/4 h(rat)

Skin corrosion/irritation
Non-irritating to the skin.

Serious eye damage/eye irritation
No eye irritation.

Sensitization
No sensitization responses were observed.

Germ cell mutagenicity
No information available.

Carcinogenicity
Not classified

Reproductive toxicity
No information available.

STOT - single exposure
No information available.

STOT - repeated exposure
No information available.

Aspiration hazard
No information available.

SECTION 12: Ecological information

12.1. Toxicity

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Ferrum (CAS #: 7439-89-6)	-	-	> 100 mg/L/48h (Daphnia magna)
Cuprum (CAS #: 7440-50-8)	0.031 - 0.054 mg/L/96h Pseudokirchneriella subcapitata static 0.0426 - 0.0535 mg/L/72h Pseudokirchneriella subcapitata static	-	-
Aluminum (CAS #: 7429-90-5)	-	> 50 mg/L/96h	-

12.2. Persistence and degradability
No information available.

12.3. Bioaccumulative potential
No information available.

12.4. Mobility in soil
No information available

12.5. Results of PBT and vPvB assessment
PBT/vPvB assessment information is not available as chemical safety assessment not conducted.

12.6. Other adverse effects
No information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products	Do not throw out a used battery cell. Recycle through the recycling company if possible. Following local, State/Provincial, and Federal/National regulations applicable to end-of-life characteristics will be the responsibility of the end-user.
Contaminated packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations

SECTION 14: Transport information

14.1 UN Number	Not regulated
14.2 Proper shipping name	Not regulated
14.3 Hazard Class	Not regulated

14.4 Packing Group	Not regulated
14.5 Environmental hazards	Not applicable
14.6 Special precautions	No information available
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work
Take note of Directive 94/33/EC on the protection of young people at work
Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work

International Inventories

Component	TSCA	DSL/NDSL	EINECS/ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Lithium iron phosphate 15365-14-7 (27.04)	X	X	X	X	X	X	X	X
Ferrum 7439-89-6 (23.52)	X	X	X	-	X	X	X	X
Graphite 7782-42-5 (12.78)	X	X	X	-	X	X	X	X
Cuprum 7440-50-8 (9.22)	X	X	X	-	X	X	X	X
Aluminum 7429-90-5 (6.44)	X	X	X	-	X	X	X	X
Polyethylene 9002-88-4 (4.37)	X	X	-	X	X	X	X	X
Lithium hexafluorphosphate 21324-40-3 (2.01)	X	X	X	X	X	X	X	X
Nickel 14332-32-2(1.18)	-	-	-	-	-	-	-	-

"-" Not Listed
"X" Listed

15.2. Chemical safety assessment

No information available

SECTION 16: Other information

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

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Revision date	27-Apr-2015
Revision Note	Not applicable

Key or legend to abbreviations and acronyms used in the safety data sheet
TWA - TWA (time-weighted average)
STEL - STEL (Short Term Exposure Limit)
Ceiling - Maximum limit value
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Full text of H-Statements referred to under section 3
Not classified

Full text of R-phrases referred to under sections 2 and 3
Not classified

Disclaimer
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-------- End of Safety Data Sheet -------

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All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.