

Material Safety Data Sheet

Product name: Lithium Power Supply

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

1.1 Product Identifier

Lithium Power Supply 1200W 12VDC – 60Ah
LPS 1212-60Ah
014-02001GF

Lithium Power Supply 1500W 12V DC – 100Ah
LPS 1512-100Ah
014-01004GF

Lithium Power Supply 2500W 12V DC – 100Ah
LPS 2510-100Ah
014-03001GF

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

Function: Lithium-Ion Battery with Inverter/Charger.
Used as a battery.

Models: 014-01004GF, 014-02001GF, 014-03001GF

1.3 Details of the supplier of the safety data sheet

Company name:	Clayton Power ApS
Address:	Pakhusgaarden 42-48, DK-5000 Odense C
Phone:	+45 46 98 57 60
E-mail:	sales@claytonpower.com

1.4 Emergency telephone number

CHEMTREC Phone: 1-800-424-9300

SECTION 2: Hazards identification

2.1 Physical

The Lithium-Ion rechargeable batteries described in this Material Safety Data Sheet are sealed units, which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the solid electrode materials and liquid electrolyte they contain are non-reactive provided the battery integrity is maintained and seals remains intact. There is Risk of fire only in cases of abuse (mechanical, thermal, electrical), which leads to the activation of the safety valve and /or the rupture of the battery container (cell container). Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/fire may follow, depending upon circumstances. In case of excessive internal pressure and/or temperature the battery cells are fitted with a safety vent for protection and/or rupture of the cell case.

Substance		Melting point	Boiling point	Classification			
CAS NO	Chemical symbol	Temperature (85°C)	Temperature (85°C)	Exposure limit	Indication of danger	Special risk	Safety advices
12190-79-3	LiFePO ₄	> 1000°C	N/A			R22 R43	S2 S22 S24 S26 S36 S37 S43 S45
EC: 96-49-1 DMC: 616-38-6 DEC: 105-58-8 EA: 141-78-6	Organic solvents (DC-DMC-DEC-EA)	EC: 38°C DMC: 4°C DEC: -43°C EA: -84°C	EC: 243°C DMC: 90°C DEC: 127°C EA: 77°C	None established OSHA	Flammable	R21 R22 R41 R42/43	S2 S24 S26 S36 S37 S45
21324-40-3	LiPF ₆	N/A (decomposes at 160°C)	N/A	None established OSHA		R14 R21 R22 R41 R43	S2 S8 S22 S24 S26 S36 S37 S45

Special risks:

- R 14 - Reacts with water
- R 21 - Harmful in contact with skin
- R 22 - Harmful if swallowed
- R 41 - Risk for serious damage to the eye
- R42/43 - May cause sensitization by inhalation or skin contact
- R43 - May cause sensitization by skin contact

Safety advises:

- S 2 - Keep out of reach from children
- S 8 - Keep away from moisture
- S 22 - Do not breathe dust
- S 24 - Avoid contact with skin
- S 26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical attention
- S 36 - Wear suitable gloves
- S 45 - In case of incident, seek medical attention

SECTION 3: Composition/information on ingredients

3.1 Substances

Battery Model: Lithium Power Supply			
Ingredient	Weight %	CAS No.	Notes
Rare earth Mo	12%	7439-98-7	----
Li ₂ CO ₃	16%	554-13-2	----
Mn ²⁺	4.4%	7439-96-5	----
Graphite	15%	7782-42-5	----
Na ⁺	1.5%	7440-23-5	----
C	3.1%	7440-44-0	----
Fe ²⁺	13.4%	7439-89-6	----
PE	3.3%	9002-88-4	----
CU	15%	7440-50-8	----
Al	11.5%	7429-90-5	----
HF	1.5%	7664-39-3	----
Sr ²⁺	3.3%	7440-24-6	----

SECTION 4: First aid measures

4.1 Description of first aid measures

In case of battery rupture, fume or fire, evacuate personnel from contaminate area and provide maximum ventilation to clean out fumes/gases. Meantime, spray the battery with water or put the smoking battery into basin at once.

In all cases seek medical attention.

4.1.1 Contact with enclosed chemicals

Eye contact: Flush with plenty of water (eyelids held open) for at least 15 minutes.

Skin contact: Remove all contaminated clothing and flush affected areas with plenty of water and soap for at least 15 minutes. Do not apply greases or ointments.

Ingestion: Dilute by giving plenty for water and get immediate medical attention. Assure that the victim does not aspirate vomited material by use of positional drainage. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person.

Inhalation: Remove to fresh air and ventilate the contaminated area. Give oxygen or artificial respiration if needed.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Spray the battery with water or put the smoking battery into basin at once.

Can be used: Type D extinguishers, Co2, Dry chemical or Foam extinguishers.

5.2 Special hazards arising from the substance or mixture

Following cell overheating due to external source or due to improper use, electrolyte leakage or battery container rupture may occur and release inner components/material in the environment.

Eye contact: The electrolyte solution contained in the battery is irritant to ocular tissue.

Skin contact: The electrolyte solution contained in the battery causes skin irritation.

Ingestion: The ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract.

Inhalation: Contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and edema.

5.3 Advice for firefighters

Special protection: Use self-contained breathing apparatus to avoid breathing irritant fumes. Wear protective clothing and equipment to prevent body contact with electrolyte solution.

SECTION 6: Accidental release measure

6.1 Personal precautions, protective equipment and emergency procedures

The material contained within the batteries would only be expelled under abusive conditions. Soak under water or spray with copious amounts of water.

6.2 Environmental precautions

Dispose in accordance with local regulations.

6.3 Methods and material for containment and cleaning up

Place in approved container (after cooling if necessary)

SECTION 7: Handling and storage

7.1 Precautions for safe handling

The battery cells should not be opened, destroyed nor incinerate since they may leak or rupture and release the ingredients they contain to the environment.

Handling: do not crush, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder inside the unit. Do not throw into fire. Do not replace cells with different types/brands. Do not mix new and used cells. Keep cells inside the Lithium Power Supply unit.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool (preferably below 30°C) and ventilated area away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 100°C may result in battery leakage or rupture. Since short circuit can cause burn, leakage and battery rupture hazard, keep batteries in original packaging until use and do not place them sideways or upside/down.

Applying pressure or deforming the battery may lead to the rupture of battery container and disassembly followed by eye, skin and throat irritation. Lithium Power supply boxes are approved to be stacked up to 4 boxes on top of each other.

Recharge batteries at least once per 6 month.

7.3 Specific end use(s)

As a battery.

As an inverter/charger.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Under normal conditions engineering of the product will prevent overcharge and most predictable misuses. The Lithium Power Supply has an automatic shut-down feature.

8.2 Exposure controls

Respiratory protection: Not necessary under normal use- In case of battery rupture, use self-contained full-face respiratory equipment.

Hand protection: Not necessary under normal use. Use Viton rubber gloves if handling a leaking battery.

Eye protection: Not necessary under normal use. Wear safety goggles or glasses with side shields if handling of a ruptured battery cell.

Skin protection: Not necessary under normal use. Use rubber apron and protective working in case of handling of a ruptured battery cell.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

9.1.1 Physical

Physical State: Solid product containing chemicals inside.

Odour: None/Unremarkable under normal circumstances.

Appearance: Grey painted aluminum, white display with blue buttons.

Dimensions: 244x390x250 mm

Cells with Chemicals:

Appearance: Black prismatic cases with ribs, hermetically sealed and fitted with metallic terminals/connections.

9.1.2 Chemical:

Classification of dangerous substances contained into the product as per direction 67/548/EEC

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9.2 Other information

9.2.1 Physical

Electricity (230V): Electrical Output in front black socket and back white socket.

Electrical Input in back blue socket.

Electricity (12V): Electrical Output in the back socket 3rd from the top.

Electrical Input in the back socket 4th from the top.

9.2.2 Chemical

Lithium Power Supply temperature range:

	Continuous	Occasional
In storage during	30°C Max	-20/+70°C
Discharge during	-20/+65°C	-20/+70°C
During charge	0/+70°C	0/+70°C

SECTION 10: Stability and reactivity

Hazardous decomposition: Corrosive Irritant Hydrogen fluoride (HF) is produced in case of reaction of lithium hexafluorophosphate (LiPF₆) with water. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorus oxides during fire.

10.1 Conditions to avoid

Avoid heat above 85°C or incineration.

Avoid deformation, mutilation, crushing, piercing or disassembling the product.

Avoid short circuit.

Avoid prolonged exposure to humid conditions.

Avoid contact with water.

10.2 Incompatible materials

Water or other conductive elements are incompatible inside the product in regards to electrical hazard and short circuit.

No materials are advised to enter the product beyond proper usage.

10.3 Hazardous decomposition products

Does not decompose when used under normal conditions for intended uses.

Proper recycling is required when scrapping the unit after its lifetime.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Clayton Power Lithium Power Supply does not contain toxic materials.

SECTION 12: Ecological information

12.1 Toxicity

When properly used and disposed, Clayton Power Lithium Power Supply can be recycled and do not present environmental hazard during the unit's lifetime.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose in accordance with applicable regulations, which vary from country to country.

Lithium-Ion cells should have their terminals insulated and preferably wrapped in individual plastic bags prior to disposal.

Incineration: Incineration should never be performed by battery users but eventually by trained professionals in authorized facilities with proper gas and fumes treatment.

SECTION 14: Transport information

UM-No. 3480

ADR/RID

Class 9

Proper shipping name

Packing group: II

Lithium-ion batteries, UN3480

ADR/RID-Labels 9

IMO

Class

Proper shipping name

Packing group: II

Lithium-ion batteries, UN3480

IMO-Labels

9

IATA-DGR

Class

Proper shipping name

Packing group: II

Lithium-ion batteries, UN3480

ICAO-Labels

9

Clayton Power ApS declares that UN Manual of Tests and Criteria, Part III, sub-section 38.3 is met.

In airfreight, small Lithium-ion batteries (cells<20WH or packs>100WH) are considered as "Expected Lithium-ion Batteries", when they meet the requirements of Ed. 55 of IATA regulations (UN3480) and ICAO Packing Instruction 965 section IA, specifying less than 35kg gross per package. They are considered as Class 9.

In Sea freight, sealed Lithium-ion batteries are considered as "Lithium-ion batteries-Not restricted", when they meet the requirements of IMDG of IMO Dangerous Goods Regulations (UN3480).

SECTION 15: Regulatory information

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

The transport of rechargeable lithium-ion batteries is regulated by various bodies; IATA, IMO, ADR/RID.

SECTION 16: Other information

This information has been compiled from sources considered to be dependable and is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

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