

MSDS No.: TS-20220323-1

Date 23 March 2022

## Material Safety Data Sheet

Product: LPS II 3012-160

## SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

## Product identifier:

Lithium Power Supply 3000W 12V DC – 160Ah

LPS II 3012-160Ah

CL2103, CI2113

1.2. Relevant identified uses of the substance or mixture and uses advised against  
Used as a battery.

## 1.3. Details of the supplier of the safety data sheet

Company name: Clayton Power A/S

Address: Pakhusgaarden 42 – 48, DK5000 Odense C

Phone: +45 46 98 57 60

## 1.4. Emergency telephone number

CHEMTREC Phone: 1-800-424-9300

## SECTION 2: Hazards identification of battery cells.

Ingredient	Weight %	CAS No.	Notes
LiFePO <sub>4</sub>	42	15365-14-7	----
C	21	7782-42-5	----
Cu	8	7440-50-8	----
Al	4	7429-90-5	----
PP (C <sub>3</sub> H <sub>6</sub> ) <sub>n</sub>	4	9003-07-0	----
LiPF <sub>6</sub>	21	21324-40-3	----

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

The Lithium-Ion Rechargeable batteries described in this Safety Data Sheet is fitted with an integrated BMS providing protection when used according to the manufactures recommendations. The individual cells inside the battery assembly are sealed units and are not hazardous when used according to the manufactures recommendations.

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 remain 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. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/fire may follow, depending upon the circumstances. In case of excessive internal pressure and/or temperature the Lithium batteries are fitted with a safety vent for protection and/or rupture of the cell case.

#### 3.2. Mixtures

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

Substance		Melting Point	Boiling Point	Classification			
CAS NO	Chemical Symbol			Exposure Limit	Indication of Danger	Special Risk (1)	Safety Advices (2)
12190-79-3	LiFeYPO <sub>4</sub>	>1000°C	N/A				
21324-40-3	LiPF <sub>6</sub>	N/A (Decomposes at 160°C)	N/A	None established OSHA	H302 H317	P102 P260 P262 P305+P351+ P338 P337+P313 P280 P308+P313 P370 + P378	
					H312 H302 H318 RH334 H317	P102 P262 P305+P351+ P338 P337+P313 P280 P308+P313	
					H261 H312H302 H318 H317	P102 P232 P260 P262 P305+P351+ P338 P337+P313 P280 P308+P313	

(1) Nature of Special risks:

H261 In contact with water releases flammable gases.

H312 Harmful in contact with skin.

MSDS No.: TS-20220323-1

Date 23 March 2022

H302 Harmful if swallowed.

H318 Risk of serious damage to the eye.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

H317 May cause an allergic skin reaction

(2) Safety advices:

P102 Keep out of reach from children.

P232 Protect from moisture.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P262 Do not get in eyes, on skin, or on clothing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/attention.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P370 + P378 In case of fire: Use Class B fire extinguisher to extinguish

P308 + P313 IF exposed or concerned: Get medical advice/attention.

#### SECTION 4: First aid measures

In case of battery rupture, fume or fire, evacuate personnel from contaminated 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.

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 of 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**

Fire and fume hazard: Except LFP series batteries, LCP and LMP batteries can leak and/or spout vaporized or decomposed and combustible electrolyte fumes in case of exposure above 150°C resulting from inappropriate use, abuse, or from the environment. Possible formation of hydrogen fluoride (HF) and phosphorous oxides during fire. LiPF<sub>6</sub> salt contained in the electrolyte releases hydrogen fluoride (HF) in contact with water.

**5.3. Advice for firefighters**

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 measures**

The material contained within the batteries would only be expelled under abusive conditions. Soak under water or spray with copious amounts of water, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

**SECTION 7: Handling and storage****7.1. Precautions for safe handling**

Batteries should not be opened, destroyed or incinerated since they may leak or rupture and release in the ingredients they contain to the environment.

Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non-conductive (i.e. plastic) trays.

**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 and rupture. Since short circuit can cause burn, leakage and battery container rupture hazard, keep batteries in original packaging until use and do not tumble them.

MSDS No.: TS-20220323-1

Date 23 March 2022

**7.3. Specific end use(s)**

Follow manufacturer recommendations regarding maximum recommended currents and operating temperature range.

Applying pressure or deforming the battery may lead to the rupture of battery container and disassembly followed by eye, skin and throat irritation.

**SECTION 8: Exposure controls/personal protection**

*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 a leaking or ruptured battery.

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

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties**

Appearance: Grey and black aluminum prismatic case with handle indentations for handling. Electrical input and output in the front and two (+/-) terminals in the top/front edge of the battery.

Condition	Continuous	Occasional
In storage	5 / 40 °C	-20 / 45°C
Discharge	-20 / 60°C	-20 / 60°C
Charge	0 / 45°C	0 / 45°C

**9.2. Other information****SECTION 10: Stability and reactivity**

Conditions to avoid: Heat above 85°C or incinerate. Deform, mutilate, crush, pierce, and disassemble. Short circuit. Prolonged exposure to humid conditions.

Materials to avoid : N/A

Hazardous decomposition products: Corrosive/Irritant Hydrogen fluoride (HF) is produced in case of reaction of lithium hexafluorophosphate (LiPF<sub>6</sub>) with water. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorous oxides during fire.

**SECTION 11: Toxicological information**

Lithium-Ion batteries made by Clayton Power A/S do not contain toxic materials.

**SECTION 12: Ecological information**

When properly used or disposed, the Lithium-Ion batteries can be recycled and do not present environmental hazard during their life time.

**SECTION 13: Disposal considerations**

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

Lithium-Ion batteries should have their terminals and electrical connections isolated prior to disposal.

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

Recycling: Send to authorized recycling facilities or return to Clayton Power A/S.

**SECTION 14: Transport information****14.1. UN number**

UN3480

**14.2. UN proper shipping name**

ARD/RID

Class 9	Packing Group II	ARD/RID-Labels	9
Proper shipping nameLithium-Ion Batteries, UN3480			

IMO

Class	Packing Group II	IMO-Labels	9
Proper shipping nameLithium-Ion Batteries, UN3480			

IATA-DGR

Class	Packing Group II	ICAO-Labels	9
Proper shipping nameLithium-Ion Batteries, UN3480			

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

**14.3. Transport hazard class(es)**

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. 52 of IATA regulations (UN3480) and ICAO Packing Instruction 965 section II, specifying less than 10kg gross per package. Cargo shipment can move as normal cargo under current IATA

In other cases (mainly for large cells >20WH or packs > 100WH), they are considered as Class 9 (See Packing Instruction 965 section I for airfreight).

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**

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.

This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

Clayton Power A/S does not accept liability for any loss or damage that may occur whether direct, indirect, incidental or consequential, from the use of this information. Clayton Power A/S does not offer warranty against patent infringement. Additional information is available by calling the telephone number above designated purpose.