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正本/ORIGIN

编号: TCH24025797
No: TCH24025797
日期: 2024-10-23
Date: 2024-10-23

ZAIQ-RF(HH)-01-19

Safety Data Sheet

扫描查看在线报告



Applicant name: Pylon Technologies Co., Ltd.

Product Name: Lithium Iron Phosphate Battery Energy Storage System
PowerCube-20H-M7A200C5.015-EU-05 1331.2V 3768Ah 5.015MWh

Edit date: 2024-10-23

Edit institution: Technology Center of Hangzhou Customs District

Approver: 万旺军

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声 明

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The result in this test report is only valid for the tested samples.

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Lithium Iron Phosphate Battery Energy Storage System PowerCube-20H-M7A200C5.015-EU-05 1331.2V 3768Ah 5.015MWh

According to GHS rev 10

1. Identification of substance

Product Name	Lithium Iron Phosphate Battery Energy Storage System PowerCube-20H-M7A200C5.015-EU-05 1331.2V 3768Ah 5.015MWh
Other Name	None
Chemical Name	None
Recommended Use	Used in Industrial and Commercial energy storage
Manufacturer	Anhui Pylon Technologies Co., Ltd.
Address	Intersection of Daqianshan Road and Gaocheng Road, Economic Development Zone, Feixi County, Hefei, Anhui Province, China
Supplier	Pylon Technologies Co., Ltd.
Address	No.300, Miaoqiao Road, Kangqiao Town, Pudong New Area, Shanghai, China / 201315
Phone Number	+86-021-5131 7699
Fax Number	None
WEB or E-mail	sales@pylontech.com.cn
Emergency Phone Number	+86-021-5131 7699 or Call your nearest poison control centre

2. Hazards identification

GHS classification	The product meets the definition of "article". In the Globally Harmonized system of Classification and Labeling of Chemicals (GHS), the "articles" defined by the US Occupational Safety and Health Administration "Hazard Communication Standard" (29 CFR 1910.1200) or similar definitions do not fall within the scope of this system. [Rev. 10 (2023) Part 1.3.2.1.1]. According to GHS system (10 th revised edition), not classified as a hazardous chemical.
GHS Pictograms	—
Signal words	—
Hazard statements	—
Precautionary Statement Prevention	—
Precautionary Statement Response	—
Precautionary Statement Storage	—
Precautionary Statement Disposal	—
Other hazards which do not result in classification	Not available.

3. Composition/information on ingredients

☐ **Substances**

✓ **Mixtures****Component Information**

Component	CAS number	EINECS number	Mass(%wt)
Lithium Iron Phosphate (LFP)	15365-14-7	604-917-2	40.5
Graphite	7782-42-5	231-955-3	25
Electrolyte (EMC/EC/PC/LiPF ₆)	—	—	20
Copper	7440-50-8	231-159-6	8.5
Aluminium	7429-90-5	231-072-3	6

4. First-aid measures

NOTE TO PHYSICIAN	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.
After inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Get immediate medical attention.
After skin contact	In case of contact with substances in the battery, immediately flush skin thoroughly with soap and plenty of water. Remove and isolate contaminated clothing and shoes. If irritation persists, get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.
After eye contact	In case of contact with substances in the battery, immediately flush eyes with plenty of water for at least 15 minutes. Assure adequate flushing of the eyes by separating the eyelids with fingers. Get medical attention immediately.
After ingestion	Rinse mouth. Do not induce vomiting without medical advice. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Loosen tight clothing such as a collar, tie, belt or waistband. Do not use mouth-to-mouth method if victim ingested the substance. Seek immediate medical attention.
Most important symptoms / effects, acute and delayed	The battery's electrolyte can irritate skin, eyes, and mucosal tissues.

5. Fire-fighting measures

Suitable extinguishing agents	Water (cooling), use a HFC (hydrofluorocarbon) clean-agent fire extinguisher or alcohol resistant foam fire extinguishers. Heptafluoropropane and perfluorohexanone have better extinguishing effects.
Special hazards caused by the material, its products of combustion or flue gases	Cell may vent when subjected to excessive heat-exposing battery contents. Can be released in case of fire: carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen fluoride, hydrogen cyanide, benzene, toluene, methane, lithium oxide fumes, phosphorus

Protective equipment for fire-fighters	oxides, irritating and toxic fumes and gases. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask, insulating gloves, insulating boots, etc.
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6. Accidental release measures

Person-related safety precautions	If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Avoid skin and eye contact or inhalation of vapors.
Measures for environmental protection	Prevent further leakage or spillage if safe to do so. Do not allow material to be released to the environment without proper governmental permits.
Measures for cleaning/collecting	If batteries show signs of leaking, avoid skin or eye contact with the material leaking from the battery. Use chemical resistant rubber gloves and non-flammable absorbent materials for clean up. Mix with inert material (e.g. dry sand, vermiculite) and transfer to sealed container for disposal.
Additional information	See Section 7 for information on safe handling See section 8 for information on personal protection equipment. See Section 13 for information on disposal.

7. Handling and storage

Handling	
Information for safe handling	Operators should be trained and strictly abide by the operating procedures. It is recommended that operators wear general protective clothing and safety gloves. Keep away from fire, heat source and direct sunlight. Smoking is strictly prohibited in the workplace. Provide ventilation systems and equipment in the workplace. Such batteries must be packed in inner packages in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits. Avoid mechanical or electrical abuse. More than a momentary short circuit will generally reduce the battery service life. Avoid reversing battery polarity within the battery assembly. In case of a battery unintentionally be crushed, rubber gloves must be used to handle all battery components. Avoid contact with eyes, skin. Avoid inhalation. Store separately from strong oxidizing agents, corrosives.
Information about protection against explosions and fires	Avoid mechanical and electrical abuse. Do not short circuit or install incorrectly. Batteries may explode or cause burns if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in

accordance with equipment instructions.

STORAGE

Requirements to be met by storerooms and containers

The product should be stored in a clean, dry and well-ventilated environment with an ambient temperature of $-30\text{ }^{\circ}\text{C} \sim 60\text{ }^{\circ}\text{C}$ and relative humidity $\leq 75\%$, and should be away from fire and heat sources (not less than 2m). Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods. Charge and discharge once every 3 months when not used for a long time, and adjust the battery SOC to $30\% \sim 50\%$.

Information about storage in one common storage facility

Store in a cool, well-ventilated area. Keep away from fire, heat source and direct sunlight. The batteries shall be securely attached to the interior structure of the cargo transport unit (e.g. by means of placement in racks, cabinets, etc.) in such a manner as to effectively prevent short circuits and to prevent movement which could lead to short circuits.

Incompatible materials: strong oxidizing agents, flammables, explosive material, corrosives, harmful substances, etc.

Further information about storage conditions

The storage area shall be equipped with corresponding types and quantities of fire-fighting equipment, leakage emergency treatment equipment and appropriate containment materials.

8. Exposure controls/personal protection

Limit Values for Exposure

Component	CAS number	ACGIH TLV-TWA	ACGIH TLV-STEL	NIOSH REL-TWA	NIOSH REL-STEL
Lithium Iron Phosphate (LFP)	15365-14-7	N.E.	N.E.	N.E.	N.E.
Graphite	7782-42-5	2mg/m ³	N.E.	2.5mg/m ³	N.E.
Electrolyte (EMC/EC/PC/LiPF ₆)	—	—	—	—	—
Copper	7440-50-8	0.2 mg/m ³	N.E.	1 mg/m ³ 10mg/m ³ (total)	N.E.
Aluminium	7429-90-5	1mg/m ³	N.E.	5mg/m ³ (resp)	N.E.

Appropriate engineering controls

Use ventilation system and equipment. In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Provide safety shower and eye wash equipment.

General protective and hygienic measures

Not necessary under conditions of normal use. Personal protection is recommended for venting battery. No smoking,

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	drinking and eating at working site. Wash thoroughly after handling.
Personal protective equipment	Personal protection is recommended for venting battery: respiratory protection, protective gloves, protective clothing and safety glass with side shields.
Breathing equipment	When workers are facing high concentrations they must use appropriate certified respirators. Respiratory protection is not necessary under conditions of normal use.
Protection of hands	Not necessary under conditions of normal use.
Eye/Face protection	If necessary, wear safety glasses and safety masks.
Body protection	Full set of anti chemical reagent overalls, flame retardant antistatic protective clothing, choose body protection according to the amount and concentration of the dangerous substance at the work place.

Note: 1. N.E. means not established.

9. Physical and chemical properties

Physical state	Rechargeable Lithium-ion Battery System PowerCube, has a white prismatic appearance and is composed of 12 battery assemblies (PowerCube-M7A-200-166.4/1331.2V-E15) in parallel. The appearance of the Battery assembly (PowerCube-M7A-200-166.4 /1331.2V-E15) is white and black prismatic, consisting of 8 Lithium-ion battery modules HM7A200L connected in series. The appearance of the lithium-ion battery pack HM7A200L is black prismatic. Size (L*W*H), 6058*2438*2896 (mm) Weight, 42T
Colour	No data available
Odour	Odourless
Melting point/freezing point	No data available
Boiling point or initial boiling point and boiling range	No data available
Flammability	No data available
Lower and upper explosion limit/flammability limit	No data available
Flash point	No data available
Auto-ignition temperature	No data available
Decomposition temperature	No data available
pH	No data available
Kinematic viscosity	No data available

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Solubility	No data available
Partition coefficient: n-octanol/water(log value)	No data available
Vapour pressure	No data available
Density and/or relative density (water=1)	No data available
Relative vapour density (air=1)	No data available
Particle characteristics	No data available

10. Stability and reactivity

Reactivity	No data available.
Chemical stability	This is a stable product under recommended storage conditions.
Possibility of hazardous reactions	No polymerization.
Conditions to avoid (e.g. static discharge, shock or vibration)	Fire source, heating source, disassemble, external short circuit, crushes, deformation, high temperature, direct sunlight, high humidity, immerse in water or overcharge, etc. Avoid excessive vibration, external impact, and falling from heights, etc.
Incompatible materials	Explosives, flammables, strong oxidants and corrosives. If leaked, forbidden to contact with strong oxidising agents, mineral acids, strong alkalis, etc.
Hazardous decomposition products	May include metal oxides, carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen fluoride, hydrogen cyanide, benzene, toluene, methane, phosphorus oxides and other toxic smoke and gas.

11. Toxicological information

Routes of Entry:	Dermal contact, eye contact, inhalation, ingestion.
Acute Toxicity	LD50 (Oral, rat) N/A LC50 (Inhalation, rat) N/A LD50 (Dermal, rabbit) N/A
Skin corrosion/Irritation	The electrolyte may cause skin irritation.
Serious eye damage/irritation	The electrolyte may cause eye irritation.
Respiratory or skin sensitization	Not classified
Germ cell mutagenicity	Not classified
Carcinogenicity	Not classified
Reproductive toxicity	Not classified
STOT-single exposure	Not classified
STOT-repeated exposure	Not classified
Aspiration hazard	Not classified

Chronic Effects	Not classified
Further Information	In the event of exposure to internal contents, moderate or severe irritation, burning and dryness of the skin may occur, and may damage the nerves of the target organs. No detailed toxicological study.

12. Ecological information

Ecotoxicity	
Aquatic Toxicity	Test & Species 96 Hr LC50 fish: N/A 48 Hr EC50 Daphnia: N/A 72 Hr EC50 Algae: N/A
Persistence and degradability	Not available
Bioaccumulative potential	Not available
Mobility in soil	Not available
Additional Information	May cause water or soil pollution.

13. Disposal considerations

WASTE DISPOSAL INSTRUCTIONS

Contact a qualified professional waste disposal service to dispose of this material.
Dispose of in accordance with local environmental regulations or local authority requirements.

14. Transport information

The Recommendation of Transport of Dangerous Goods (TDG)	
UN Number	UN 3536
Proper Shipping Name	LITHIUM BATTERIES INSTALLED IN CARGO TRANSPORT UNIT
Class/Division	Class 9 Miscellaneous Dangerous Substances and Articles
Package Group	—
Subsidiary risk	—
labeling pictogram	



Note: The sample is a battery system with type PowerCube-20H-M7A200C5.015-EU-05, which contains 4992 cells in 12 parallels and 416 strings, a collection of battery modules with type HM7A200L. The battery modules (HM7A200L) have passed UN 38.3 each applicable testing. The battery modules do not equipped with battery overcharge protection, are only designed as a component in another battery or equipment which affords such protection. The battery assembly

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(PowerCube-20H-M7A200C5.015-EU-05, PowerCube-M7A-200-166.4/1331.2V-E15) have been verified. Cells and batteries incorporate a safety venting device. Cells and batteries are properly protected to prevent short circuits and reverse currents, and have a high quality management programme can be transported as mentioned above. This entry only applies to lithium ion batteries or lithium metal batteries installed in a cargo transport unit and designed only to provide power external to the cargo transport unit. The lithium batteries shall meet the requirements of 2.9.4 (a) to (g) and contain the necessary systems to prevent overcharge and over discharge between the batteries. The batteries shall be securely attached to the interior structure of the cargo transport unit (e.g. by means of placement in racks, cabinets, etc.) in such a manner as to prevent short circuits, accidental operation, and significant movement relative to the cargo transport unit under the shocks, loadings and vibrations normally incident to transport. Dangerous goods necessary for the safe and proper operation of the cargo transport unit (e.g., fire extinguishing systems and air conditioning systems), shall be properly secured to or installed in the cargo transport unit and are not otherwise subject to these Regulations. Dangerous goods not necessary for the safe and proper operation of the cargo transport unit shall not be transported within the cargo transport unit.

The batteries inside the cargo transport unit are not subject to marking or labelling requirements. The cargo transport unit shall display the UN number in accordance with 5.3.2.1.2 and be placarded on two opposing sides in accordance with 5.3.1.1.2.

The containers have been certified by Lloyd's Register of Classification Society (China) Co., Ltd. The CSC approval number is GB-LR 28301-06/2024. (Accepting the certificate of Lloyd's Register of Classification Society (China) Co., Ltd, NO. SHI2481720).

Maritime transport IMDG

Being same with TDG

Marine pollutant (Yes/No): No

EmS No.: F-A, S-I

According to 2.9.4.7 of IMDG Code (2022 Edition), except for button cells installed in equipment (including circuit boards), manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 shall make available the test summary as specified in the Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

Air transport ICAO-TI and IATA-DGR

Forbidden.

According to 3.9.2.6.1 (g) of IATA DGR (65th Edition), except for button cells installed in equipment (including circuit boards), manufacturers and subsequent distributors of cells or batteries manufactured after 30 June 2003 must make

available the test summary as specified in the UN Manual of Tests and Criteria, Part III, sub-section 38.3, paragraph 38.3.5.

15. Regulatory information

European/International Regulations

OSHA:	Hazardous by definition of Hazard Communication Standard (29CFR 1910.1200).
EINECS Status:	Graphite, Copper, Aluminium are included in EINECS inventory.
EPA TSCA Status:	Lithium Iron Phosphate (LFP), Graphite, Copper, Aluminium are included in TSCA public inventory.
Canadian DSL/NDSL (Domestic Substances List/ Non-domestic Substances List):	Lithium Iron Phosphate (LFP), Graphite, Copper, Aluminium are included in DSL / NDSL.
HMIS (Hazardous Material Identification System Ratings):	Health: 1 Flammability: 0 Physical hazard: 0 Personal protection: F (4. Severe Hazard; 3. Serious Hazard; 2. Moderate Hazard; 1. Slight Hazard; 0. Minimal Hazard)
WHMIS (Canadian Workplace Hazardous Material Identification System Ratings):	B6 (Aluminium).
List of dangerous goods (GB 12268-2012)	None.

16. other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

This Material Safety Data Sheet was based on the "Globally Harmonized System of Classification and Labelling of Chemicals", "Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations", "INTERNATIONAL MARITIME DANGEROUS GOODS CODE", "International Air Transport Association Dangerous Goods Regulations", the National Standards and other related dangerous chemicals management laws, regulations and standards, which are periodically updated and changed. To make dangerous goods / hazardous chemicals comply with the relevant requirements of the latest management, regularly update is recommended.

This Material Safety Data Sheet has been compiled in both English and Chinese. For any discrepancies, the Chinese version shall prevail.

Abbreviations and acronyms	ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road RID: Regulations Concerning the International Transport of Dangerous Goods by Rail IMDG: International Maritime Code for Dangerous Goods IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA) ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO) EINECS: European Inventory of Existing Commercial Chemical Substances CAS: Chemical Abstracts Service LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent EC50: Effective concentration, 50 percent
Edit Date	23.10.2024
Update and Revise	Original edition
Edit Standard	<i>Globally Harmonized System of Classification and Labelling of Chemicals</i> Part 1.5
Revised Institution	Technology Center of Hangzhou Customs District