

Notified Body
TÜV Rheinland
LGA Products GmbH

Tillystraße 2
90431 Nürnberg - Germany



recognized by the
**Bundesnetzagentur für Elektrizität, Gas,
Telekommunikation, Post und Eisenbahnen**
herewith issues an

EU-Type Examination Certificate

Notified under No. 0197

within the meaning of Annex III, Part A, Module B of the EMC Council
Directive 2014/30/EU on compliance with the EMC protection requirements

Certificate Holder:

Pylon Technologies Co., Ltd.
No. 73, Lane 887, Zu Chongzhi Road,
Zhangjiang Hi-Tech Park, Pudong
201203 Shanghai
P.R. China

Product:

Lithium-ion battery
(Rechargeable Li-ion Battery)

Type Identification:

US3000C US2000C

Serial No.: n.a.

Remark: Refer to test report NN20SMJA 001 for details.

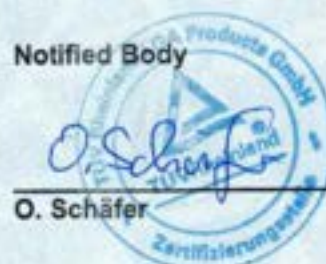
The technical design of the apparatus type has been verified based on the technical documentation presented by the manufacturer according to Annex III Module B of the Directive. As far as the assessed essential requirements apply, the Notified Body of TÜV Rheinland LGA Products GmbH confirms, that the technical design of the apparatus meets the essential requirements of the Directive 2014/30/EU Annex I. This certificate becomes void in case of equipment design changes or changes to the essential requirements which were not taken into account during the examination. The certificate consists of this page and enclosed evaluation report.

Registration No.: AV 50483005 0001

Evaluation Report No.: NN20SMJA 001 issued

Date 05.11.2020

Notified Body



O. Schäfer

Zertifikat

Certificate



Zertifikat Nr. Certificate No.
R 50485157

Blatt Sheet
0001

Ihr Zeichen Client Reference
Elvis Xu

Unser Zeichen Our Reference
01-XGJ-NN204ZKD 001

Ausstellungsdatum Date of Issue
09.11.2020 (day/mo/yr)

Genehmigungsinhaber License Holder

Pylon Technologies Co., Ltd.
No. 73, Lane 887, Zu Chongzhi Road,
Zhangjiang Hi-Tech Park, Pudong
201203 Shanghai
P.R. China

Fertigungsstätte Manufacturing Plant

Pylon Technologies Co., Ltd.
Plant 8,
No.505 Kunkai Road, JinXi Town,
Kunshan City
Jiangsu
P.R. China

Prüfzeichen Test Mark



Geprüft nach Tested acc. to
IEC 62619:2017
IEC 63056:2020

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

Energiespeichersystem (Rechargeable Li-Ion Battery)

Type designation : US3000C 10
Maximum current of the recommended charger[A]: 90A
Containing cell : PF37M
Rated capacity [Ah] : 74AH
Nominal voltage [Vd.c.] : 48
Upper limit charging voltage[Vd.c.]: 54
System designation: IFpP/13/141/238/[(2P5S)3S]M/0+50/95
End of discharging voltage[Vd.c.] : 40.5

Continued on page 0002

10

ANLAGE (Appendix): 1.0

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg

Tel.: +49 221 806-1371 e-mail: cert-validity@de.tuv.com

Fax: +49 221 806-3935 http://www.tuv.com/safety



Weichun Li

Zertifikat

Certificate



Zertifikat Nr. Certificate No.
R 50485157

Blatt Sheet
0002

Ihr Zeichen Client Reference
Elvis Xu

Unser Zeichen Our Reference
01-XGJ-NN204ZKD 001

Ausstellungsdatum Date of Issue
09.11.2020 (day/month/year)

Genehmigungsinhaber License Holder

Pylon Technologies Co., Ltd.
No. 73, Lane 887, Zu Chongzhi Road,
Zhangjiang Hi-Tech Park, Pudong
201203 Shanghai
P.R. China

Fertigungsstätte Manufacturing Plant

Pylon Technologies Co., Ltd.
Plant 8,
No.505 Kunkai Road, JinXi Town,
Kunshan City
Jiangsu
P.R. China

Prüfzeichen Test Mark



Bautyp geprüft
Sicherheit
Regelmäßige
Produktions-
überwachung

www.tuv.com
ID 1111231671

Geprüft nach Tested acc. to

IEC 62619:2017
IEC 63056:2020

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

Energiespeichersystem (Rechargeable Li-Ion Battery)

as page 0001 continuation

Charging temperature [°C] : -8 to 55
Discharging temperature [°C] : -10 to 55
Ingress Protection (IP) : IP20
Protection Class : I
Pollution degree (PD) : 2
Altitude [m] : 4000

Remark(s):

The installation has to be carried out according to the attached installation instruction.
Any additional requirements in countries where the product is going to be marketed have to be considered additionally.

ANLAGE (Appendix): 1.0

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.

This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg

Tel.: +49 221 806-1371 e-mail: cert-validity@de.tuv.com
Fax: +49 221 806-3935 http://www.tuv.com/safety



Weichun Li

C E R T I F I C A T E
of Conformity



Registration No.: AK 50485614 0001

Report No.: NN20G39D 001

Holder: Pylon Technologies Co., Ltd.
No. 73, Lane 887, Zu Chongzhi Road,
Zhangjiang Hi-Tech Park, Pudong
201203 Shanghai
P.R. China

Product: Battery
(Rechargeable Li-ion Battery)

Identification: Type Designation : US3000C
Serial Number : Engineering Sample
Remark(s) : Refer to test report NN20G39D 001
for details.

Tested acc. to: EN 62477-1:2012+A11+A1
IEC 62477-1:2012+A1

The certificate of conformity refers to the above mentioned product. This is to certify that the specimen is in conformity with the assessment requirement mentioned above. This certificate does not imply assessment of the production of the product and does not permit the use of a TÜV Rheinland mark of conformity.

Date 09.11.2020



Weichun Li

TÜV Rheinland LGA Products GmbH - Tillystraße 2 - 90431 Nürnberg

Pylon Technologies Co., Ltd.
Elvis Xu

Date : 09.11.2020
Our ref. : XGJ 01
Your ref.: Elvis Xu

No. 73, Lane 887, Zu Chongzhi Road,
Zhangjiang Hi-Tech Park, Pudong
201203 Shanghai
P.R. China

Ref : AK Certificate of Conformity

Type of Equipment : Rechargeable Li-ion Battery
Model Designation : See Certificate
Certificate No. : AK 50485614 0001
Report No. : NN20G39D 001

Dear Elvis Xu,

We herewith confirm that a sample of the above mentioned technical equipment has been tested and was found to be in accordance with the relevant requirements.

Enclosed please find your Certificate of Conformity.

We appreciate your kind support and would like to offer our assistance and continuous services in the future.

With kind regards,

Certification Body


Weichun Li

CC: Pylon Technologies Co., Ltd.

Enclosure

证书的详细资料请登陆www.certipedia.com查阅,或拨打我司客服热线800 999 3668 / 400 883 1300咨询



Test Report No. 64.168.20.60353.01A
Rev. 00
Dated 2021-02-23

Applicant: Pylon Technologies Co., Ltd.

Address: No. 73, Lane 887, Zu Chongzhi Road, Zhangjiang Hi-Tech Park,
Pudong, 201203 Shanghai, P.R. China

Sample Description: Rechargeable Li-ion Battery

Model No.: US2000C、US3000C、UP5000

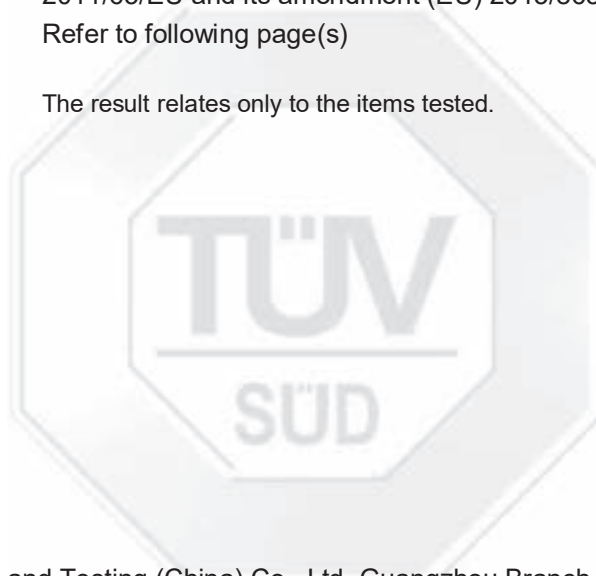
Sample Received Date: 2021-01-08

Test Period: From 2021-01-08 to 2021-02-19

Purpose of examination: Verification of RoHS (Restriction of Hazardous Substances) directive 2011/65/EU and its amendment (EU) 2015/863 on submitted samples

Test Result: Refer to following page(s)

Remark: The result relates only to the items tested.



TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group

Prepared by:

Autumn Lin

Autumn Lin
Project Handler



Reviewed by:

Kevin Zhang

Kevin Zhang
Designated Reviewer

This technical report may only be quoted in full. Any use for advertising purposes must be granted in writing. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group
5F, Communication Building, 163 Pingyun Rd, Huangpu West Ave.
Guangzhou 510656, P.R. China

Tel.: (86) 20 38320668
Fax: (86) 20 38320478

Page: 1 of 32



SUMMARY OF TEST RESULTS

No.	Test Requested	Conclusion	Remarks
1.	Heavy Metal (Pb, Cd, Hg and Cr VI) Content	PASS	/
2.	Polybrominated Biphenyls (PBBs) and Polybrominated Diphenyl Ethers (PBDEs) Content	PASS	/
3.	Phthalates (DEHP, BBP, DBP and DIBP) Content	PASS	/



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TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group
5F, Communication Building, 163 Pingyun Rd, Huangpu West Ave.
Guangzhou 510656, P.R. China

Tel.: (86) 20 38320668
Fax: (86) 20 38320478



Certificate of Compliance

Certificate: 80045633

Master Contract: 274187

Project: 80045633

Date Issued: 2020-10-30

Issued to: Pylon Technologies Co., Ltd.
No. 73, Lane 887, Zu Chongzhi Road,
Zhangjiang Hi-Tech Park, Pudong,
Shanghai, 201203,
China
Attention: Mr. Min Xu

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only



Issued by: Peng (Cheney) Chen
Peng (Cheney) Chen

PRODUCTS

CLASS - C3701-12 - Battery System for use in Stationary Applications.

CLASS - C3701-82 - Battery System for use in Stationary Applications - Certified to US standard.

Rechargeable Lithium ion Battery Pack for use in stationary application, Model US3000C.

Electrical Ratings:

Battery Pack Model	Battery Pack Ratings				Battery Module	BMS Model
	Normal Voltage, Vdc	Normal Capacity, Ah/Wh	Battery Pack Configuration*	Enclosure IP Rating		
US3000C	48	74Ah/3552Wh	(2p5s)*3	IP20	XM1674	MMCB_US02

Note*: Battery Pack consists of 3 modules XM1674, which are in series connected. The Module XM1674 consists of 10pcs Cells, which are connected in 2 parallel-5 series configuration.



Certificate: 80045633

Master Contract: 274187

Project: 80045633

Date Issued: 2020-10-12

Manufacturer's Specified Charging Parameters for Battery Pack

Battery Pack Model	Temperature Range, °C	Normal Charging Voltage, Vdc	Normal Charging Current, A	Maximum Charging Voltage, Vdc	Maximum Charging Current, A
US3000C	0~50	53.5	37	54	74 (0~45 Deg. C) 37 (45~50 Deg. C)

Manufacturer's Specified Discharging Parameters for Battery Pack:

Battery Pack Model	Temperature Range, °C	Normal Discharging Current, A	End-of-discharge voltage, Vdc	Maximum Discharging Power, W	Maximum Discharging Current, A
US3000C	-10~50	37	40.5	--	74

Conditions of Acceptability:

1. The battery pack including its battery management system has been tested according to the functional-safety requirements of ANSI/CAN/UL-1973:2018, Second Edition. Solid state circuits and software controls relied upon as the primary safety protection, have been evaluated to the Standard for Safety: Automatic Electrical Controls – Part 1, CSA/UL 60730-1. Any change to the software and electronic controls of the BMS may require additional testing.
2. The enclosure was evaluated only to establish an IP rating of IP20 with the Standard for Degrees of Protection Provided by Enclosure (IP Code) IEC 60529.
3. Product is evaluated for indoor use and shall avoid being used in moisture environment, and not being used near marine environments.
4. Further evaluation for Resistance of Moisture and/or Salt Fog shall be required for the battery pack intended to be used in the end product where moisture and/or salt fog condition were applied.
5. Manual disconnect device shall be required during the installation of the end products.
6. Corrosion due to electrochemical action is to be determined for conductive parts in contact with terminals when subjecting to the installation of the end products.
7. Equipment Application Location: Stationary
8. Access Location: Operator Accessible.
9. The installation was not evaluated. The battery system shall be installed in accordance with NFPA 70 or other applicable installation code.
10. Dielectric Voltage Withstand Test was performed with the test potential of 2000Vac/2828 Vdc, a higher test potential shall be considered in the end product if higher overvoltage category specified.
11. Overvoltage Category(OVC): 2
12. Pollution Degree(PD): 2
13. Altitude for Operation: Up to 2000 m.



Certificate: 80045633

Project: 80045633

Master Contract: 274187

Date Issued: 2020-10-12

APPLICABLE REQUIREMENTS

ANSI/CAN/UL-1973:2018, Second Edition - Batteries for Use in Stationary, Vehicle Auxiliary Power and Light Electric Rail (LER) Applications.

MARKINGS

See CSA report.



Supplement to Certificate of Compliance

Certificate: 80045633

Master Contract: 274187

*The products listed, including the latest revision described below,
are eligible to be marked in accordance with the referenced Certificate.*

Product Certification History

Project	Date	Description
80045633	2020-10-30	Original certification of Rechargeable Lithium ion Battery Pack for use in stationary application, Model US3000C.



Design Report of Safety Data Sheet

Report No.: DG2050221E

Date: 2020/10/10



Name of the sample	Rechargeable Li-ion Battery US3000C		
Applicant	Pylon Technologies Co., Ltd.		
Supplier	Pylon Technologies Co., Ltd.		
Composition of the sample	Lithium Iron Phosphate; Graphite; Copper; Aluminium; Poly(vinylidene difluoride); Carbon black; Polyacrylic acid; Lithium hexafluorophosphate; Nickel		
Warranty of Design	GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS) Eighth revised edition		
Design Result of SDS please see next page.			
Designer	华雯	Approver	王红

Notes: This SDS is valid before the implementation of the ninth revised edition GHS.



SAFETY DATA SHEET

Rechargeable Li-ion Battery US3000C

Pylon Technologies Co., Ltd.

- According to GHS (Eighth Revised Edition)

SDS

Section 1 Product and Company Identification

> Product Identifier

Product Name Rechargeable Li-ion Battery US3000C
Synonyms -

> Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant Identified Uses Please consult manufacturer.
Uses Advised Against Please consult manufacturer.

> Details of the Supplier of the Safety Data Sheet

Applicant Name Pylon Technologies Co., Ltd.
Application Address No.73, Lane 887, Zu Chongzhi Road, Zhangjiang Hi-Tech Park Pudong, Shanghai 201203, China
Applicant Post Code 200120
Applicant Telephone +86-21-51317697
Applicant Fax +86-21-51317698
Applicant E-mail xu.min@pylontech.com.cn
Supplier Name Pylon Technologies Co., Ltd.
Supplier Address Plant 8, No.505 Kunkai Road, Jinxi Town, Kunshan City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA
Supplier Post Code 215300
Supplier Telephone +86-21-51317697
Supplier Fax +86-21-51317698
Supplier E-mail xu.min@pylontech.com.cn

> Emergency Phone Number

Emergency Phone Number +86-21-51317699

Section 2 Hazards Identification

Hazard class and label elements of the product according to GHS (the eighth revised edition):

> GHS Hazard Class

This product meets the definition of an article. Under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), "Articles" as defined in the Hazard Communication Standard (29 CFR 1910.1200) of the Occupational Safety and Health Administration of the United States of America, or by similar definition, are outside the scope of the system. [Rev.8 (2019) Part 1.3.2.1.1]

> GHS Label Elements

Pictogram	Not applicable
Signal Word	Not applicable
> Hazard Statements	Not applicable
> Precautionary Statements	
Prevention	Do not open or disassemble. Do not expose to high temperatures or open fire. Do not mix with batteries of varying sizes, chemistries or types. Avoid using external impact battery.
Response	Not applicable
Storage	Store under roof in cool, dry, well-ventilated areas.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 3 Composition/Information on Ingredients

Component	Concentration (weight percent, %)	CAS No.	EC No.
Lithium Iron Phosphate	Commercial secrets	15365-14-17	-
Graphite	Commercial secrets	7782-42-5	231-955-3
Copper	Commercial secrets	7440-50-8	231-159-6
Aluminium	Commercial secrets	7429-90-5	231-072-3
Poly(vinylidene difluoride)	Commercial secrets	24937-79-9	200-867-7
Carbon black	Commercial secrets	1333-86-4	215-609-9
Polyacrylic acid	Commercial secrets	9003-01-4	202-415-4
Lithium hexafluorophosphate	Commercial secrets	21324-40-3	244-334-7
Nickel	Commercial secrets	7440-02-0	231-111-4

Section 4 First Aid Measures

> Description of First Aid Measures

General Advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Skin Contact	Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not

**Protecting of
First-aiders**

breathing, give artificial respiration and consult a physician immediately.
Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

> Most Important Symptoms and Effects, both Acute and Delayed

- 1 Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

> Indication of Any Immediate Medical Attention and Special Treatment Needed

- 1 Treat symptomatically.
- 2 Symptoms may be delayed.

Section 5 Fire Fighting Measures**> Extinguishing Media****Suitable Extinguishing
Media**

Dry chemical, carbon dioxide or alcohol-resistant foam.

Unsuitable**Extinguishing Media**

Do not use a solid water stream as it may scatter or spread fire.

> Specific Hazards Arising from the Substance or Mixture

- 1 Containers may explode when heated.
- 2 Fire exposed containers may vent contents through pressure relief valves.
- 3 May expansion or decompose explosively when heated or involved in fire.

> Advice for Firefighters

- 1 As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
- 2 Fight fire from a safe distance, with adequate cover.
- 3 Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6 Accidental Release Measure**> Personal Precautions, Protective Equipment and Emergency Procedures**

- 1 Ensure adequate ventilation. Remove all sources of ignition.
- 2 Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
- 3 Use personal protective equipment. Avoid breathing vapours, mist, gas or dust.

> Environmental Precautions

- 1 Prevent further leakage or spillage if safe to do so.
- 2 Discharge into the environment must be avoided.

> Methods and Materials for Containment and Cleaning Up

- 1 Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
- 2 Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.
- 3 Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

Section 7 Handling and Storage

> Precautions for Handling

- 1 Handling is performed in a well ventilated place.
- 2 Wear suitable protective equipment.
- 3 Avoid contact with skin and eyes.
- 4 Keep away from heat/sparks/open flames/ hot surfaces.
- 5 Take precautionary measures against static discharges.

> Precautions for Storage

- 1 Keep containers tightly closed.
- 2 Keep containers in a dry, cool and well-ventilated place.
- 3 Keep away from heat/sparks/open flames/ hot surfaces.
- 4 Store away from incompatible materials and foodstuff containers.

Section 8 Exposure Controls/Personal Protection**> Control Parameters****Occupational Exposure Limit Values**

Component	Country/Region	Limit Value - Eight Hours		Limit Value - Short Term	
		ppm	mg/m ³	ppm	mg/m ³
Graphite 7782-42-5	USA - OSHA	-	15	-	-
	South Korea	-	2	-	-
	Ireland	-	10	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	2.5	-	5
	Australia	-	3 (4)	-	-
Copper 7440-50-8	The Netherlands	-	0.1	-	-
	Poland	-	0.2	-	-
	Latvia	-	0.5	-	1
	Germany (DFG)	-	0.01	-	0.02
Aluminium 7429-90-5	USA - OSHA	-	15	-	-
	South Korea	-	10	-	-
	Ireland	-	1	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	5	-	10
	Australia	-	10	-	-
Carbon black 1333-86-4	USA - OSHA	-	3.5	-	-
	South Korea	-	3.5	-	-
	Ireland	-	3.5	-	7
	France	-	3.5	-	-
	Denmark	-	3.5	-	7
	Australia	-	3	-	-
Nickel 7440-02-0	USA - OSHA	-	1	-	-
	South Korea	-	1	-	-

	Ireland	-	0.5	-	-
	Hungary	-	0.1	-	0.1
	Denmark	-	0.05	-	0.1
	Australia	-	1	-	-

Biological Limit Values

Component	Source	Biological monitoring index	Biological limits value	Sampling time	remark
Lithium hexafluorophosphate	SCOEL(EU)	Fluorine/urine	8mg/L	end of shift	

Monitoring Methods

- 1 EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
- 2 GBZ/T 160 Determination of toxic substances in workplace air(Series effective standard)and GBZ/T 300 Determination of toxic substances in workplace air(Series standard).

> Engineering Controls

- 1 Ensure adequate ventilation, especially in confined areas.
- 2 Ensure that eyewash stations and safety showers are close to the workstation location.
- 3 Use explosion-proof electrical/ventilating/lighting/equipment.
- 4 Set up emergency exit and necessary risk-elimination area.

> Personal Protection Equipment

Eye Protection	Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US).
Hand Protection	Wear protective gloves (such as butyl rubber) , passing the tests according to EN 374(EU),US F739 or AS/NZS 2161.1 standard.
Respiratory protection	If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.
Skin and Body Protection	Wear fire/flamm resistant/retardant clothing and antistatic boots.

Section 9 Physical and Chemical Properties

Appearance: Li-ion battery, individually packaged, 48V 74Ah 3552Wh

Odor Threshold: No information available

Melting Point/Freezing Point (°C): No information available

Flash Point (°C)(Closed Cup): Not applicable

Flammability: No information available

Vapor Pressure (KPa): Not applicable

Relative Density(Water=1): No information available

n-Octanol/Water Partition Coefficient: No information available

Decomposition Temperature (°C): No information available

Particle characteristics: No information available

Odor: No information available

pH: No information available

Initial Boiling Point and Boiling Range (°C): No information available

Evaporation Rate: Not applicable

Upper/lower explosive limits[% (v/v)]: Upper limit: No information available; Lower limit: No information available

Relative Vapour Density(Air = 1): Not applicable

Solubility: No information available

Auto-Ignition Temperature(°C): No information available

Kinematic Viscosity (mm²/s): Not applicable

Section 10 Stability and Reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical Stability	Stable under proper operation and storage conditions.
Possibility of Hazardous Reactions	Mixtures with metallic acetylene, when heated, cause a fire or incandescence. Reacts severely with halogens, interhalogens or other strong oxidants, or causes a fire. Ultrafine powder will self-ignite in the air at room temperature.
Conditions to Avoid	Incompatible materials, heat, flame and spark.
Incompatible Materials	Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid. Halogen, interhalogen, strong oxidant, water and acids. Oxidants, halogen, interhalogen and mercury.
Hazardous Decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11 Toxicological Information

> Acute Toxicity

Component	CAS No.	LD ₅₀ (Oral)	LD ₅₀ (Dermal)	LC ₅₀ (Inhalation, 4h)
Carbon black	1333-86-4	> 15400mg/kg(Rat)	> 3000mg/kg(Rabbit)	No information available
Polyacrylic acid	9003-01-4	2500mg/kg(Rat)	No information available	No information available

> Skin Corrosion/Irritation

No information available

> Serious Eye Damage/Irritation

No information available

> Skin Sensitization

No information available

> Respiratory Sensitization

No information available

> Germ Cell Mutagenicity

No information available

> Carcinogenicity

ID	CAS No.	Component	IARC	NTP
1	15365-14-17	Lithium Iron Phosphate	Not Listed	Not Listed
2	7782-42-5	Graphite	Not Listed	Not Listed
3	7440-50-8	Copper	Not Listed	Not Listed
4	7429-90-5	Aluminium	Not Listed	Not Listed
5	24937-79-9	Poly(vinylidene difluoride)	Not Listed	Not Listed
6	1333-86-4	Carbon black	Category 2B	Not Listed
7	9003-01-4	Polyacrylic acid	Category 3	Not Listed
8	21324-40-3	Lithium hexafluorophosphate	Not Listed	Not Listed
9	7440-02-0	Nickel	Category 2B	Not Listed

> Reproductive Toxicity

No information available

> Reproductive Toxicity (Additional)

No information available

> STOT-Single Exposure

No information available

> STOT-Repeated Exposure

No information available

> Aspiration Hazard

No information available

Section 12 Ecological Information

> Acute Aquatic Toxicity

Component	CAS No.	Fish	Crustaceans	Algae
Nickel	7440-02-0	LC ₅₀ : 40mg/L (96h)(Fish)	EC ₅₀ : 1mg/L (48h)	No information available
Aluminium	7429-90-5	LC ₅₀ : 1.55mg/L (96h)(Fish)	No information available	No information available
Copper	7440-50-8	LC ₅₀ : 0.665mg/L (96h)(Fish)	EC ₅₀ : 0.02mg/L (48h)	ErC ₅₀ : 7.9mg/L (96h)

> Chronic Aquatic Toxicity

No information available

> Others

Persistence and Degradability

No information available

Bioaccumulative Potential	No information available
Mobility in Soil	No information available
Results of PBT and vPvB Assessment	Lithium Iron Phosphate does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Graphite does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Copper does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Aluminium does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Poly(vinylidene difluoride) does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Carbon black does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Polyacrylic acid does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Lithium hexafluorophosphate does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
	Nickel does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Section 13 Disposal Considerations

Waste Chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated Packaging Disposal Recommendations	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible. Refer to section 13.1 and 13.2.

Section 14 Transport Information

Transporting Label



Marine pollutant	None
UN Number	3480
UN Proper Shipping Name	LITHIUM ION BATTERIES(including lithium ion polymer batteries)
Transport Hazard Class	9
Transport Subsidiary Hazard Class	NONE
Packing Group	Packagings shall conform to the packing group II performance level

Section 15 Regulatory Information

> International Chemical Inventory

Component	EINECS	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AICS	ENCS
Lithium Iron Phosphate	×	×	×	×	×	×	×	×	×
Graphite	✓	✓	✓	✓	✓	✓	✓	✓	×
Copper	✓	✓	✓	✓	✓	✓	✓	✓	×
Aluminium	✓	✓	✓	✓	✓	✓	✓	✓	×
Poly(vinylidene difluoride)	×	✓	✓	✓	✓	✓	✓	✓	✓
Carbon black	✓	✓	✓	✓	✓	✓	✓	✓	×
Polyacrylic acid	✓	✓	✓	✓	✓	✓	×	✓	✓
Lithium hexafluorophosphate	✓	✓	×	✓	×	✓	✓	✓	×
Nickel	✓	✓	✓	✓	✓	✓	✓	✓	×

【EINECS】 European Inventory of Existing Commercial Chemical Substances.

【TSCA】 United States Toxic Substances Control Act Inventory.

【DSL】 Canadian Domestic Substances List.

【IECSC】 China Inventory of Existing Chemical Substances.

【NZIoC】 New Zealand Inventory of Chemicals.

【PICCS】 Philippines Inventory of Chemicals and Chemical Substances.

【KECI】 Existing and Evaluated Chemical Substances.

【AICS】 Australia Inventory of Chemical Substances.

【ENCS】 Existing And New Chemical Substances.

Note

"✓" Indicates that the substance included in the regulations

"×" That no data or included in the regulations

Section 16 Additional Information

Creation Date 2020/10/10

Revision Date 2020/10/10

Reason for Revision -

> Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 8th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.



Terms of the Using of the Report

1. The report is issued by DPTC according to the information of the chemicals and the information of its shipping provided by the applicant (shipper or his agent).
2. According to the demand of this SDS, DPTC requires the applicant to provide true and exact sample and data.
3. Information from applicant is the key of this Label, so the center will not respond for the wrong of applicant.
4. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.
5. This report will be effective only after it is signed by the inspector, approver and stamped by DPTC.
6. Our center guarantees the objectivity and fairness of this report, and carries out confidentiality obligations on business secrets such as business information, technical documents and so on.
7. The partly duplicating of this report is prohibited without the written approver of DPTC.
8. The report is invalid when anything of the following happens-illegal transfer, embezzlement, imposture, modification or tampering in any media form.
9. The authenticity of the certificate can be checked by scanning the QR code of this certificate.





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UN 38.3

检测报告

Test Report

☐ 新申请

New Application

☒ 变更

Modification

☐ 其他:

Other:

报告编号: 20210606J14839

Report ID

样品名称: 锂离子电池

Sample Name Rechargeable Lithium-ion Battery

型号规格: US3000C

Model/Type

48V 74Ah 3552Wh

委托单位: 黄石中兴派能能源科技有限公司

Applicant

Pylon Technologies Co., Ltd.



中认英泰检测技术有限公司
CQC Intime Testing Technology Co., Ltd

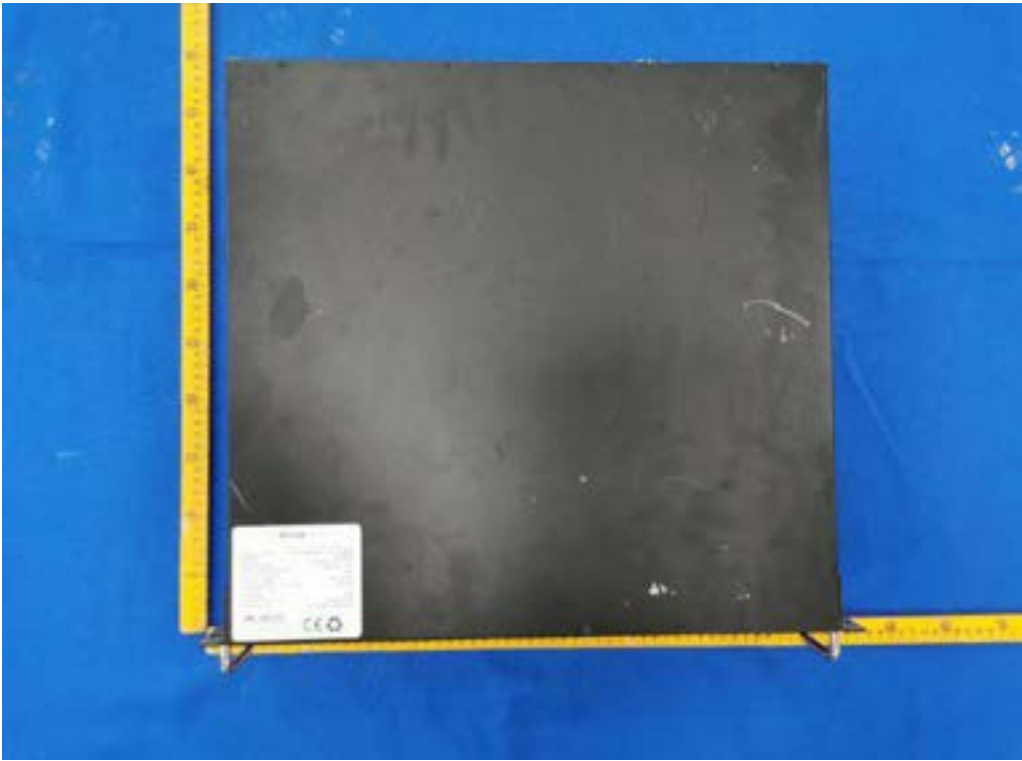
检测报告 TEST REPORT			
报告编号: Report ID	20210606J14839		
样品名称: Sample Name	锂离子电池 Rechargeable Lithium-ion Battery	商 标 : Trade Mark	
型号规格: Model/Type	US3000C 48V 74Ah 3552Wh	样品状态: Sample status	完好 Good
委托单位: Applicant	黄石中兴派能能源科技有限公司 Pylon Technologies Co., Ltd.		
地址: Applicant Address	黄石经济技术开发区,铁山区金山街办圣水路289号厂房2 No.289, Shengshui Road Jinshan Street Office, Tieshan District, Huangshi Economic and Technological Development Zone		
制造商: Manufacturer	江苏派能能源科技有限公司 Pylon Technologies Co., Ltd.		
地址: Manufacturer Address	江苏省昆山市锦溪镇昆开路505号8号厂房 Plant 8, No.505 Kunkai Road, JinXi Town, Kunshan City, Jiangsu Province, PEOPLE'S REPUBLIC OF CHINA		
试验单位: Test Lab	中认英泰检测技术有限公司 CQC Intime Testing Technology Co., Ltd		
地址: Lab Address	苏州吴中经济开发区吴中大道 1368号东太湖科技金融城 East Taihu Technology and Finance City, No.1368 Wuzhong Dadao Rd., Wuzhong Economic Development Zone, Suzhou, Jiangsu.		
试验标准: Standard Specification	《关于危险货物运输的建议书 试验和标准手册》第六版修订1第38.3节 Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, ST/SG/AC.10/11/Rev.6/Amend.1/Section 38.3		
试验项目: Test Item	高度模拟; 温度试验; 振动; 冲击; 外部短路; 挤压; 过充电; 强制放电 Altitude Simulation, Thermal Test, Vibration, Shock, External Short Circuit, Crush, Overcharge, Force Discharge		
接样日期: 2021-06-16 Receiving Date		完成时间: 2021-06-23 Completing Date	
试验结论 : Conclusion	所检样品符合上述标准要求 The Submitted Sample(s) Meet the Requirement of the Standard.		
检测环境: Test Condition	环境温度: 20±5°C Ambient temperature		
项目: Engineer	侯逢文 侯逢文		
审核: Auditor	杨振荣 杨振荣		
签发: Approver	赵润生 赵润生		

试验样品描述 Description of the sample		
测试项目 Test Item	样品编号 Sample No.	样品状态 Sample State
T1~T5	B1~ B2	第1个充放电循环, 完全充电状态 At first cycle, in fully charged states
	B3~ B4	第25个充放电循环后, 完全充电状态 After 25 cycles ending in fully charged states
T6	C1~C5	第1个充放电循环, 50%设计额定容量状态 At first cycle at 50% of the design rated capacity
	C6~C10	第25个充放电循环后, 50%设计额定容量状态 After 25 cycles ending at 50% of the design rated capacity
T7	B5~ B6	第1个充放电循环, 完全充电状态 At first cycle, in fully charged states
	B7~ B8	第25个充放电循环后, 完全充电状态 After 25 cycles ending in fully charged states
T8	C11~C20	第1个充放电循环, 完全放电状态 At first cycle, in fully discharged states
	C21~C30	第25个充放电循环后, 完全放电状态 After 25 cycles ending in fully discharged states
备注 Remarks		
1, 本报告与编号为20200806J20965-2的报告, 仅委托单位不同, 其他参数均相同。20200806J20965-2的报告委托单位为“上海派能能源科技股份有限公司”。根据《关于危险货物运输的建议书 试验和标准手册》38.3.2.2条款, 不影响其安全性能, 无需进行测试。本报告的测试结果和数据引用自编号为20200806J20965-2的报告。 This report is different from the report No. 20200806J20965-2 only for the applicant. The other elements are the same. The applicant of the report of 20200806J20965-2 is Pylon Technologies Co., Ltd.. According to clause 38.3.2.2 of the Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, its safety performance will not be affected and no testing is required. The test result and data of this report is cited from the report No. 20200806J20965-2. 2, 该样品为大型电池组 This sample is large battery		

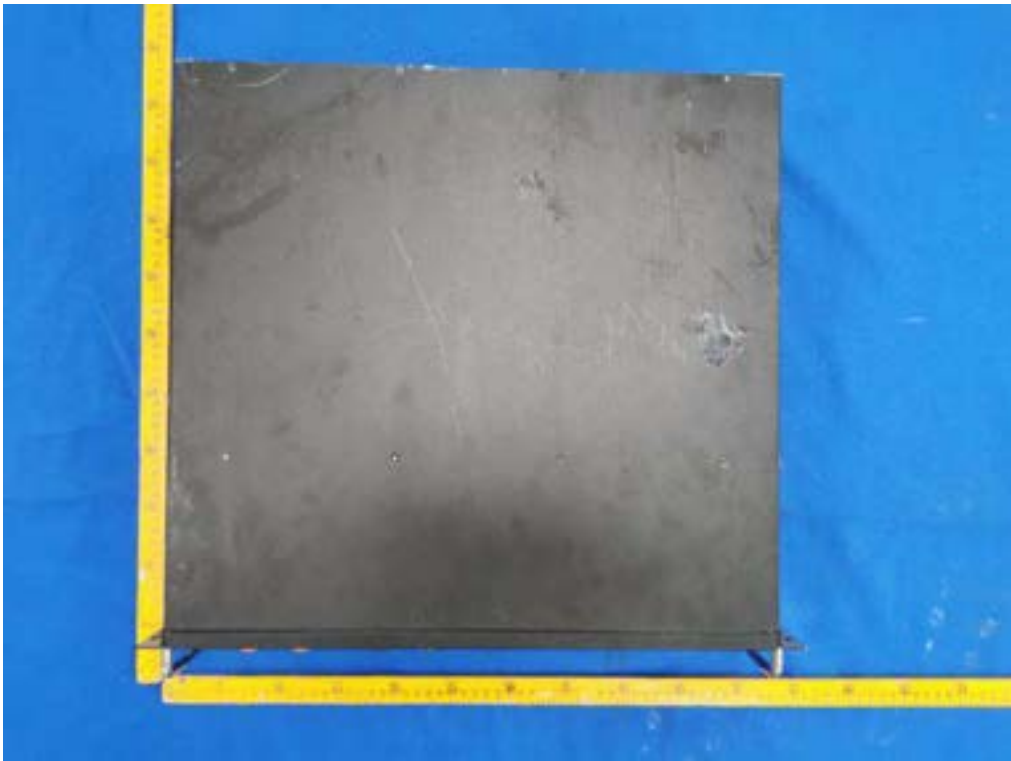
样品基本信息 Sample Fundamental Parameters			
项目 Item	参数 Parameters	项目 Item	参数 Parameters
额定容量(Ah) Rated capacity(Ah)	74	标称电压(V) Nominal voltage(V)	48
额定瓦特一小时(Wh) Watt-hour rating(Wh)	3552	充电限制电压 (V) Limited charge voltage(V)	54.75
充电电流(A) Charge current(A)	90	最大连续充电电流(A) Maximum continous charging current (A)	90
充电截止电流(mA) End charge current(mA)	3700	放电电流(A) Discharge current(A)	90
放电终止电压(V) End of discharging voltage (V)	40.5	内含电池芯个数(个) Cell numbers(pcs)	30
最大放电电流 (A) Maximum discharge current(A)	90	电池芯型号 Model of cell	PF37M
电池芯容量(Ah) Capacity of cell(Ah)	37	电池芯排列方式 Permutation of cell	2P15S
电池芯形状 Shape of cell	☐圆柱形 $\Phi \geq 18\text{mm}$ Cylindrical $\Phi \geq 18\text{mm}$ ☐圆柱形 $\Phi < 18\text{mm}$ Cylindrical $\Phi < 18\text{mm}$ ☐棱柱形 Prismatic ☒袋装电池 Pouch Cell ☐纽扣电池 Button Cell		

样品照片
Photos of Sample

样品图片 (Sample photograph) -1



样品图片 (Sample photograph) -2

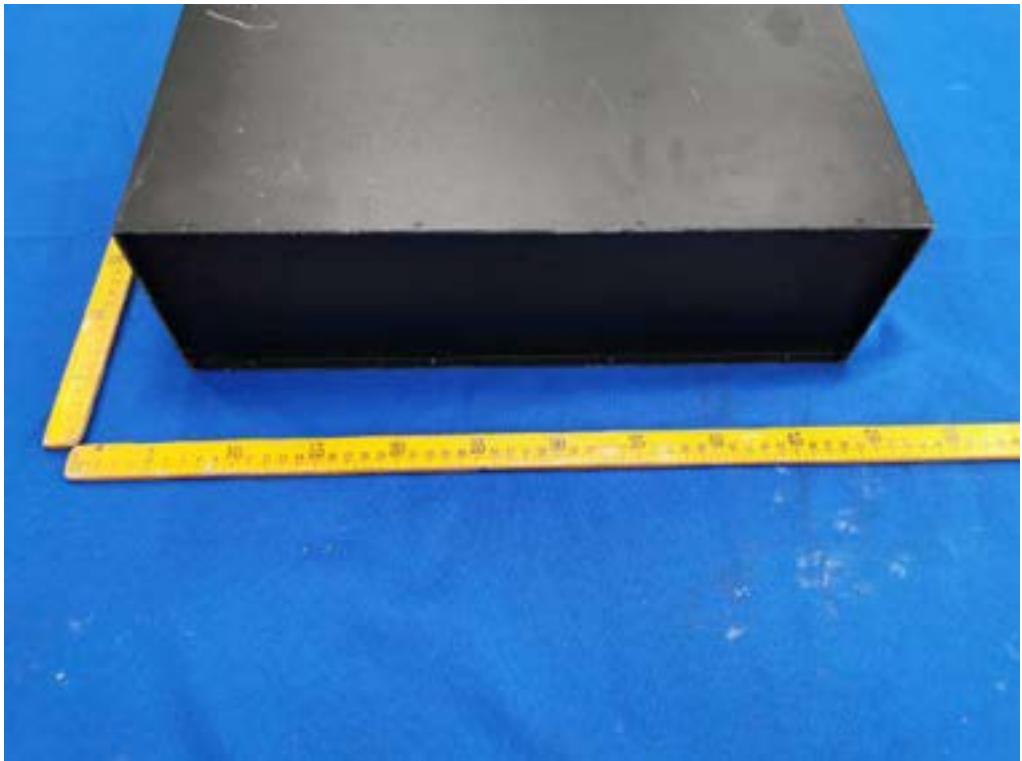


样品照片
Photos of Sample

样品图片 (Sample photograph) -3



样品图片 (Sample photograph) -4



样品照片
Photos of Sample

样品图片 (Sample photograph) -5



样品图片 (Sample photograph) -6



样品照片
Photos of Sample

样品图片 (Sample photograph) -7



样品图片 (Sample photograph) -8



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条款 Clause	38.3.4.1高度模拟试验 38.3.4.1 Altitude simulation
测试步骤 Test Procedure	试验电池和电池组应在压力等于或低于11.6千帕和环境温度(20 ± 5°C)下存放至少6小时。 Test cells and batteries shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature(20±5°C).
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表1 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 1.
结论 Pass/Fail Conclusion	P

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条款 Clause	38.3.4.2温度试验 38.3.4.2 Thermal test
测试步骤 Test Procedure	试验电池和电池组应先在试验温度等于$72 \pm 2^{\circ}\text{C}$的条件下存放至少6小时，接着再在试验温度等于$-40 \pm 2^{\circ}\text{C}$的条件下存放至少6小时。两个极端试验温度之间的最大时间间隔为30分钟。此程序重复进行，共完成10次，接着将所有试验电池和电池组在环境温度($20 \pm 5^{\circ}\text{C}$)下存放24小时。 对于大型电池和电池组，暴露于极端试验温度的时间至少应为12小时。 Test cells and batteries are to be stored for at least six hours at a test temperature equal to $72 \pm 2^{\circ}\text{C}$, followed by storage for at least six hours at a test temperature equal to $-40 \pm 2^{\circ}\text{C}$. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature ($20 \pm 5^{\circ}\text{C}$). For large cells and batteries the duration of exposure to the test temperature extremes should be at least 12 hours.
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表2 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 2.
结论 Pass/Fail Conclusion	P

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条款 Clause	38.3.4.3 振动试验 38.3.4.3 Vibration
测试步骤 Test Procedure	电池和电池组紧固于振动机平台，但紧固程度不能造成电池变形以致不能准确传递振动。振动应是正弦波形，对数频率扫描从7Hz到200Hz，再回到7Hz，跨度为15分钟。 对电池和小型电池组：从7 Hz开始，保持1gn 的最大加速度，直到频率达到18 Hz。然后将振幅保持在0.8 毫米(总偏移1.6 毫米)，并增加频率直到最大加速度达到8 gn (频率约为50 Hz)。将最大加速度保持在8 gn 直到频率增加到200 Hz。 对大型电池组：从7Hz开始，保持1 gn 的最大加速度，直到频率达到18Hz。然后将振幅保持在0.8 毫米(总偏移1.6 毫米)，并增加频率直到最大加速度达到2 gn (频率约为25 Hz)。将最大加速度保持在2 gn 直到频率增加到200Hz。 这一振动过程须对三个互相垂直的电池安装方位的每一方向重复进行12次，总共为时3小时。其中一个振动方向必须与端面垂直。 Cells and batteries are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200 Hz and back to 7 Hz traversed in 15 minutes. For cells and small batteries: from 7 Hz a peak acceleration of 1 gn is maintained until 18Hz is reached. The amplitude is then maintained at 0.8 mm(1.6 mm total excursion) and the frequency Increased until a peak acceleration of 8 gn occurs (approximately 50 Hz). A peak acceleration of 8 gn is then maintained until the frequency is Increased to 200 Hz For large batteries: from 7HZ to a peak acceleration of 1 gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm(1.6 mm total excursion) and the frequency increased until a peak acceleration of 2 gn occurs (approximately 25 Hz). A peak acceleration of 2 gn is then maintained until the frequency is increased to 200Hz This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face.
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表3 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 3.
结论 Pass/Fail Conclusion	P

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条款 Clause	38.3.4.4 冲击试验 38.3.4.4 Shock
测试步骤 Test Procedure	试验电池和电池组用坚固支架紧固在试验机上，支架支撑着每个试验电池组的所有安装面。 每个电池须经受最大加速度150 gn 和脉冲持续时间6 毫秒的半正弦波冲击。大型电池须经受最大加速度50 gn 和脉冲持续时间11 毫秒的半正弦波冲击。 小型电池组以峰值为 150gn（或与$\sqrt{\left(\frac{100850}{\text{mass}}\right)}$ 中的较小值）的半正弦的加速度撞击，脉冲持续 6 毫秒，大型电池组须经受最大加速度 50gn（或与$\sqrt{\left(\frac{30000}{\text{mass}}\right)}$ 中的较小值）和脉冲持续时间 11 毫秒的半正弦波冲击。 每个电池或电池组须在三个互相垂直的电池安装方位的正方向经受三次冲击，接着在反方向经受三次冲击，总共经受 18 次冲击。 Test cells and batteries shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test battery. Each cell shall be subjected to a half-sine shock of peak acceleration of 150 gn and pulse duration of 6 milliseconds. Alternatively, large cells may be subjected to a half-sine shock acceleration of 50 gn and pulse duration of 11 milliseconds. Small batteries shall be subjected to a half-sine shock of peak acceleration of 150 gn (or Acceleration(gn)=$\sqrt{\left(\frac{100850}{\text{mass}}\right)}$, which is smaller) and pulse duration of 6 milliseconds. Large batteries shall be subjected to a half-sine of peak acceleration of 50 gn (or Acceleration(gn)=$\sqrt{\left(\frac{30000}{\text{mass}}\right)}$, which is smaller) and pulse duration of 11 milliseconds. Each battery shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the battery for a total of 18 shocks.
技术要求 Test requirement	不漏液、不泄放、不解体、不破裂、不着火(测试完电池的开路电压不小于测试前电压的90%，质量损失限值0.1%) No leakage, no venting, no disassembly, no rupture and no fire. The open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure. Mass loss limit 0.1%.
检测结果 Test results	不漏液、不泄放、不解体、不破裂、不着火，具体数据详见附表4 No leakage, no venting, no disassembly, no rupture and no fire. Test data is shown in Annex 4.
结论 Pass/Fail Conclusion	P

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CQC Intime Testing Technology Co.,Ltd

检测报告

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条款 Clause	38.3.4.5 外部短路 38.3.4.5 External short circuit
测试步骤 Test Procedure	电池和电池组的外壳温度稳定在57±4℃后，在此温度下对电池进行外部短路，外电路的总阻值应小于0.1Ω，持续短路至样品外壳温度回落到57±4℃后至少再继续短路1 h；对于大型电池组，外壳温度降幅达试验中所观察的的最高温升幅的二分之一并保持低于该数值。电池电池组必须再观察6h结束试验。 The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches 57±4℃and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 57 ±4℃. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to 57±4℃. In the case of the large batteries, has decreased by half of the temperature increase observed during the test and remains below that value. The cell and battery must be observed for a further six hours for the test to be concluded.
技术要求 Test requirement	外壳温度不超过170℃，不解体、不破裂、不着火。 External temperature does not exceed 170℃. No disassembly, no rupture and no fire.
检测结果 Test results	外壳温度不超过170℃，不解体、不破裂、不着火，具体数据详见附表5 External temperature does not exceed 170℃. No disassembly, no rupture and no fire. Test data is shown in Annex 5.
结论 Pass/Fail Conclusion	P

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条款 Clause	38.3.4.6 撞击/挤压 38.3.4.6 Impact/Crush
测试步骤 Test Procedure	□撞击（适用于直径不小于18.0毫米的圆柱形电） Impact(applicable to cylindrical cells not less than 18.0 mm in diameter) 将样品电池置于平板上，将一直径为15.8mm±0.1mm的不锈钢棒横放在样品中心，一块9.1Kg±0.1Kg的重锤从61 ± 2.5 cm高度落到试样上。圆柱形电池受撞击时，其长轴应平行于平板并且垂直于放在受检电池中心的直径为 15.8mm的棒。每一试样只经受一次撞击，电池必须再观察6h结束试验。 The sample cell or component cell is to be placed on a flat smooth surface. A 15.8 mm ± 0.1mm diameter stainless steel bar is to be placed across the centre of the sample. A 9.1 kg ± 0.1 kg mass is to be dropped from a height of 61 ± 2.5 cm on to the sample. The test sample is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8 mm ± 0.1mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact. The battery must be observed for a further six hours for the test to be concluded. ■挤压(适用于棱柱形、袋装、硬币/纽扣电池和直径小于18.0毫米的圆柱形电池) Crush (applicable to prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diameter) 将试样电池放在两个平面之间挤压，挤压力度逐渐增大，速度大约为1.5cm/s.挤压持续进行，直到出现以下三种情况之一：(a)施加的力量达到13kN±0.78kN;(b)电池的电压下降至少100mV;(c)电池变形达到原始厚度的50%或以上。棱柱形和袋装电池应从最宽的一面施压。硬币/纽扣电池应从平坦表面施压。圆柱形电池应从与纵轴垂直的方向施压。每个试样电池只做一次挤压试验，电池必须再观察6h结束试验。 A cell or component cell is to be crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact. The crushing is to be continued until the first of the three options below is reached. (a) The applied force reaches 13 kN ± 0.78 kN; (b) The voltage of the cell drops by at least 100 mV; or (c) The cell is deformed by 50% or more of its original thickness. A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis. Each test cell or component cell is to be subjected to one crush only. The battery must be observed for a further six hours for the test to be concluded.
技术要求 Test requirement	外壳温度不超过170℃，不解体、不破裂、不着火。 External temperature does not exceed 170°C.. No disassembly, no rupture and no fire.
检测结果 Test results	外壳温度不超过170℃，不解体、不破裂、不着火，具体数据详见附表6 External temperature does not exceed 170°C. No disassembly, no rupture and no fire. Test data is shown in Annex 6.
结论 Pass/Fail Conclusion	P

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条款 Clause	38.3.4.7 过度充电 38.3.4.7 Overcharge
测试步骤 Test Procedure	充电电流必须是制造商推荐的最大持续充电电流的两倍。试验的最小电压应为如下： (a) 当制造商推荐的充电电压不超过18 V时，试验的最小电压应为2倍于电池的最大充电电压或为22 V二者中较小者；(b) 当制造商推荐的充电电压超过18 V时，试验的最小电压应为最大充电电压的1.2倍。该试验应在环境温度下进行。进行试验的时间应为24 小时。在过充电结束后观察被检电池7天。 The charge current shall be the twice the manufactures recommended maximum continuous charge current. The minimum voltage of the test shall be follows:(a)When the manufactures recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.(b)When the manufactures recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours. The test sample shall be observed for a further 7 days.
技术要求 Test requirement	不解体、不着火。 No disassembly, no fire.
检测结果 Test results	不解体、不着火，具体数据详见附表7 No disassembly, no fire. Test data is shown in Annex 7.
结论 Pass/Fail Conclusion	P

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条款 Clause	38.3.4.8 强制放电 38.3.4.8 Forced discharge
测试步骤 Test Procedure	电池在环境温度下与12V 直流电源串联连接，以电池制造商规定的最大持续放电电流作为初始电流强制放电。 将一个大小和功率合适的电阻负载与被检电池以及直流电源串联以获得规定的放电电流。每个电池强制放电的时间应等于其额定容量除以起始试验电流。在强制放电结束后观察被检电池7 天。 Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12V D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharge current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in ampere). The test sample shall be observed for a further 7 days.
技术要求 Test requirement	不解体、不着火。 No disassembly, no fire.
检测结果 Test results	不解体、不着火,具体数据详见附表8 No disassembly, no fire. Test data is shown in Annex 8.
结论 Pass/Fail Conclusion	P

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附表1 高度模拟试验

Annex 1. Altitude Simulation

样品编号 Sample No.	试验前 Before test OCV ₁ (V)	试验前 Before test M ₁ (kg)	试验后 After test OCV ₂ (V)	试验后 After test M ₂ (kg)	OCV ₂ / OCV ₁ (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	50.84	31.90	50.83	31.90	99.98%	0.000%	-
B2	49.99	31.89	49.98	31.89	99.98%	0.000%	-
B3	50.76	31.92	50.75	31.92	99.98%	0.000%	-
B4	50.74	31.90	50.72	31.90	99.96%	0.000%	-
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附表2温度试验

Annex 2. Thermal test

样品编号 Sample No.	试验前 Before test OCV ₁ (V)	试验前 Before test M ₁ (kg)	试验后 After test OCV ₂ (V)	试验后 After test M ₂ (kg)	OCV ₂ / OCV ₁ (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	50.83	31.90	50.01	31.88	98.39%	0.063%	-
B2	49.98	31.89	49.90	31.88	99.84%	0.031%	-
B3	50.75	31.92	50.07	31.91	98.66%	0.031%	-
B4	50.72	31.90	50.01	31.89	98.60%	0.031%	-
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附表3振动试验
Annex 3. Vibration

样品编号 Sample No.	试验前 Before test OCV ₁ (V)	试验前 Before test M ₁ (kg)	试验后 After test OCV ₂ (V)	试验后 After test M ₂ (kg)	OCV ₂ / OCV ₁ (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	50.01	31.88	50.01	31.88	100.00%	0.000%	-
B2	49.90	31.88	49.89	31.88	99.98%	0.000%	-
B3	50.07	31.91	50.05	31.91	99.96%	0.000%	-
B4	50.01	31.89	50.01	31.88	100.00%	0.031%	-
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附表4冲击试验

Annex 4.Shock

样品编号 Sample No.	试验前 Before test OCV ₁ (V)	试验前 Before test M ₁ (kg)	试验后 After test OCV ₂ (V)	试验后 After test M ₂ (kg)	OCV ₂ / OCV ₁ (%)	质量损失 Mass Loss (%)	备注 Remarks
B1	50.01	31.88	50.00	31.88	99.98%	0.000%	-
B2	49.89	31.88	49.89	31.88	100.00%	0.000%	-
B3	50.05	31.91	50.05	31.90	100.00%	0.031%	-
B4	50.01	31.88	50.01	31.88	100.00%	0.000%	-
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附表5外部短路试验
Annex 5. External short circuit

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
B1	50.00	56.9	57.0	-
B2	49.89	57.1	57.1	-
B3	50.05	57.0	57.0	-
B4	50.01	57.1	57.1	-
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附表6冲击/挤压试验
Annex 6. Impact/Crush

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
C1	3.308	24.1	24.2	-
C2	3.311	24.2	24.2	-
C3	3.309	23.8	23.8	-
C4	3.315	23.6	23.7	-
C5	3.309	23.7	23.8	-
C6	3.282	23.8	23.9	-
C7	3.302	23.9	23.9	-
C8	3.302	24.1	24.1	-
C9	3.302	24.0	24.0	-
C10	3.300	23.8	23.9	-
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附表7过充电试验
Annex 7.Overcharge

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
B5	50.05	24.1	24.1	-
B6	50.21	23.9	24.0	-
B7	50.01	24.2	24.2	-
B8	50.24	24.1	24.1	-
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附表8强制放电试验

Annex 8. Forced discharge

样品编号 Sample No.	试验前电压 Voltage before test (V)	初始温度 Initial Temperature (℃)	最高温度 Max Temperature (℃)	备注 Remarks
C11	3.104	24.1	57.6	-
C12	3.105	23.8	58.4	-
C13	3.106	23.9	57.5	-
C14	3.089	23.7	39.5	-
C15	3.087	23.8	45.8	-
C16	3.095	23.6	52.6	-
C17	3.096	23.8	39.8	-
C18	3.098	23.8	49.6	-
C19	3.104	23.9	47.6	-
C20	3.112	24.0	38.7	-
C21	3.111	23.9	47.2	-
C22	3.097	23.8	46.5	-
C23	3.082	23.7	51.4	-
C24	3.096	23.7	47.6	-
C25	3.105	23.6	44.5	-
C26	3.104	24.0	46.2	-
C27	3.114	24.1	47.1	-
C28	3.101	23.9	46.5	-
C29	3.107	23.8	44.9	-
C30	3.097	23.7	45.3	-
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——报告结束 End——

声明

Statement

1. 未经本机构书面批准不得部分复制本报告，除非全部复制。

Don't copies the report partly, if you don't obtain the laboratory allow you to do that, unless you copy the whole report.

2. 检验结果仅对所检样品有效。

The test report is only valid to the sample which has been tested

3. 若对检测结果有异议，请在收到报告后十日内向本机构书面提出。

If you have any objection to the test result, please submit it to the laboratory in writing within 10 days after receiving the report.

4. 受检样品务必在收到检测报告三十日内领取，逾期本机构将作为废弃物自行处理。

The sample must be collected within 30 days after receiving the test report. The overdue sample will be disposed of as waste by the laboratory itself.

5. 此报告仅作为委托方参考，不作为诉讼、仲裁等依据。

This report only as a reference for client, can't be considered as a basis for litigation, arbitration and so on.

检测机构：中认英泰检测技术有限公司

Test Lab.: CQC Intime Testing Technology Co.,Ltd.

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Product Carbon Footprint Verification Statement

The Product Carbon Footprint study of
1 kWh US 3000C
which is conducted by

Pylon Technologies Co.,Ltd.

71-72, 5th Floor, Lane 887, Zuchongzhi Road, China (Shanghai) Free Trade Area, Shanghai

has been verified meeting the requirements of

ISO 14067:2018

The carbon footprint of 1 kWh US 3000C is as follow:

92.41 kg CO₂ eq.

For the life cycle stages assessment of product
[Cradle to gate]



Authorized by

David Xin

Sr. Director - Knowledge

Date: 11 October 2023

SGS-CSTC Standards Technical Services Co., Ltd.

16F Century YuHui Mansion, No. 73 Fucheng Road, Beijing, P.R. CHINA 100142

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SGS-CSTC Standards Technical Services Co., Ltd. (hereinafter referred to as "SGS") has been commissioned by Pylon Technologies Co.,Ltd. (hereinafter referred to as "PYLON"), 71-72, 5th Floor, Lane 887, Zuchongzhi Road, China (Shanghai) Free Trade Area, Shanghai, for the verification the life cycle Greenhouse Gas emissions of product as provided by PYLON in accordance with

ISO 14067:2018

Roles and responsibilities

PYLON is responsible for the management of its GHG information system, the development and maintenance of records and reporting procedures in accordance with that system, including the calculation and determination of the life cycle GHG emissions of product information and the reported life cycle GHG emissions of product.

It is SGS's responsibility to express an independent GHG verification opinion on the life cycle GHG emissions of 1 kWh US 3000C.

SGS conducted a third-party verification of the provided GHG assertion against the principles of ISO 14067:2018, ISO 14040:2006 and ISO 14044:2006 in the period from 27 Jul 2023 to 28 Jul 2023. The verification was based on the verification scope, objectives and criteria as agreed between PYLON and SGS.

Level of Assurance

The level of assurance agreed is that of reasonable assurance.

Scope

PYLON has commissioned an independent verification by SGS of reported the life cycle GHG emissions of product of PYLON arising from the manufacture of 1 kWh US 3000C product activities, to establish conformance with ISO 14067:2018 principles within the scope of the verification as outlined below.

This engagement covers verification of emission from partial life cycle of the product of greenhouse gases included within the organization's boundary and is based on ISO 14067:2018.

- Title or description activities: GHG verification of the life cycle GHG emissions of 1 kWh US 3000C

- Product Category Rule: there was not relevant PCR can be considered
- Functional unit: 1 kWh US 3000C
- System boundary: Covers a "Cradle to gate" assessment of the life cycle emissions, from raw material extraction to production completion. The system boundary be clearly defined in accordance with ISO 14040:2006, ISO 14044:2006 and ISO 14067:2018.
- Use phase: Excluded in system boundary
- Retail locations: Excluded in system boundary
- Disposal phase: Excluded in system boundary
- Data resources: The primary data collection from manufacture and own operation phase. The secondary data collection from Ecoinvent 3.8 database.
- Life cycle assessment tool and index using:
 - Software applied SimaPro 9.5.
 - IPCC 2021 GWP values are applied in this inventory.
- Cut-off rules: The flow is less than 1% of the cumulative mass of the model it be excluded, providing its environmental relevance is not a concern, a minimum 97% of the total mass for the system is captured.
- Allocation rules:
 - Multi-output: The allocations are based on the changes in the resource consumption and pollutant emissions following the changes in the studied system's output product, or function or economical relationship.
 - Multi-input: The allocation is based on actual relationship. For example, the manufacturing process's consumption may be affected by the change in recycled resource input.
- Manufacturing locations: 71-72, 5th Floor, Lane 887, Zuchongzhi Road, China (Shanghai) Free Trade Area, Shanghai
- Emissions and removal of the product system included: Please refer to the CFP study reported provided by PYLON.
- Types of GHGs included: CO₂, CH₄, N₂O, Substances controlled by the Montreal Protocol, HFCs, PFCs, Fluorinated ethers, Perfluoropolyether, Hydrocarbons compounds.
- Mitigation: There is no GHG emissions offsetting be used at any point in the life cycle of the product.
- GHG information for the following production period was verified: The data collection period was from 01 January 2022 to 31 December 2022. Emissions covered the particular period.
- Intended user of the verification statement: Private

Statement CN23/00005394, continued

Objective

The purposes of this verification exercise are, by review of objective evidence, to independently review:

- Whether the life cycle GHG emissions and removals of product are as declared by the organization's CFP study report;
- The data reported are accurate, complete, consistent, transparent and free of material error or omission.

Criteria

Criteria against which the verification assessment is undertaken are the principles of ISO 14067:2018.

The IPCC 2021 AR6 GWP values are applied in this assessment of life cycle GHG emissions for the product.

Materiality

The materiality required of the verification was considered by SGS to 5%, based on the needs of the intended user of the GHG Assertion.

Conclusion

PYLON provided the GHG assertion based on the requirements of ISO 14067:2018. The life cycle GHG information of product manufactured in 2022 disclosing carbon emissions, covering a Cradle to Gate system boundary, are verified by SGS to a reasonable level of assurance, consistent with the agreed verification scope, objectives and criteria.

The life cycle GHG emissions of 1 kWh US 3000C are described as below:

	Carbon footprint of product / kg CO ₂ eq.
Product category for 1 kWh US 3000C	92.41

SGS's approach is risk-based, drawing on an understanding of the risks associated with reporting the life cycle GHG emissions of product information and the controls in place to mitigate these. Our examination includes assessment, on a test basis, of evidence relevant to the amounts and disclosures in relation to the organization's reported the life cycle GHG emissions of product.

We planned and performed our work to obtain the information, explanations and evidence that we considered necessary to provide a reasonable level of assurance that the life cycle GHG emissions of 1 kWh US 3000C.

Statement CN23/00005394, continued

We conducted our verification with regard to the GHG assertion of 1 kWh US 3000C which included assessment of GHG information system, monitoring and reporting plan/protocol. This assessment included the collection of evidence supporting the reported data, and checking whether the provisions of the protocol reference, were consistently and appropriately applied.

In SGS's opinion the presented GHG assertion

- is materially correct and is a fair representation of the GHG data and information, and
- is prepared in accordance with ISO 14067:2018 on GHG quantification, monitoring and reporting.

The validity of this verification declaration is consistent with the validity of the corresponding carbon footprint study report of 1 kWh US 3000C product. If the carbon footprint of product changes by more than 10% within the validity period of the carbon footprint study report, this certificate will automatically become invalid without SGS reverification.

Note: This Statement is issued, on behalf of Client, by SGS-CSTC Standards Technical Services Co., Ltd. ("SGS") under its General Conditions for Green Gas Verification Services available at http://www.sgs.com/terms_and_conditions.htm. The findings recorded hereon are based upon an audit performed by SGS. A full copy of this statement, the findings and the supporting GHG Assertion may be consulted at Pylon Technologies Co., Ltd., 71-72, 5th Floor, Lane 887, Zuchongzhi Road, China (Shanghai) Free Trade Area, Shanghai. This Statement does not relieve Client from compliance with any bylaws, federal, national or regional acts and regulations or with any guidelines issued pursuant to such regulations. Stipulations to the contrary are not binding on SGS and SGS shall have no responsibility vis-à-vis parties other than its Client.