NATIONAL REFRIGERANTS, INC.

R-134a

Safety Data Sheet

R-134a

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: R-134a
OTHER NAME: 1,1,1,2-Tetrafluoroethane
USE: Refrigerant Gas
DISTRIBUTOR: National Refrigerants, Inc.
661 Kenyon Avenue
Bridgeton, New Jersey 08302

FOR MORE INFORMATION CALL:
(Monday-Friday, 8:00am-5:00pm)
1-800-262-0012

IN CASE OF EMERGENCY CALL:
CHEMTREC: 1-800-424-9300

2. HAZARDS IDENTIFICATION

CLASSIFICATION: **Gases under pressure, Liquefied Gas**
SIGNAL WORD: **WARNING**
HAZARD STATEMENT: **Contains gas under pressure, may explode if heated**
SYMBOL: **Gas Cylinder**
PRECAUTIONARY STATEMENT: **STORAGE: Protect from sunlight, store in a well ventilated place**

EMERGENCY OVERVIEW: Colorless, volatile liquid with ethereal and faint sweetish odor. Non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, CNS depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides.

POTENTIAL HEALTH HAZARDS

SKIN: Irritation would result from a defatting action on tissue. Liquid contact could cause frostbite.

EYES: Liquid contact can cause severe irritation and frostbite. Mist may irritate.

INHALATION: R-134a is low in acute toxicity in animals. When oxygen levels in air are reduced to 12-14% by displacement, symptoms of asphyxiation, loss of coordination, increased pulse rate and deeper respiration will occur. At high levels, cardiac arrhythmia may occur.

INGESTION: Ingestion is unlikely because of the low boiling point of the material. Should it occur, discomfort in the gastrointestinal tract from rapid evaporation of the material and consequent evolution of gas would result. Some effects of inhalation and skin exposure would be expected.

DELAYED EFFECTS: None Known

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

INGREDIENT NAME	NTP STATUS	IARC STATUS	OSHA LIST
No ingredients listed in this section			

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT NAME	CAS NUMBER	WEIGHT %
1,1,1,2-Tetrafluoroethane	811-97-2	100

COMMON NAME AND SYNONYMS
R-134a; HFC134a

There are no impurities or stabilizers that contribute to the classification of the material identified in Section 2

4. FIRST AID MEASURES

SKIN: Promptly flush skin with water until all chemical is removed. If there is evidence of frostbite, bathe (do not rub) with lukewarm (not hot) water. If water is not available, cover with a clean, soft cloth or similar covering. Get medical attention if symptoms persist.

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes (in case of frostbite, water should be lukewarm, not hot) lifting eyelids occasionally to facilitate irrigation. Get medical attention if symptoms persist.

INHALATION: Immediately move to fresh air. If breathing has stopped, give artificial respiration. Use oxygen as required, provided a qualified operator is available. Get medical attention immediately. DO NOT give epinephrine (adrenaline).

INGESTION: Ingestion is unlikely because of the physical properties and is not expected to be hazardous. DO NOT induce vomiting unless instructed to do so by a physician.

ADVICE TO PHYSICIAN: Because of the possible disturbances of cardiac rhythm, catecholamine drugs, such as epinephrine, should be used with special caution and only in situations of emergency life support. Treatment of overexposure should be directed at the control of symptoms and the clinical conditions.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Gas, not applicable per DOT regulations
FLASH POINT METHOD: Not applicable
AUTOIGNITION TEMPERATURE: >750°C
UPPER FLAME LIMIT (volume % in air): None*
LOWER FLAME LIMIT (volume % in air): None*
*Based on ASHRAE Standard 34 with match ignition
FLAME PROPAGATION RATE (solids): Not applicable
OSHA FLAMMABILITY CLASS: Not applicable

EXTINGUISHING MEDIA:
Use any standard agent – choose the one most appropriate for type of surrounding fire (material itself is not flammable)

UNUSUAL FIRE AND EXPLOSION HAZARDS:

R-134a is not flammable at ambient temperatures and atmospheric pressure. However, this material will become combustible when mixed with air under pressure and exposed to strong ignition sources.
Contact with certain reactive metals may result in formation of explosive or exothermic reactions under specific conditions (e.g. very high temperatures and/or appropriate pressures).

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Firefighters should wear self-contained, NIOSH-approved breathing apparatus for protection against possible toxic decomposition products. Proper eye and skin protection should be provided. Use water spray to keep fire-exposed containers cool.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)

Evacuate unprotected personnel. Product dissipates upon release. Protected personnel should remove ignition sources and shut off leak, if without risk, and provide ventilation. Unprotected personnel should not return to the affected area until air has been tested and determined safe, including low-lying areas.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Avoid breathing vapors and liquid contact with eyes, skin or clothing. Do not puncture or drop cylinders, expose them to open flame or excessive heat. Use authorized cylinders only. Follow standard safety precautions for handling and use of compressed gas cylinders.

R-134a should not be mixed with air above atmospheric pressure for leak testing or any other purpose.

STORAGE RECOMMENDATIONS:

Store in a cool, well-ventilated area of low fire risk and out of direct sunlight. Protect cylinder and its fittings from physical damage. Storage in subsurface locations should be avoided. Close valve tightly after use and when empty.

INCOMPATIBILITIES:

Freshly abraded aluminum surfaces at specific temperatures and pressures may cause a strong exothermic reaction.
Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS:

Provide local ventilation at filling zones and areas where leakage is probable. Mechanical (general) ventilation may be adequate for other operating and storage areas.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Skin contact with refrigerant may cause frostbite. General work clothing and gloves (leather) should provide adequate protection. If prolonged contact with liquid or gas is anticipated, insulated gloves constructed of PVA, neoprene or butyl rubber should be used. Any contaminated clothing should be promptly removed and washed before reuse.

EYE PROTECTION:

For normal conditions, wear safety glasses. Where there is reasonable probability of liquid contact, wear chemical safety goggles.

RESPIRATORY PROTECTION:

None generally required for adequately ventilated work situations. For accidental release or non-ventilated situations, or release into confined space, where the concentration may be above the PEL of 1,000 ppm, use a self-contained, NIOSH approved breathing apparatus or supplied air respirator. For escape: use the former or a NIOSH approved gas mask with organic vapor canister.

ADDITIONAL RECOMMENDATIONS:

Where contact with liquid is likely, such as in a spill or leak, impervious boots and clothing should be worn. High dose-level warning signs are recommended for areas of principle exposure. Provide eyewash stations and quick-drench shower facilities at convenient locations. For tank cleaning operations, see OSHA regulations, 29 CFR 1910.132 and 29 CFR 1910.133.

EXPOSURE GUIDELINES

INGREDIENT NAME	ACGIH TLV	OSHA PEL	OTHER LIMIT
1,1,1,2-Tetrafluoroethane	None	None	*1000 ppm TWA (8hr)

* = Workplace Environmental Exposure Level (AIHA)

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

Hydrogen Fluoride: ACGIH TLV: 2 ppm ceiling, 0.5 ppm TLV-TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear, colorless liquid and vapor
PHYSICAL STATE:	Gas at ambient temperatures
MOLECULAR WEIGHT:	102
CHEMICAL FORMULA:	F_3CCH_2F
ODOR:	Faint ethereal odor
SPECIFIC GRAVITY (water = 1.0):	<1.22
SOLUBILITY IN WATER (weight %):	0.15 wt%
pH:	Neutral
BOILING POINT:	-26.2°C (-15.1°F)
FREEZING POINT:	-92.5°C (-141.9°F)
VAPOR PRESSURE:	85.8 psia @ 70°F 213.4 psia @ 130°F
VAPOR DENSITY (air = 1.0):	3.5
EVAPORATION RATE:	>1 **COMPARED TO:** $CC1_4$ = 1
% VOLATILES:	100

ODOR THRESHHOLD: Not established
FLAMMABILITY: Not applicable
LEL/UEL: None/None
RELATIVE DENSITY: 1.21g/cm^3 at 25˚C
PARTITION COEFF (n-octanol/water) Log Pow: 1.06
AUTO IGNITION TEMP: >750˚C
DECOMPOSITION TEMPERATURE: >250˚C
VISCOSITY: Not applicable
FLASH POINT: Not applicable
(Flash point method and additional flammability data are found in Section 5.)

10. STABILITY AND REACTIVITY

NORMALLY STABLE: (CONDITIONS TO AVOID):

The product is stable.
Do not mix with oxygen or air above atmospheric pressure. Any source of high temperatures, such as lighted cigarettes, flames, hot spots or welding may yield toxic and/or corrosive decomposition products.

INCOMPATIBILITIES:

(Under specific conditions: e.g. very high temperatures and/or appropriate pressures) – Freshly abraded aluminum surfaces (may cause strong exothermic reaction). Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.

HAZARDOUS DECOMPOSITION PRODUCTS:

Halogens, halogen acids and possibly carbonyl halides.

HAZARDOUS POLYMERIZATION:

Will not occur.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

LC_{50} :Inhalation 4 hr. (rat) - > 500,000 ppm / Cardiac Sensitization threshold (dog) 80,000 ppm. NOEL – 50,000 ppm

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Not mutagenic in four tests
Teratogenic NOEL (rat and rabbit) – 40,000 ppm
Subchronic inhalation (rat) NOEL – 50,000 ppm
Chronic NOEL – 10,000 ppm

REPEATED DOSE TOXICITY:

Lifetime inhalation exposure of male rats was associated with a small increase in salivary gland fibrosarcomas.

FURTHER INFORMATION:

Acute effects of rapid evaporation of the liquid may cause frostbite. Vapors are heavier than air and can displace oxygen causing difficulty breathing or suffocation. May cause cardiac arrhythmia.

OTHER DATA:

Metabolism <0.5% as CO_2 in tests at 50,000 ppm, late developing benign tumors were found.

12. ECOLOGICAL INFORMATION

Degradability (BOD): R-134a is a gas at room temperature; therefore, it is unlikely to remain in water.
Octanol Water Partition Coefficient: See Section 9

13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Not a hazardous waste
If yes, the RCRA ID number is: Not applicable

OTHER DISPOSAL CONSIDERATIONS:

Disposal must comply with federal, state, and local disposal or discharge laws. R-134a is subject to U.S. Environmental Protection Agency Clean Air Act Regulations Section 608 in 40 CFR Part 82 regarding refrigerant recycling.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

US DOT ID NUMBER: UN3159
US DOT PROPER SHIPPING NAME: 1,1,1,2-Tetrafluoroethane or Refrigerant Gas R 134a
US DOT HAZARD CLASS: 2.2
US DOT PACKING GROUP: Not applicable
For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the TSCA inventory
OTHER TSCA ISSUES: Subject to Section 12(b) export notification. May contain 0-10 ppm Ethane, 2-chloro-1,1,1-trifluoro, CAS# 75-88-7

SARA TITLE III / CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME	SARA / CERCLA RQ (lb.)	SARA EHS TPQ (lb.)
No ingredients listed in this section		

Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: IMMEDIATE
PRESSURE

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

INGREDIENT NAME	COMMENT
No ingredients listed in this section	

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

INGREDIENT NAME	WEIGHT %	COMMENT
No ingredients listed in this section		

ADDITIONAL REGULATORY INFORMATION:

R-134a is subject to U.S. Environmental Protection Agency Clean Air Act Regulations at 40 CFR Part 82.

WARNING: DO NOT vent to the atmosphere. To comply with provisions of the U.S. Clean Air Act, any residual must be recovered. **Contains 1,1,1,2-Tetrafluoroethane (HFC-134a),** a greenhouse gas which may contribute to global warming.

WHMIS CLASSIFICATION (CANADA):

This product has been evaluated in accordance with the hazard criteria of the CPR and the SDS contains all the information required by the CPR.

FOREIGN INVENTORY STATUS:

Canada – Listed on DSL
EU - EINECS # 223770

16. OTHER INFORMATION

CURRENT ISSUE DATE: January 04, 2021
PREVIOUS ISSUE DATE: April, 2018

OTHER INFORMATION:

HMIS Classification: Health – 1, Flammability – 1, Reactivity – 0
NFPA Classification: Health – 2, Flammability – 1, Reactivity – 0
ANSI/ASHRAE 34 Safety Group – A1
UL Classified

Regulatory Standards:

1. OSHA regulations for compressed gases: 29 CFR 1910.101
2. DOT classification per 49 CFR 172.101

Toxicity information per PAFT Testing

DISCLAIMER:

National Refrigerants, Inc. believes that the information and recommendations contained herein (including data and statements are accurate as of the date hereof. NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN. The information provided herein relates only to the specific product designated and may not be valid where such product is used in combination with any other methods of use of the product and of the information referred to herein are beyond the control of National Refrigerants. National Refrigerants expressly disclaims any and all liability as to any results obtained or arising from any use of the product or reliance on such information.

Safety Data Sheets (SDSs)

Product Name: Rechargeable Li-ion Battery System

Commissioner: REPT BATTERO Energy Co., Ltd.

CVC Testing Technology Co., Ltd.

Safety Data Sheets (SDSs)

Name of Product	Rechargeable Li-ion Battery System
Type/Mode	Y104R04C12-314 1331.2V 3768Ah 5015.962kWh
Commissioned by	REPT BATTERO Energy Co., Ltd.
Commissioner address	No. 205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou Zhejiang, P.R. China
Supplier	REPT BATTERO Energy Co., Ltd.
Supplier address	No. 205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou Zhejiang, P.R. China
Inspection according to	GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS, Rev.10)
Emergency telephone number	18714954467
Remarks	-

Seal of CVC

Date of issue: 2024-08-05

Approved by: Zhang Siyao Reviewed by: Liu Zhen Tested by: Lin Qingyuan

SECTION 1: Product and company identification

Product Identifier:

Product name: Rechargeable Li-ion Battery System

Model: Y104R04C12-314

Other means of identification:

Synonyms: None

Relevant identified use of Product and uses advised against:

Recommended Use: Used in the field of energy storage

Uses advised against: Don’t disassemble, impact, crush, put into fire or water

Details of the Supplier of the safety data sheet:

Name: REPT BATTERO Energy Co., Ltd.

Address: No. 205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou Zhejiang, P.R. China

Telephone: 18714954467

Fax: -

Postcode: -

E-mail address: liaozs@chinarept.com

Emergency telephone number:

Company Emergency Phone Number: 18714954467

SECTION 2: Hazard identification

Classification:

The watt-hour rate of the product is 5015.962kWh, it is belong to the class 9 dangerous goods. The product is tested according to Section 38.3 of the Manual of Tests and Criteria, the test report number is: RZUN2024-2098

Other information

Caution! Avoid short circuit place in high temperature environment, put into water, or damage the shell.

SECTION 3: Composition/information on ingredients

Chemical characterization: Mixtures

Description: Chemical power supply based on nonaqueous electrolyte. Composed by positive electrode, negative electrode, diaphragm, electrolyte and shell.

Hazardous ingredients:

Common Chemical Name	Chemical Formula	Concentration (%)	CAS No.	EC No.
Aluminium	Al	7.8	7429-90-5	213-072-3

Copper	Cu	2.1	7440-50-8	213-159-6
iron	Fe	2.7	7439-89-6	231-096-4
Polycarbonate	PC	1.7	97281-47-5	232-307-2
ABS	ABS	1.7	9003-56-9	618-371-8
Polyimide	PI	1.5	25036-53-7	/
PET	PET	0.9	25038-59-9	/
Polyformaldehyde	POM	0.6	9002-81-7	200-001-8
mica	SiO2	0.5	14808-60-7	/
Lithium Iron Phosphate	LiFePO4	35.1	15365-14-7	476-700-9
Graphite	C	18.3	7782-42-5	231-955-3
Ethylene Carbonate	C3H4O3	5.1	96-49-1	202-510-0
Dimethyl carbonate	C3H6O3	5.1	616-38-6	210-478-4
Ethyl Methyl Carbonate	C4H8O3	3.2	623-53-0	433-480-9
Copper foil	Cu	5.3	7440-50-8	231-159-6
Aluminum foil	Al	3.3	7429-90-5	231-072-3
Diaphragm	/	2.1	9002-88-4	618-339-3
Lithium hexafluorophosphate	LiPF6	1.1	21324-40-3	244-334-7
SBR	SBR	0.6	9003-55-8	618-370-2
Conductive carbon black	/	0.6	1333-89-4	215-609-9
Polyvinylidene fluoride	(CH2CF2)n	0.5	24937-79-9	607-458-6
CMC	[C6H7O2(OH)2O CH2COONa]n	0.2	9004-32-4	618-378-6

Note: N/A=Not apply.

SECTION 4: First-aid measures

First aid measures:

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact: Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation: Move to fresh air. If symptoms persist, call a physician.

Ingestion: Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Swallowing: Do not induce vomiting. Get medical attention.

Most Important Symptoms/Effects:

No information available.

Indication of any immediate medical attention and special treatment needed:

Inform physician. Treat symptomatically.

SECTION 5: Fire-fighting measures

Suitable Extinguishing Media:

CO_2, dry chemical powder, wet sand, plenty of water (for cooling).

Unsuitable Extinguishing Media: No information available.

Protective Equipment and Precautions for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. For example: Wear self-contained respiratory protective device. Wear suitable protective clothing and eye/face protection.

Special hazards arising from the substance or mixture:

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium batteries contain flammable ingredients that may vent, ignite and produce sparks when subjected to high temperature (>150℃), When damaged or abused (e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in close proximity.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Personal Precautions Avoid contact with eyes.

Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

Environmental precautions:

Environmental PrecautionsRefer to protective measures listed in Sections 7 and 8.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Methods and material for containment and cleaning up:

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning up Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non-combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

SECTION 7: Handling and storage

Precautions for safe handling:

Keep away from ignition sources， heat and flame. 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. No smoking at working site. Materials to Avoid: Strong oxidizing agents， Corrosives.

Conditions for safe storage, including any incompatibilities:

Store in a cool， well-ventilated area. Keep away from ignition sources， heat and flame. 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. Materials to Avoid: Strong oxidizing agents，Corrosives.

SECTION 8: Exposure controls/personal protection

Engineering Controls:

Use ventilation equipment if available. Safety shower and eye bath.

Personal Protective Equipment:

Respiratory System: Not necessary under conditions of normal use.

Eyes: Not necessary under conditions of normal use.

Clothing: Wear appropriate protective clothing. ，

Hand: Safety gloves.

Other Protect:

No smoking，drinking and eating at working site. Wash thoroughly after handling.

SECTION 9: Physical and chemical properties

PhysicalState	Form: Prismatic	
	Color: RAL 7035	
	Odour: Odourless	
	Odor Threshold: No information available	
Change in condition:		
pH, with indication of the concentration		Not determined.
Melting point/freezing point		Not determined.
Initial boiling point and Boiling range:		Not determined.
Flash Point		Not determined.

Flammability (solid, gas)	Not determined.
Upper/lower flammability or explosive limits	Not determined.
Auto-ignition temperature	Product is not self-igniting.
Decomposition temperature	Not determined.
Other Information	No further relevant information available.

SECTION 10: Stability and reactivity

Reactivity: Stable under recommended storage and handling conditions (see section 7).
Chemical stability: Stable under normal conditions of use, storage and transport.
Thermal decomposition/conditions to be avoided: No decomposition if used according to specifications.
Possibility of Hazardous Reactions: None under normal processing.
Hazardous Polymerization: Hazardous polymerization does not occur.
Conditions to avoid: Strong heating, fire, Incompatible materials.
Incompatible materials: Strong oxidizing agents. Strong acids.
Hazardous Decomposition Products: Carbon oxides, other irritating and toxic gases.

SECTION 11: Toxicological information

Acute toxicity: No data available.
Skin corrosion/irritation: No irritant effect.
Serious eye damage/irritation: Cause serious eye irritation.
Respiratory or skin sensitization: No sensitizing effects known.
Specific target organ system toxicity: No information available.
Note: The internal battery materials may cause irritation to eyes and skin.

SECTION 12: Ecological information

Toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No information available.

SECTION 13: Disposal considerations

Waste treatment methods:

Recommendation: Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. Contact a licensed professional waste disposal service to dispose of large quantities materials.

Other disposal recommendations:

Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

The product had been tested according to the requirements of the UN manual of tests and Criteria, Part III, subsection 38.3 (see section 2)

EmS No: F-A ,S-I

Marine pollutant: No

Environmental hazards: Not applicable.

Special precautions for user: Not applicable.

Proper Shipping name: lithium batteries installed in cargo transport unit

Hazard Class: Class 9

UN/ID Number: UN3536

Packaging Group: N/A

Maritime transport:

Label for conveyance: Class 9 lithium battery hazard label

The goods are complied with the requirements of Special Provisions SP389 of IMDG CODE (Amdt. 41-22) (2022 Edition)

SECTION 15: Regulatory information

International Regulation:

GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS)

Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations

IATA Dangerous Goods Regulations（DGR）

INTERNATIONAL MARITIME DANGEROUS GOODS CODE（IMDG CODE）

EU Regulation:

Regulation (EU) 2020/878: Revised Requirements for EU Safety Data Sheets

EU regulation (EC) 1272/2008 on "Classification, Labeling and Packaging of Substances and Mixtures" (CLP)

Registration，Evaluation and Authorization of Chemicals（REACH）

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

US Regulation:

American National Standard for Hazardous Workplace Chemicals – Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

US DOT， Code of Federal Regulations, Title 49, Transportation, PT. 100-185

SECTION 16: Other information

This file is only effective to the batteries（Y104R04C12-314） provided by commissioner REPT BATTERO Energy Co., Ltd. The commissioner provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. CVC Testing Technology Co., Ltd. (CVC) doesn't assume responsibility for any damage or loss because of misuse of batteries.

Important

1. The test report is invalid without the official seal of CVC.
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of CVC.
3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
4. The test report is invalid if altered,
5. Objections to the test report must be submitted to CVC within 15 days,
6. This report is valid for the samples provided by commissioner only.

**The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented. **

Address: No.3, Tiantai 1st Road, Kaitai Avenue, Science City, Guangzhou，Guangdong, China.
Tel：020 32293888
FAX：020 32293889
Post Code：510663
E-mail： office@cvc.org.cn
http://www.cvc.org.cn

Safety Data Sheets (SDSs)

Product Name: Rechargeable Lithium-ion Battery Module

Commissioner: REPT BATTERO Energy Co., Ltd.

CVC Testing Technology Co., Ltd.

Safety Data Sheets (SDSs)

Name of Product	Rechargeable Lithium-ion Battery Module
Type/Model	Y104 332.8V 314Ah 104499Wh
Commissioned by	REPT BATTERO Energy Co., Ltd.
Commissioner address	No. 205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou Zhejiang, P.R. China
Supplier	REPT BATTERO Energy Co., Ltd.
Supplier address	No. 205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou Zhejiang, P.R. China
Inspection according to	GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS, Rev.10)
Emergency telephone number	18714954467
Remarks	-
Seal of CVC Date of issue: 2024-04-30	

Approved by: Huang Kun Reviewed by: Zhang Siyao Tested by: Liu Zhen

SECTION 1: Product and company identification

Product Identifier:

Product name: Rechargeable Lithium-ion Battery Module

Model: Y104

Other means of identification:

Synonyms: None

Relevant identified use of Product and uses advised against:

Recommended Use: Used in the field of energy storage

Uses advised against: Don’t disassemble, impact, crush, put into fire or water

Details of the Supplier of the safety data sheet:

Name: REPT BATTERO Energy Co., Ltd.

Address: No. 205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou Zhejiang, P.R. China

Telephone: 18714954467

Fax: -

Postcode: -

E-mail address: liaozs@chinarept.com

Emergency telephone number:

Company Emergency Phone Number: 18714954467

SECTION 2: Hazard identification

Classification:

The watt-hour rate of the product is 104499Wh, it is belong to the class 9 dangerous goods.

The product is tested according to Section 38.3 of the Manual of Tests and Criteria, the test report number is: RZUN2024-2096

Other information

Caution! Avoid short circuit place in high temperature environment, put into water, or damage the shell.

SECTION 3: Composition/information on ingredients

Chemical characterization: Mixtures

Description: Chemical power supply based on nonaqueous electrolyte. Composed by positive electrode, negative electrode, diaphragm, electrolyte and shell.

Hazardous ingredients:

Common Chemical Name	Chemical Formula	Concentration (%)	CAS No.	EC No.
Aluminium	Al	7.8	7429-90-5	213-072-3

Copper	Cu	2.1	7440-50-8	213-159-6
iron	Fe	2.7	7439-89-6	231-096-4
Polycarbonate	PC	1.7	97281-47-5	232-307-2
ABS	ABS	1.7	9003-56-9	618-371-8
Polyimide	PI	1.5	25036-53-7	/
PET	PET	0.9	25038-59-9	/
Polyformaldehyde	POM	0.6	9002-81-7	200-001-8
mica	SiO2	0.5	14808-60-7	/
Lithium Iron Phosphate	LiFePO4	35.1	15365-14-7	476-700-9
Graphite	C	18.3	7782-42-5	231-955-3
Ethylene Carbonate	C3H4O3	5.1	96-49-1	202-510-0
Dimethyl carbonate	C3H6O3	5.1	616-38-6	210-478-4
Ethyl Methyl Carbonate	C4H8O3	3.2	623-53-0	433-480-9
Copper foil	Cu	5.3	7440-50-8	231-159-6
Aluminum foil	Al	3.3	7429-90-5	231-072-3
Diaphragm	/	2.1	9002-88-4	618-339-3
Lithium hexafluorophosphate	LiPF6	1.1	21324-40-3	244-334-7
SBR	SBR	0.6	9003-55-8	618-370-2
Conductive carbon black	/	0.6	1333-89-4	215-609-9
Polyvinylidene fluoride	(CH2CF2)n	0.5	24937-79-9	607-458-6
CMC	[C6H7O2(OH)2O CH2COONa]n	0.2	9004-32-4	618-378-6

Note: N/A=Not apply.

SECTION 4: First-aid measures

First aid measures:

Eye Contact: Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.

Skin Contact: Remove contaminated clothing and shoes. Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.

Inhalation: Move to fresh air. If symptoms persist, call a physician.

Ingestion: Do NOT induce vomiting. Drink plenty of water. If symptoms persist, call a physician.

Swallowing: Do not induce vomiting. Get medical attention.

Most Important Symptoms/Effects:

No information available.

Indication of any immediate medical attention and special treatment needed:

Inform physician. Treat symptomatically.

SECTION 5: Fire-fighting measures

Suitable Extinguishing Media:

CO_2, dry chemical powder, wet sand, plenty of water (for cooling).

Unsuitable Extinguishing Media: No information available.

Protective Equipment and Precautions for Firefighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. For example: Wear self-contained respiratory protective device. Wear suitable protective clothing and eye/face protection.

Special hazards arising from the substance or mixture:

Battery may burst and release hazardous decomposition products when exposed to a fire situation. Lithium batteries contain flammable ingredients that may vent, ignite and produce sparks when subjected to high temperature (>150℃), When damaged or abused (e.g. mechanical damage or electrical overcharging); may burn rapidly with flare-burning effect; may ignite other batteries in close proximity.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Personal Precautions Avoid contact with eyes.

Refer to section 8 for personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition.

Evacuate personnel to safe areas.

Environmental precautions:

Environmental PrecautionsRefer to protective measures listed in Sections 7 and 8.

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Methods and material for containment and cleaning up:

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Cleaning up Use personal protective equipment. Dam up. Cover liquid spill with sand, earth or other Non-combustible absorbent material. Pick up and transfer to properly labeled containers. Clean contaminated surface thoroughly.

SECTION 7: Handling and storage

Precautions for safe handling:

Keep away from ignition sources， heat and flame. 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. No smoking at working site. Materials to Avoid: Strong oxidizing agents， Corrosives.

Conditions for safe storage, including any incompatibilities:

Store in a cool， well-ventilated area. Keep away from ignition sources， heat and flame. 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. Materials to Avoid: Strong oxidizing agents，Corrosives.

SECTION 8: Exposure controls/personal protection

Engineering Controls:

Use ventilation equipment if available. Safety shower and eye bath.

Personal Protective Equipment:

Respiratory System: Not necessary under conditions of normal use.

Eyes: Not necessary under conditions of normal use.

Clothing: Wear appropriate protective clothing.

Hand: Safety gloves.

Other Protect:

No smoking，drinking and eating at working site. Wash thoroughly after handling.

SECTION 9: Physical and chemical properties

PhysicalState	Form: Prismatic	
	Color: White	
	Odour: Odourless	
	Odor Threshold: No information available	
Change in condition:		
pH, with indication of the concentration		Not determined.
Melting point/freezing point		Not determined.
Initial boiling point and Boiling range:		Not determined.
Flash Point		Not determined.

Flammability (solid, gas)	Not determined.
Upper/lower flammability or explosive limits	Not determined.
Auto-ignition temperature	Product is not self-igniting.
Decomposition temperature	Not determined.
Other Information	No further relevant information available.

SECTION 10: Stability and reactivity

Reactivity: Stable under recommended storage and handling conditions (see section 7).
Chemical stability: Stable under normal conditions of use, storage and transport.
Thermal decomposition/conditions to be avoided: No decomposition if used according to specifications.
Possibility of Hazardous Reactions: None under normal processing.
Hazardous Polymerization: Hazardous polymerization does not occur.
Conditions to avoid: Strong heating, fire, Incompatible materials.
Incompatible materials: Strong oxidizing agents. Strong acids.
Hazardous Decomposition Products: Carbon oxides, other irritating and toxic gases.

SECTION 11: Toxicological information

Acute toxicity: No data available.
Skin corrosion/irritation: No irritant effect.
Serious eye damage/irritation: Cause serious eye irritation.
Respiratory or skin sensitization: No sensitizing effects known.
Specific target organ system toxicity: No information available.
Note: The internal battery materials may cause irritation to eyes and skin.

SECTION 12: Ecological information

Toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.
Results of PBT and vPvB assessment:
PBT: Not applicable.
vPvB: Not applicable.
Other adverse effects: No information available.

SECTION 13: Disposal considerations

Waste treatment methods:

Recommendation: Lithium batteries are best disposed of as a non-hazardous waste when fully or mostly discharged. Contact a licensed professional waste disposal service to dispose of large quantities materials.

Other disposal recommendations:

Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

The product had been tested according to the requirements of the UN manual of tests and Criteria, Part III, subsection 38.3 (see section 2)

EmS No: F-A ,S-I

Marine pollutant: No

Environmental hazards: Not applicable.

Special precautions for user: Not applicable.

Proper Shipping name: Lithium ion batteries

Hazard Class: Class 9

UN/ID Number: UN3480

Packaging Group: II

Maritime transport:

Label for conveyance: Class 9 lithium battery hazard label

The goods are complied with the requirements of Packing Instruction P903 of IMDG CODE (Amdt. 41-22) (2022 Edition)

SECTION 15: Regulatory information

International Regulation:

GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS)

Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations

IATA Dangerous Goods Regulations（DGR）

INTERNATIONAL MARITIME DANGEROUS GOODS CODE（IMDG CODE）

EU Regulation:

Regulation (EU) 2020/878: Revised Requirements for EU Safety Data Sheets

EU regulation (EC) 1272/2008 on "Classification, Labeling and Packaging of Substances and Mixtures" (CLP)

Registration，Evaluation and Authorization of Chemicals（REACH）

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

US Regulation:

American National Standard for Hazardous Workplace Chemicals – Hazard Evaluation and Safety Data Sheet and Precautionary Labeling Preparation

US DOT， Code of Federal Regulations, Title 49, Transportation, PT. 100-185

SECTION 16: Other information

This file is only effective to the batteries（Y104） provided by commissioner REPT BATTERO Energy Co., Ltd. The commissioner provides the composition information of batteries, and promises its integrity and accuracy. Users should read this file carefully, and use the batteries in correct method. CVC Testing Technology Co., Ltd. (CVC) doesn't assume responsibility for any damage or loss because of misuse of batteries.

Important

1. The test report is invalid without the official seal of CVC.
2. Nobody is allowed to photocopy or partly photocopy this test report without written permission of CVC.
3. The test report is invalid without the signatures of Ratifier, Reviewer and Testing engineer.
4. The test report is invalid if altered.
5. Objections to the test report must be submitted to CVC within 15 days.
6. This report is valid for the samples provided by commissioner only.

**The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented. **

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正本/ORIGIN

编号：TCH23024962
No：TCH23024962
日期：2023-11-22
Date：2023-11-22

ZAIQ-RF(HH)-01-19

Safety Data Sheet

扫描查看在线报告

Applicant name：REPT BATTERO Energy Co., Ltd.

Product Name: Rechargeable Prismatic Lithium-ion Cell CB75/3.2V 314Ah 1004.8Wh

Edit date: 2023-11-22

Edit institution: Technology Center of Hangzhou Customs District

Approver:

1. Unless other wise stated, this test report is only responsible for the sample(s).
2. This test report can not be reproduced,except in full,without prior written permission of the lab.

杭州海关技术中心
国家危险化学品检测重点实验室（浙江）

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编号：TCH23024962
No：TCH23024962
日期：2023-11-22
Date：2023-11-22

声　明

DECLARATION

1.本报告中检测结果仅对样品负责。

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

2.本报告无授权人签字、未加盖本机构报告专用章无效。

This report is invalid without authorized signature or the stamp of this organization.

3.对本报告中检测数据如有异议，请在收到报告后十五天内提出复测申请（部分特殊项目不能复测）。复测以原样为准，复测维持原结论时，由申请方承担复测费。

If there is any dissidence to the test data, the entrusting party shall apply for retesting within 15 days upon receiving this report (Some special item can not be retested).The former tested samples will be used as the retested ones. If the retest results are the same as the former ones, the retest fee will be paid by the entrusting party.

4.本报告各页均为报告不可分割部分，使用者部分使用检测报告而导致误解或由此造成后果，本机构不承担任何责任。

This report shall be used in integrity. This organization will not be responsible for any misleading caused by the content of this report.

1. Identification of substance

Product Name	Rechargeable Prismatic Lithium-ion Cell CB75/3.2V 314Ah 1004.8Wh
Other Name	None
Chemical Name	None
Recommended Use	Energy supply, Energy storage product
Supplier	REPT BATTERO Energy Co., Ltd.
Address	No.205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou, Zhejiang, P.R. China / 325058
Manufacturer	REPT BATTERO Energy Co., Ltd.
Address	No.205, Binhai 6th Road, Konggang New District, Longwan District, Wenzhou, Zhejiang, P.R. China / 325058
Phone Number	+86-0577-86880706
Fax Number	+86-0577-86865888
WEB or E-mail	www.chinarept.com
Emergency Phone Number	+86-0577-86880706 or Call your nearest poison control centre

2. Hazards identification

GHS classification	—
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(%)**
Lithium iron Phosphate	15365-14-7	476-700-9	39.6
Graphite	7782-42-5	231-955-3	20.1
Aluminum Alloy	——	——	7.0
Ethylence carbonate (EC)	96-49-1	202-510-0	6.0
Dimethyl carbonate (DMC)	616-38-6	210-478-4	6.0
Copper Foil	7440-50-8	231-159-6	5.4

Ethyl methyl carbonate (EMC)	623-53-0	433-480-9	4.9
Aluminum Foil	7429-90-5	231-072-3	3.8
Separator	9002-88-4	618-339-3	2.3
Lithium hexafluorophosphate	21324-40-3	244-334-7	2.3
Styrene-butadiene rubber (SBR)	9003-55-8	618-370-2	0.8
Carbon black	1333-86-4	215-609-9	0.8
Poly (vinylidene fluoride)(PVDF)	24937-79-9	607-458-6	0.7
Sodium carboxymethylcellulose	9004-32-4	618-378-6	0.3

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 cell, 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 cell, immediately flush eyes with plenty of running water or normal saline for a few 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	No data available.

5. Fire-fighting measures

Suitable extinguishing agents	Water (cooling), use dry chemical powder, sandy soil, foam and carbon dioxide. 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, hydrogen fluoride, phosphorus oxides, lithium oxide

	fumes, irritating and toxic fumes and gases.
Protective equipment for fire-fighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

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	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. Suggested temperature: -10 ℃ ~ 40 ℃; Relative humidity: 10% RH ~ 90% RH.
Information about storage in one common storage facility	Store in a cool, well-ventilated area. Keep away from fire, heat source and direct sunlight. 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. Materials to Avoid: strong oxidizing agents, corrosives.
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 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	15365-14-7	N.E.	N.E.	N.E.	N.E.
Graphite	7782-42-5	2 mg/m^3 (respirable fraction)	N.E.	2.5 mg/m^3 (respirable dust)	N.E.
Ethylence carbonate (EC)	96-49-1	N.E.	N.E.	N.E.	N.E.
Dimethyl carbonate (DMC)	616-38-6	N.E.	N.E.	N.E.	N.E.
Copper Foil	7440-50-8	0.2 mg/m^3	N.E.	0.1 mg/m^3	N.E.
Ethyl methyl carbonate (EMC)	623-53-0	N.E.	N.E.	N.E.	N.E.
Aluminum Foil	7429-90-5	1mg/m^3	N.E.	10mg/m^3 (total) 5mg/m^3 (resp)	N.E.
Separator	9002-88-4	N.E.	N.E.	N.E.	N.E.
Lithium hexafluorophosphate	21324-40-3	2.5 mg/m^3	N.E.	N.E.	N.E.
Styrene-butadiene rubber (SBR)	9003-55-8	N.E.	N.E.	N.E.	N.E.
Carbon black	1333-86-4	3 mg/m^3 (Inhalable particulate matter)	N.E.	3.5 mg/m^3	N.E.
Poly (vinylidene fluoride) (PVDF)	24937-79-9	N.E.	N.E.	N.E.	N.E.

Sodium carboxymethylcellulose	9004-32-4	N.E.	N.E.	N.E.	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, 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	Use safety glasses with side shields or safety goggles as mechanical barrier for prolonged exposure.
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 Prismatic Lithium-ion Cell, blue prismatic Size (L*W*H): (71.7±2)*(174.0±2)*(206.8±2) (mm)
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
Solubility	No data available
Partition coefficient: n-octanol/water(log value)	No data available
Vapour pressure	No data available
Density and/or relative density	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.
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, hydrogen fluoride, 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 3480
Proper Shipping Name	LITHIUM ION BATTERIES
Class/Division	Class 9 Miscellaneous Dangerous Substances and Articles
Package Group	—
Subsidiary risk	—
labeling pictogram	

Note: The sample is Rechargeable Lithium-ion Cell with a Watt-hour rating in excess of 20wh, and passed the tests required by UN 38.3. Cells and batteries incorporate a safety venting device. Cells and batteries are properly protected to prevent short circuits, and have a quality management programme can be transported as mentioned above. Lithium cells and batteries must be packed in inner packaging that completely enclose the cell or battery and placed in a strong outer packaging. The completed package must meet the Packing Group II performance requirements.

Maritime transport IMDG	Being same with TDG

	Marine pollutant (Yes/No): No EmS No.: F-A, S-I Each package must be labeled with the Class 9 Lithium Battery hazard label (Model No.9A ,5.2.2.2.2 in IMDG code). 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	Being same with TDG The product shall meet the General Requirements and section IA of Packaging Instruction 965. According to 3.9.2.6.1(g) of IATA DGR (64th 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. According to Special Provisions of IATA DGR (64th Edition) A164 Any electrical battery or battery powered device, equipment or vehicle having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent: (a) a short circuit (b) unintentional activation. A802 Notwithstanding the absence of a packing group in column E, substances and articles assigned to these entries must be packed in UN Specification packagings that meet packing group II performance standards. This does not apply when lithium batteries prepared in accordance with Section IB of Packing Instructions 965 or 968.

15. Regulatory information

European/International Regulations

OSHA:	Hazardous by definition of Hazard Communication Standard (29CFR 1910.1200).
EINECS Status:	The main components of this chemical (except Lithium iron Phosphate, Aluminum Alloy, Separator, Ethyl methyl carbonate (EMC), Poly (vinylidene fluoride)(PVDF), Styrene-butadiene rubber (SBR), Sodium carboxymethylcellulose) are included in EINECS inventory.
EPA TSCA Status:	The main components of this chemical (except Aluminum Alloy) are included in TSCA inventory.
Canadian DSL/NDSL (Domestic Substances List/ Non-domestic	The main components of this chemical (except Aluminum Alloy) are included in DSL / NDSL.

Substances List):	
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 (Aluminum Foil), D2A, D2B (Carbon black), B2 (Dimethyl carbonate (DMC)), D2B (Ethylence carbonate (EC)), D1A, D2B, E (Lithium hexafluorophosphate).
ICAO-TI	1. Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN 3480, PI 965) and lithium metal cell/batteries (UN 3090, PI 968) are forbidden for carriage on passenger aircraft. 2. Unless be approved according to ICAO TI, Lithium ion cells/batteries (UN 3480, PI 965) must be offered for transport at a state of charge (SoC) not exceeding 30% of their rated design capacity.
List of dangerous goods (GB 12268-2012)	UN Number: UN3480, Shipping Name: LITHIUM ION BATTERIES, Packing Group: II.

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	22.11.2023
Update and Revise	Original edition
Edit Standard	*Globally Harmonized System of Classification and Labelling of Chemicals* Part 1.5
Revised Institution	Technology Center of Hangzhou Customs District

中国认可 国际互认 检验 INSPECTION CNAS IB0871

杭州海关技术中心

国家危险化学品检测重点实验室（浙江）

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编号：TCH23024962
No：TCH23024962
日期：2023-11-22
Date：2023-11-22

ZAIQ-RF(HH)-01-19

化学品安全数据表

扫描查看在线报告

申请单位：瑞浦兰钧能源股份有限公司

产品名称：可充电方形锂离子电池 CB75/3.2V 314Ah 1004.8Wh

编制日期：2023-11-22

编制机构：杭州海关技术中心

批准人：

注：1.除非特别说明，本报告仅对样品负责。
2.未经本实验室许可，本报告不得部分复制。

杭州海关技术中心
国家危险化学品检测重点实验室（浙江）

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编号：TCH23024962
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声　明

DECLARATION

1.本报告中检测结果仅对样品负责。

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

2.本报告无授权人签字、未加盖本机构报告专用章无效。

This report is invalid without authorized signature or the stamp of this organization.

3.对本报告中检测数据如有异议，请在收到报告后十五天内提出复测申请（部分特殊项目不能复测）。复测以原样为准，复测维持原结论时，由申请方承担复测费。

If there is any dissidence to the test data, the entrusting party shall apply for retesting within 15 days upon receiving this report (Some special item can not be retested).The former tested samples will be used as the retested ones. If the retest results are the same as the former ones, the retest fee will be paid by the entrusting party.

4.本报告各页均为报告不可分割部分，使用者部分使用检测报告而导致误解或由此造成后果，本机构不承担任何责任。

This report shall be used in integrity. This organization will not be responsible for any misleading caused by the content of this report.

1. 标识

产品名称	可充电方形锂离子电池 CB75/3.2V 314Ah 1004.8Wh
英文名称	Rechargeable Prismatic Lithium-ion Cell CB75/3.2V 314Ah 1004.8Wh
其他名称	无
化学名称	无
使用建议	单独电池：供能，供能产品
供应商	瑞浦兰钧能源股份有限公司
地址	浙江省温州市龙湾区空港新区金海二道滨海六路 205 号/325058
生产单位	瑞浦兰钧能源股份有限公司
地址	浙江省温州市龙湾区空港新区金海二道滨海六路 205 号/325058
固定电话	+86-0577-86880706
传真	+86-0577-86865888
网址或电子邮件地址	www.chinarept.com
应急电话	+86-0577-86880706 或向离你最近的解毒中心求助

2. 危险标识

GHS 危险性分类	—
GHS 危险标签	—
信号词	—
危险说明	—
防范说明	—
预防	
防范说明	—
反应	
防范说明	—
贮存	
防范说明	—
处置	
不导致分类的其他危险	未知。

3. 成分构成/成分信息

□物质

√混合物

成分信息

成分	**CAS 号**	**EINECS 号**	**含量(%)**
磷酸铁锂	15365-14-7	476-700-9	39.6
石墨	7782-42-5	231-955-3	20.1
铝合金	——	——	7.0
碳酸乙烯酯	96-49-1	202-510-0	6.0
碳酸二甲酯	616-38-6	210-478-4	6.0
铜箔	7440-50-8	231-159-6	5.4
碳酸甲乙酯	623-53-0	433-480-9	4.9
铝箔	7429-90-5	231-072-3	3.8
隔膜	9002-88-4	618-339-3	2.3

六氟磷酸锂	21324-40-3	244-334-7	2.3
丁苯橡胶	9003-55-8	618-370-2	0.8
导电炭黑	1333-86-4	215-609-9	0.8
聚偏氟乙烯	24937-79-9	607-458-6	0.7
羧甲基纤维素钠	9004-32-4	618-378-6	0.3

4.急救措施

对医师的建议	在呼吸急促的情况下，需给受害人输氧。保持受害人温暖。 让受害人处于观察监护下。
吸入后	转移到有新鲜空气的地方。如需要，须输氧或进行人工呼吸。马上就医。
皮肤接触后	若接触到电池内的物质，立即用肥皂和大量清水彻底冲洗皮肤。脱掉被污染的衣服和鞋子。如皮肤刺激仍继续：须求医。如原是小面积的皮肤接触，防止接触面积的扩大。污染的衣服在使用前，须单独清洗。
眼睛接触后	若接触到电池内的物质，立即用大量流动清水或生理盐水冲洗眼睛数分钟。用手指分开眼睑以保证充分冲洗眼睛。马上就医。
摄入后	漱口。无医师建议的情况下不要引吐。如果受害人需呕吐，使其前倾以减少倒吸的危险。解松过紧的衣物，如领子、领带、皮带或腰带。不要使用嘴对嘴的方法实施救助。马上就医。
主要的症状和影响，包括急性和迟发效应	无数据资料。

5. 消防措施

合适的灭火剂	大量水（降温），可用干粉、砂土、泡沫和二氧化碳灭火。七氟丙烷和全氟己酮对锂电池灭火效果较好。
由物质本身或其燃烧产物、烟气产生的特殊危险	当电芯暴露于过热的环境中时，安全阀可能会打开。 在发生火灾时可能释放：一氧化碳，二氧化碳，氟化氢，磷氧化物，锂氧化物烟气，刺激性有毒烟雾和气体。
消防人员的特殊防护设备	穿全套防护衣物，包括头盔，自给正压式呼吸器，防护服和面罩。

6. 泄漏应急处理

与人相关的安全防范措施	如果电池内部材料泄露，试验人员应立刻撤离试验区直到烟气消散。将通风设备打开吹散危险性气体。避免皮肤和眼睛接触或吸入有害气体。
环境保护措施	如能做到应防止进一步的泄露和溢出。无相关政府许可，不允许把该物质释放到环境中。
清洁/收集措施	如果电池有泄漏迹象，避免皮肤或眼睛接触电池泄漏的材料。使用耐化学腐蚀的橡胶手套和不易燃的吸收性材料进行清洁。与惰性材料（如干沙，蛭石）混合并转移到密封的容器待处理。
附加说明	关于安全操作的信息见第 7 部分 关于个人防护设备的信息见第 8 部分 关于处置的信息见第 13 部分

7. 操作和存储

操作

安全操作的信息	操作人员应经过培训，严格遵守操作规程。建议操作人员穿一般作

	业防护服，戴安全手套。远离火种、热源，避免阳光直射。工作场所严禁吸烟。工作场所应有通风系统和设备。避免随意拆卸电池和弄错正负极。须牢固在内包装中，以有效防止短路和防止可导致短路的移动。万一电池内的物质泄漏，避免眼睛、皮肤直接接触，避免吸入。应与强氧化剂、腐蚀品分开存放。
防止爆炸和火灾的信息	避免机械和电气的滥用。不要短路或安装错误。 电池如果拆卸、压碎、充电或暴露在高温下，可能会发生爆炸和燃烧。按照设备说明书安装电池。
存储	
对储藏室和容器的要求	禁止物理或电滥用，禁止高温储存，最好将电池储存在阴凉、干燥、通风等温度变化较小的环境中。禁止将电池接触加热设备或将电池直接暴露与阳光中。 建议温度：-10℃~40℃；相对湿度：10%RH~90%RH。
关于储藏在普通存储设施中的信息	储存于阴凉、通风的库房内。远离火种、热源，避免阳光直射。须牢固在内包装中，以有效防止短路和防止可导致短路的移动。应与强氧化剂、腐蚀品分开存放。
关于储藏条件进一步的信息	储存区配备相应品种和数量的消防器材、泄漏应急处理设备和合适的收容材料。

8. 暴露控制/人身保护

暴露限值

成分	**CAS 号**	**ACGIH 阈限值-时间加权平均浓度**	**ACGIH 阈限值-短时间接触限值**	**NIOSH 阈限值-时间加权平均浓度**	**NIOSH 阈限值-短时间接触限值**
磷酸铁锂	15365-14-7	N.E.	N.E.	N.E.	N.E.
石墨	7782-42-5	2mg/m^3（呼吸性颗粒物）	N.E.	2.5mg/m^3（可吸入粉尘）	N.E.
碳酸乙烯酯	96-49-1	N.E.	N.E.	N.E.	N.E.
碳酸二甲酯	616-38-6	N.E.	N.E.	N.E.	N.E.
铜箔	7440-50-8	0.2 mg/m^3	N.E.	0.1 mg/m^3	N.E.
碳酸甲乙酯	623-53-0	N.E.	N.E.	N.E.	N.E.
铝箔	7429-90-5	1mg/m³	N.E.	10mg/m^3 (总尘) 5mg/m^3 (呼尘)	N.E.
隔膜	9002-88-4	N.E.	N.E.	N.E.	N.E.
六氟磷酸锂	21324-40-3	2.5 mg/m^3	N.E.	N.E.	N.E.
丁苯橡胶	9003-55-8	N.E.	N.E.	N.E.	N.E.
导电炭黑	1333-86-4	3 mg/m^3	N.E.	3.5 mg/m^3	N.E.

		（可吸入颗粒物）			
聚偏氟乙烯	24937-79-9	N.E.	N.E.	N.E.	N.E.
羧甲基纤维素钠	9004-32-4	N.E.	N.E.	N.E.	N.E.

减少接触的工程控制方法	有通风系统和设备。当电池排气阀打开时，应尽量使通风设备开至最大，避免将打开排气阀的电芯局限在某一狭窄空间内。提供安全淋浴和洗眼设备。
一般保护和卫生措施	正常使用条件下不需要。电池开阀试验时应做好个人防护。工作场所严禁吸烟、饮水和饮食。工作后，沐浴更衣。
个人防护用品	电池开阀试验时应做好个人防护，呼吸防护，防护手套，防护服和有护边的安全玻璃罩。
呼吸设备	当工人在高浓度的环境下工作时，必须使用合适的已认证的呼吸器。正常操作条件下，呼吸保护是不必要的。
双手保护	正常使用条件下不需要。
眼睛/面部保护	使用带侧罩或安全眼镜的护目镜作为工人长期暴露的机械屏蔽。
身体保护	全套防化学试剂工作服，阻燃防静电防护服，防护设备的类型必须根据特定工作场所中的危险物的浓度和含量来选择。

注:1. N.E. — 未建立。

9.物理和化学特性

物理状态	可充电方形锂离子电池，蓝色棱柱形 尺寸（长宽高）:（71.7±2）*（174.0±2）*（206.8±2）（mm）
颜色	无数据资料
气味	无味
熔点/凝固点	无数据资料
沸点或初始沸点和沸程	无数据资料
易燃性	无数据资料
上、下爆炸极限/易燃极限	无数据资料
闪点	无数据资料
自燃温度	无数据资料
分解温度	无数据资料
pH 值	无数据资料
运动粘度	无数据资料
溶解性	无数据资料
分配系数:正辛醇/水（对数值）	无数据资料
蒸汽压	无数据资料
密度和/或相对密度	无数据资料
相对蒸气密度（空气=1）	无数据资料
颗粒特征	无数据资料

10. 稳定性和反应活性

反应性	无数据资料。
化学稳定性	在要求的贮存条件下，这是个稳定的产品。
有害反应的可能性	不聚合。

需避开的条件（如：静电放电，震动等）	火源、热源、拆卸、外部短路、压碎、变形、高温、阳光直射、高湿度、浸水或过充等。
不相容的物质	爆炸品、易燃物、强氧化剂和腐蚀剂。如果发生泄漏，避免与强氧化剂，无机酸，强碱等接触。
有害分解产物	可能包括金属氧化物，一氧化碳，二氧化碳，氟化氢，磷氧化物等有毒烟雾和气体。

11.毒理学信息

进入人体内的途径：皮肤接触、眼睛接触、吸入和摄入。

急性毒性	LD50（口服，大鼠）：未知 LC50（吸入，大鼠）：未知 LD50（皮肤，兔子）：未知
皮肤腐蚀/刺激	其中的电解质对皮肤有刺激性。
严重眼损伤/刺激	其中的电解质对眼睛有刺激性。
呼吸或皮肤敏化作用	未分类
生殖细胞致突变性	未分类
致癌性	未分类
生殖毒性	未分类
特定目标器官毒性-单次接触	未分类
特定目标器官毒性-重复接触	未分类
吸入危险	未分类
慢性影响	未分类
其他信息	万一发生与电芯内部材料接触的事故，轻微或严重的刺激，都可能使皮肤出现干燥和灼烧的感觉，并可能损坏靶器官的神经。无详细的毒理学研究。

12. 生态学信息

生态毒性

水生毒性	测试 & 物种
	96 Hr LC50 鱼：未知
	48 Hr EC50 溞类：未知
	72 Hr EC50 藻类：未知

持久性和降解性	未知
潜在的生物累积性	未知
土壤中的迁移性	未知
其他信息	可能造成水或土壤污染。

13. 废弃处置

废物处置说明

联系一家有资质的专业废物处置机构来处置。
按照当地的环境法规或地方当局的要求来进行处置。

14. 运输信息

联合国《关于危险货物运输的建议书 规章范本》(TDG)

UN 编号	UN 3480
正式运输名称	锂离子电池组
危险类/项别	第 9 类 杂项危险物质和物品

包装类别	—
次要危险性	—
危险性标签	
	注：该样品为可充电锂离子电池芯，瓦特-小时额定值大于 20wh 并通过 UN 38.3 要求的各项试验。该锂电池芯需装有安全排气、防止外部短路所需的有效装置，并有高质量的管理方案才可按上述条目运输。锂电池必须完全封装在内包装内，位于坚固的外包装中。包装件必须满足 II 级包装的性能要求。
国际海运危规 IMDG	与 TDG 的分类相同 海洋污染物（是/否）：否 EmS 编号：F-A，S-I 每个包装件必须使用 9 类锂电池危险性标签（IMDG code 5.2.2.2.2 图 No.9A）。 根据 IMDG Code(2022 版)的 2.9.4.7，除了安装在设备（包括电路板）中的纽扣电池，2003 年 06 月 30 日之后生产的锂电池或电池组的制造商和出厂后的销售商应提供联合国《试验和标准手册》第 III 部分第 38.3 小节第 38.3.5 段规定的 UN38.3 试验概要。
国际空运危规 IATA-DGR 和 ICAO-TI	与 TDG 的分类相同 空运中本品应满足 IATA DGR 包装说明 965 的基本要求和第 IA 部分的规定。根据 IATA DGR (64 版)的 3.9.2.6.1(g)，除了安装在设备（包括电路板）中的纽扣电池，2003 年 06 月 30 日之后生产的锂电池或电池组的制造商和出厂后的销售商必须提供联合国《试验和标准手册》第 III 部分第 38.3 小节第 38.3.5 段规定的 UN38.3 试验概要。 IATA DGR (64 版)特殊要求 A164，任何电池或以电池驱动的设备、装置或车辆，如果会产生危险放热，其运输必须采取以下保护措施：（a）防短路；（b）防意外启动。特殊要求 A802，尽管 E 栏无包装等级，此条目所列物品必须包装在符合包装等级 II 级的联合国规格包装容器中。此规定不适用于按包装说明 965 或 968 第 IB 部分准备的锂电池。

15. 法规信息

欧洲/国际法规	
OSHA (美国职业安全和健康管理法):	危险性根据危害通讯标准来编写 (29CFR 1910.1200).
EINECS (欧洲现有商业化学物质名录):	该样品各主要成分（除了磷酸铁锂，铝合金，隔膜，碳酸甲乙酯，聚偏氟乙烯，丁苯橡胶，羧甲基纤维素钠） 已被列入 EINECS 目录中。
EPA TSCA(有毒物质控制法):	该样品各主要成分（除了铝合金）均已被列入 TSCA 目录中。

加拿大 DSL/NDSL(国内物质清单)/ (非国内物质清单):	该样品各主要成分（除了铝合金）已被列入 DSL/NDSL 目录中。
HMIS(危险品识别系统):	健康危害：1 易燃性：0 物理危害：0 个人防护：F (4. 极其严重危害; 3. 严重危害; 2. 中度危害; 1. 轻度危害; 0. 极小危害)
WHMIS(加拿大工作场所有害物质识别系统):	B6（铝箔），D2A,D2B（导电炭黑），B2（碳酸二甲酯），D2B（碳酸乙烯酯），D1A，D2B，E（六氟磷酸锂）。
ICAO-TI	1.除非依据《技术细则》的相关要求取得豁免，单独包装的锂离子电池（芯）（UN 3480，PI 965）和锂金属电池（芯）（UN 3090，PI 968）货物禁止使用客机运输。 2.除非依据《技术细则》的相关要求取得特别批准，按照包装说明 965 要求运输的锂离子电池（芯）货物，交运时锂离子电池（芯）的荷电状态不得超过其额定容量的 30%。
危险货物品名表（GB 12268-2012）	联合国编号：UN 3480，名称和说明：锂离子电池组，包装类别：II。

16. 其他信息

雇主只能把本化学品安全数据表的信息当作他们所获其他信息的补充信息，并能独立判断此信息的适用性，以确保正确使用并保护雇员的健康和安全。此化学品安全数据表提供的信息并不具担保作用，任何未按本化学品安全数据表使用产品、或与其他产品和操作过程同时使用本产品时产生的后果由用户自行承担。

本化学品安全数据表是根据《全球化学品统一分类和标签制度》，《联合国关于危险货物运输的建议书》，《国际海运危规》，国际航空运输协会《危险货物规则》和国家标准等相关危险化学品管理法律法规和标准进行编制，而上述法律法规和标准均会定期进行更新和变化。为使危险货物/危险化学品符合相关最新的管理要求，建议定期审核更新化学品安全数据表。

本化学品安全数据表分别以中、英文编制，在对中、英文本的理解上发生歧义时，以中文文本为准。

缩略语

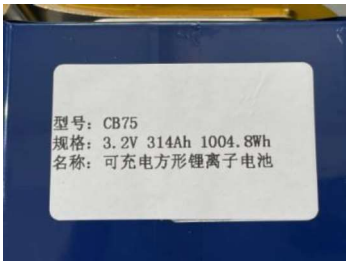
ADR:《关于危险货物道路国际运输的欧洲协议》
RID:《关于危险货物铁路国际运输的规则》
IMDG: 国际海运危规
IATA-DGR: 国际航空运输协会《危险货物规则》(IATA)
ICAO-TI: 国际民用航空组织《国际民航公约》(ICAO)
EINECS: 欧洲现有商业化学物质名录
CAS: 化学文摘号
LC50: 半数致死浓度
LD50: 半数致死剂量
EC50: 半数效应浓度

编制日期	2023.11.22
更新和修改	第 1 版
编制标准	*全球化学品统一分类和标签制度* 第 1.5 部分

编制机构	杭州海关技术中心

附：样品照片 Sample Photos

铭牌/ Nameplate



电芯/ Cell（可充电方形锂离子电池 CB75/3.2V 314Ah 1004.8Wh）

委托方提供的包装照片 / Package Photos provided by the Applicant

报告结束

Safety Data Sheet

Report No.:	SHA03-23035717-JC-01EnR1
Sample Name:	Ultra long life coolant
Client:	Shenzhen Envicool Technology Co., Ltd.
Warranty of Design:	GB/T 17519-2013、GB/T 16483-2008

Shanghai WEIPU Testing Technology Group Co., LTD.

Terms of the Using of the Report

1. The information provided by the client is the basis for the correct formulation of this SDS, and our laboratory shall not bear any consequences caused by the wrong information provided by the client.
2. If there is any change in the chemical information submitted by the client, this report will automatically become invalid.
3. The results of this report are only responsible for this sample.
4. This report shall not be modified, added or deleted without authorization, otherwise it will be invalid.
5. Partial provision or partial reproduction of the report is considered invalid. The full copy without the "special stamp for inspection and testing" or "special stamp for report" is deemed invalid.
6. If you have any questions about the report, please submit it within 15 working days after receiving the report.

Safety Data Sheet

Complied by: MengRu Wang

Approved by: Dihong Sun

Issued Date: 2023-04-04

Ultra long life coolant

Version: V1.0
Report No.: SHA03-23035717-JC-01EnR1
Creation Date: 2023/03/22
Revision Date: 2023/04/04

***Prepared according to GB/T 17519-2013 and GB/T 16483-2008**

1 Identification of the chemical and supplier

Product identifier

Product Name	Ultra long life coolant
Cat No.	-
CAS No.	Not applicable
EC No.	Not applicable
Molecular Formula	Not applicable
Sample picture(s)	

Recommended use of the product and restrictions on use

Relevant identified uses	Please consult manufacturer.
Uses advised against	Please consult manufacturer.

Details of the supplier of the Safety Data Sheet

Name of the company	Shenzhen Envicool Technology Co., Ltd.
Address of the company	Building 9, Hongxin Industrial Park, Guanlan, Longhua District, Shenzhen
Post code	——
Telephone number	——
Fax number	——
E-mail address	dengyuhang@envicool.com

Emergency phone number

Emergency phone number	

2 Hazard(s) identification

Emergency overview

Liquid. Harmful if swallowed. Possible risk of harm to the unborn child.

Hazard classification according to GHS

Acute Toxicity – Oral	Category 4
Reproductive Toxicity	Category 2

GHS Label elements

Hazard pictograms	
Signal word	Warning

Hazard statements

H302	Harmful if swallowed
H361	Suspected of damaging fertility or the unborn child

Precautionary statements

◆ Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P264	Wash face and hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

◆ Response

P330	Rinse mouth.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P308+P313	IF exposed or concerned: Get medical advice/ attention.

◆ Storage

P405	Store locked up.

◆ Disposal

P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

Hazard description

◆ Physical and chemical hazards

	No information available

◆ Health hazards

Inhaled	Cough. Dizziness. Headache.
Ingestion	Abdominal pain. Dullness. Nausea. Unconsciousness. Vomiting.
Skin Contact	Dry skin.
Eye	Redness. Pain.

◆ Environmental hazards

	Please refer to 12th chapter of SDS.

3 Composition/information on ingredients

Substance/mixture

	Mixture

Component	CAS No.	EC No.	Concentration (wt, %)
Sodium 2-ethylhexanoate	19766-89-3	243-283-8	0.1-3
Methyl-1H-benzotriazole	29385-43-1	249-596-6	0.1-2.5
Ethane-1,2-diol	107-21-1	203-473-3	20-70
Water	7732-18-5	231-791-2	24.5-79.8

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	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
Skin contact	Remove contaminated clothes. Rinse skin with plenty of water or shower.
Ingestion	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention. If no medical personnel are available and the patient is conscious, ingestion of alcoholic beverage may prevent kidney failure.
Inhalation	Fresh air， rest. Artificial respiration may be needed. Refer for medical attention.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms, acute and delayed

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

Advice for protecting the rescuer

1	Remove all sources of ignition and increase ventilation.
2	Avoid contact with skin and eyes.
3	Avoid inhalation of vapor or mist.
4	Use personal protective equipment including respirator.

Special note to the doctor

1	Treat symptomatically.
2	Symptoms may be delayed.

5 Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use extinguishing media suitable for surrounding area.

Unsuitable extinguishing media	There is no restriction on the type of extinguisher which may be used.

Specific hazards arising from the substance or mixture

1	Development of hazardous combustion gases or vapor possible in the event of fire.
2	May expansion or decompose explosively when heated or involved in fire.

Fire precautions and protective measures

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.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Use personal protective equipment,do not breathe gas/mist/vapour/spray.
2	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
3	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

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	Cut off the source of the leak as much as possible.
2	Keep leaks in a ventilated place.
3	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
4	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.
5	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container.

7 Handling and storage

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.

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.

8 Exposure controls/personal protection

Control parameters

◆ Occupational Exposure limit values（Chemical Harmful Factors）

Component	Standard	OELs	Standard value mg/m³	Critical adverse health effects	Remark
Ethane-1,2-diol	GBZ 2.1-2019	PC-TWA	20	Upper respiratory tract and eye irritation	-
		PC-STEL	40		
		MAC	-		

◆ Biological limit values

Biological limit values	No relevant regulations

◆ 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 300 series standard Determination of toxic substances in workplace air.

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

General requirement	
Eye protection	Must wear appropriate safety goggles.
Hand protection	Must wear appropriate chemical protective gloves.
Respiratory protection	Must wear appropriate personal respiratory protective equipment.
Skin and body protection	Must wear appropriate chemical protective clothing and chemical resistant shoes.

9 Physical and chemical properties

Physical and chemical properties

Appearance	Blue Liquid
Odor	No special odor
Odor threshold	No information available
pH	No information available
Melting point/freezing point(°C)	No information available
Initial boiling point and boiling range(°C)	No information available
Flash point(Closed cup,°C)	No information available
Evaporation rate	No information available
Flammability	No information available
Upper/lower explosive limits[%(v/v)]	Upper limit：No information available；Lower limit：No information available
Vapor pressure	No information available
Vapor density(Air = 1)	No information available
Relative density(Water=1)	No information available
Solubility	No information available
n-octanol/water partition coefficient	No information available
Auto-ignition temperature(°C)	No information available
Decomposition temperature(°C)	No information available
Viscosity	No information available

10 Stability and reactivity

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	In contact with oxidants causes severe reactions, and may cause a fire or explosion. In contact with active metals (alkali metals, Na, Ca etc.) causes a reaction and release hydrogen.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Oxidants, alkali metals, alkaline earth metals and aluminum. Alkali, sodium, calcium, and other active metal, halogen, metal oxide, nonmetal oxide, acyl halide and metal phosphide.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 Toxicological information

Acute toxicity

Component	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation,4h)
Ethane-1,2-diol	4700mg/kg(Rat)	10600mg/kg(Rabbit)	No information available
Methyl-1H-benzotriazole	675mg/kg(Rat)	No information available	No information available

Carcinogenicity

Component	List of carcinogens by the IARC Monographs	Report on Carcinogens by NTP
Sodium 2-ethylhexanoate	Not Listed	Not Listed
Methyl-1H-benzotriazole	Not Listed	Not Listed
Ethane-1,2-diol	Not Listed	Not Listed
Water	Not Listed	Not Listed

Others

Ultra long life coolant	
Skin corrosion/irritation	Based on available data, the classification criteria are not met
Serious eye damage/irritation	Based on available data, the classification criteria are not met
Skin sensitization	Based on available data, the classification criteria are not met
Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Suspected of damaging fertility or the unborn child(Category 2)
STOT-single exposure	Based on available data, the classification criteria are not met
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Reproductive toxicity(additional)	Based on available data, the classification criteria are not met

12 Ecological information

Acute aquatic toxicity

Component	Fish	Crustaceans	Algae
Ethane-1,2-diol	LC_{50}: 54700mg/L (96h)(Fish)	EC_{50}: >1100mg/L (48h)(Crustaceans)	ErC_{50}: >1000mg/L (72h)(Algae)
Methyl-1H-benzotriazole	LC_{50}: 180mg/L (96h)(Fish)	No information available	No information available
Sodium 2-ethylhexanoate	LC_{50}: 180mg/L (96h)(Fish)	EC_{50}: 910mg/L (48h)(Crustaceans)	ErC_{50}: 500mg/L (72h)(Algae)

Chronic aquatic toxicity

Component	Fish	Crustaceans	Algae
Ethane-1,2-diol	No information available	NOEC: 100mg/L(Crustaceans)	NOEC: 1000mg/L(Algae)
Sodium 2-ethylhexanoate	No information available	NOEC: 18mg/L(Crustaceans)	NOEC: 130mg/L(Algae)

Persistence and degradability

Component	Persistence (water/soil)	Persistence (air)
Ethane-1,2-diol	Low(Half-life = 24 days)	Low(Half-life = 3.46 days)
Water	Low	Low

Bioaccumulative potential

Component	Bioaccumulative potential	Comments
Ethane-1,2-diol	Low	BCF=200
Water	Low	Log Kow=-1.38

Mobility in soil

Component	Mobility in soil	Soil Organic Carbon-Water Partitioning Coefficient (Koc)
Ethane-1,2-diol	High	1
Water	Low	14.3

Results of PBT and vPvB assessment

Component	Results of PBT and vPvB assessment [according to (EC) No 1907/2006]
Sodium 2-ethylhexanoate	Not PBT/vPvB
Methyl-1H-benzotriazole	Not PBT/vPvB
Ethane-1,2-diol	Not PBT/vPvB
Water	Insufficient information, temporarily unable to evaluate

13 Disposal considerations

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	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.

Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

14 Transport information

Label and Mark

Transporting Label	Not applicable

IMDG-CODE

IMDG-CODE	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

IATA-DGR

IATA-DGR	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

UN-ADR

UN-ADR	NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Others

Methods of packing	Packaging as recommended by manufacturer.
Precautions for transport	Transport vehicles should be equipped with the appropriate variety and quantity of fire equipment and emergency equipment leakage during transport. Before transport, should be preceded by checking whether container integrity, sealing. The transport unit must be placarded and marked in accordance with relevant transporting requirements.

15 Regulatory information

International chemical inventory

Component	EC inventory	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AIIC	ENCS
Sodium 2-ethylhexanoate	√	√	√	√	√	√	√	×	√
Methyl-1H-benzotriazole	√	√	√	√	√	√	√	√	√
Ethane-1,2-diol	√	√	√	√	√	√	√	√	√
Water	√	√	√	√	√	√	√	√	√

[EC inventory]	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]	Korea Existing Chemicals Inventory
[AIIC]	Australia. Inventory of Industrial Chemicals (AIIC)
[ENCS]	Japan Inventory of Existing & New Chemical Substances

Chinese chemical inventory

Component	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Sodium 2-ethylhexanoate	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Methyl-1H-benzotriazole	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Ethane-1,2-diol	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×
Water	×	×	×	×	×	×	×	×	×	×	×	×	×	×	×

【A】 Catalog of Hazardous Chemicals(2015 Edition), Notice 5th 2015, the former China State Administration of Work together with the Ministry of Industry and Information Technology, etc.

【B】 List of Toxic Chemicals Restricted in China, Notice 60th 2019, the Ministry of Ecology and Environment, Ministry Commerce, General Administration of Customs.

【C】 List of Ozone Depletion Chemicals Controlled to be Imported/Exported in China（2021）, Decree No. 50 of Mi Ecology and environment of PRC in 2021.

【D】 Catalog of Hazardous Chemicals for Priority Management（First and Second batches）, Notice 95th, 2011, No 12th 2013, China State Administration of Work Safety.

【E】 Catalog of Hazardous Chemicals for Environmental Management, Notice 33th 2014, The former Ministry of Env Protection.

【F】 List of Various Monitoring Chemicals, 52th 2020, the Ministry of Industry and Information Technology.

【G】 List of Priority Controlled Chemicals (the First batch), 83th 2017, the former Ministry of Environmental Protection Industry and Information Technology, the former National Health And Family Planning Commission.

【H】 Catalog of Specially Controlled Hazardous Chemicals (First Edition), 1st 2020, the Ministry of Emergency Mana Ministry of Industry and Information Technology, Ministry of Public Security, Ministry of Transport.

【I】 List of Toxic and Harmful Water Pollutants (First batch), 28th 2019, the Ministry of Ecology and Environment, Na Health Commission.

【J】 Catalog of Highly Toxic Chemicals, Notice 142th 2003, the former Ministry of Health of P.R.China.

【K】 Dangerous Chemicals Directory Used to Manufacure Exploder (2017 Edition), Notice 11th May. 2017, Ministry Public Security of P.R.China.

【L】 Catalog of Stupefacient and Psychotropic Substances(2013 Edition), Notice 230th 2013, China Food and Drug Administration.

【M】 Decree No. 445 of the State Council in 2005 and its amendment announcement.

【N】 Catalog of Import and Export Management of Precursor Chemicals, 7th 2006, the Ministry of Commerce.

【O】 International Verification of Precursor Chemicals Management Catalog, 8th 2006, the Ministry of Commerce, Mi Public Security.

Note:

"√" Indicates that the substance included in the regulations.

"×" No data or not included in the regulations.

16 Other information

Information on revision

Creation Date	2023/03/22
Revision Date	2023/03/22
Reason for revision	-

Reference

[1] IPCS: The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home。
[2] IARC, website: http://www.iarc.fr/。
[3] OECD: The Global Portal to Information on Chemical Substances, website: https://www.echemportal.org/echemportal/substancesearch/index.action。
[4] CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple。
[5] NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp。
[6] EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/。
[7] U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg。
[8] Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/。

Abbreviations and acronyms

CAS	Chemical Abstracts Service	UN	The United Nations
PC-STEL	Short term exposure limit	OECD	Organization for Economic Co-operation and Develo
PC-TWA	Time Weighted Average	IMDG-CODE	International Maritime Dangerous Goods CODE
MAC	Maximum Allowable Concentration	IARC	International Agency for Research on Cancer
DNEL	Derived No Effect Level	ICAO	International Civil Aviation Organization
PNEC	Predicted No Effect Concentration	IATA	International Air Transportation Association
NOEC	No Observed Effect Concentration	ACGIH	American Conference of Governmental Industrial Hy
LC_{50}	Lethal Concentration 50%	NFPA	National Fire Protection Association
LD_{50}	Lethal Dose 50%	NTP	National Toxicology Program
EC_{50}	Effective Concentration 50%	PBT	Persistent, Bioaccumulative, Toxic
EC_X	Effective Concentration X%	vPvB	very Persistent, very Bioaccumulative
P_{OW}	Partition coefficient Octanol: Water	CMR	Carcinogens, mutagens or substances toxic to repro
BCF	Bioconcentration factor	RPE	Respiratory Protective Equipment
ED	Endocrine disruptor		

Disclaimer

This Safety Data Sheet (SDS) was prepared according to GB/T 16483-2008 and GB/T 17519-2013. 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.

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