



杭州海关技术中心  
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正本/ORIGIN

编号: TCH26000567  
No: TCH26000567  
日期: 2026-01-20  
Date: 2026-01-20

ZAIQ-RF(HH)-01-19

# Safety Data Sheet

扫描查看在线报告



**Applicant name: NINGBO DEYE ESS TECHNOLOGY CO., LTD.**

**Product name: Rechargeable Li-ion Battery System BOS-B-Pack16-A3 / 51.2V  
314Ah 16.08kWh**

**Date of issue: 2026-01-20**

**Edit institution: Technology Center of Hangzhou Customs District**

**Approver:**

万旺军

Note: 1. Unless other wise stated, this test report is only responsible for the sample(s).  
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## 声 明

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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 Li-ion Battery System BOS-B-Pack16-A3 / 51.2V 314Ah 16.08kWh
Other Name	None
Chemical Name	None
Sample Identifier	<b>Deye</b>
Recommended Use	Used in energy storage systems
Manufacturer	NINGBO DEYE ESS TECHNOLOGY CO., LTD.
Address	No.568, South Rixian Road, Binhai Economic Development Zone, Cixi, Ningbo, Zhejiang, P.R.China / 315311
Supplier	NINGBO DEYE ESS TECHNOLOGY CO., LTD.
Address	No.568, South Rixian Road, Binhai Economic Development Zone, Cixi, Ningbo, Zhejiang, P.R.China / 315311
Phone Number	+86-0574-8622 8851
Fax Number	None
WEB or E-mail	zhanggj@deye.com.cn
Emergency Phone Number	+86-131 2866 9573 or Call your nearest poison control centre

**Details of the Australian Importer Supplier**

Manufacturer Name	DEYE NEW ENERGY AUSTRALIA PTY LTD
Address	566 Saint Kilda Road Melbourne, Victoria 3004 Australia
E-mail address	Service_au@deye.com.cn
Telephone	+61 406599299

Note:1. Remarks: BOS-B-Pack16-A3 is the internal battery module for BOS-BX Pro-A3 (X=80, 96, 112, 128, 144, 160, 176, 192, 208, 224, 240, 256).

2. The above remarks are provided by the client themselves. If there is any false information, the consequences shall be borne by the enterprise itself.

## 2. Hazards identification

GHS classification	The product meets the definition of "article". In the Globally Harmonized system of Classification and Labeling of Chemicals (GHS), the "articles" defined by the US Occupational Safety and Health Administration "Hazard Communication Standard" (29 CFR 1910.1200) or similar definitions do not fall within the scope of this system. [Rev. 11 (2025) Part 1.3.2.1.1]. According to GHS system (11 <sup>th</sup> revised edition), not classified as a hazardous chemical.
GHS Pictograms	—
Signal words	—
Hazard statements	—
Precautionary Statement	—
Prevention	—
Precautionary Statement	—
Response	—

Precautionary Statement —  
 Storage  
 Precautionary Statement —  
 Disposal  
 Other hazards which do Not available.  
 not result in classification

### 3. Composition/information on ingredients

Substances

Mixtures

#### Component Information

Component	CAS number	EINECS number	Mass(%wt)
Lithium iron phosphate	15365-14-7	604-917-2	40.22
Graphite	7782-42-5	231-955-3	20.50
Aluminium	7429-90-5	231-072-3	11.96
Ethyl methyl carbonate	623-53-0	433-480-9	6.49
Copper	7440-50-8	231-159-6	5.74
Ethylene carbonate	96-49-1	202-510-0	4.60
Dimethyl carbonate	616-38-6	210-478-4	3.84
Lithium hexafluorophosphate(1-)	21324-40-3	244-334-7	2.47
Polyvinylidene Fluoride(PVDF)	24937-79-9	607-458-6	0.84
Propylene carbonate	108-32-7	203-572-1	0.82
Additive	—	—	0.69
Carbon black	1333-86-4	215-609-9	0.59
Polypropylene	9003-07-0	618-352-4	0.44
POLY(ETHYLENE TEREPHTHALATE)	25038-59-9	607-507-1	0.44
Vinylene carbonate	872-36-6	212-825-5	0.27
Aluminium oxide	1344-28-1	—	0.07
Polyethylene	9002-88-4	618-339-3	0.02

Note:1. Unless a component presents a severe hazard, it does not need to be considered in the SDS if the concentration is less than 1%.

### 4. First-aid measures

NOTE TO PHYSICIAN	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation.
After inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Get immediate medical attention.
After skin contact	In case of contact with substances in the battery, immediately flush skin thoroughly with soap and plenty of water. Remove and isolate contaminated clothing and shoes. If irritation persists, get medical attention immediately. For minor skin contact, avoid spreading material on unaffected skin. Wash clothing separately before reuse.

After eye contact	In case of contact with substances in the battery, immediately flush eyes with plenty of 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	The battery's electrolyte can irritate skin, eyes, and mucosal tissues.

#### 5. Fire-fighting measures

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

#### 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

Storage temperature: 0~35 °C. Prohibition of physical or electrical abuse, prohibition of high-temperature storage. Storage preferably in cool, dry and well-ventilated area, which is subject to little temperature change. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Information about storage in one common storage facility

Store in a cool, dry and 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, flammables, explosive material, corrosives, harmful substances.

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**

		mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>
Lithium iron phosphate	15365-14-7	N.E.	N.E.	N.E.	N.E.
Graphite	7782-42-5	2	N.E.	2.5	N.E.
Aluminium	7429-90-5	1	N.E.	10 (total) 5 (resp)	N.E.
Ethyl methyl carbonate	623-53-0	N.E.	N.E.	N.E.	N.E.
Copper	7440-50-8	0.2	N.E.	1	N.E.
Ethylene carbonate	96-49-1	N.E.	N.E.	N.E.	N.E.
Dimethyl carbonate	616-38-6	N.E.	N.E.	N.E.	N.E.
Lithium hexafluorophosphate(1-)	21324-40-3	N.E.	N.E.	N.E.	N.E.
Polyvinylidene Fluoride(PVDF)	24937-79-9	N.E.	N.E.	N.E.	N.E.
Propylene carbonate Additive	108-32-7	N.E.	N.E.	N.E.	N.E.
Carbon black	1333-86-4	3	N.E.	3.5	N.E.
Polypropylene	9003-07-0	N.E.	N.E.	N.E.	N.E.
POLY(ETHYLENE TEREPHTHALATE)	25038-59-9	N.E.	N.E.	N.E.	N.E.
Vinylene carbonate	872-36-6	N.E.	N.E.	N.E.	N.E.
Aluminium oxide	1344-28-1	N.E.	N.E.	15 (total) 5 (resp)	N.E.
Polyethylene	9002-88-4	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	Not necessary under conditions of normal use. Use safety glasses with side shields or safety goggles as mechanical barrier for prolonged exposure if necessary.				
Body protection	Not necessary under conditions of normal use. Full set of anti chemical reagent overalls, flame retardant antistatic protective				

clothing if necessary, choose body protection according to the amount and concentration of the dangerous substance at the work place.

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

### 9. Physical and chemical properties

Physical state	Rechargeable Lithium-ion Battery Pack, white prismatic Size (L*W*H), 795.9*526*274.2 (mm) Weight, 122.50 kg
Colour	See Physical state
Odour	No pungent odour
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 (water=1)	No data available
Relative vapour density (air=1)	No data available
Particle characteristics	No data available

### 10. Stability and reactivity

Reactivity	No data available.
Chemical stability	This is a stable product under recommended storage conditions.
Possibility of hazardous reactions	No polymerization.
Conditions to avoid (e.g. static discharge, shock or	Fire source, heating source, disassemble, external short circuit, crushes, deformation, high temperature, direct sunlight, high

vibration)	humidity, immerse in water or overcharge, etc.
Incompatible materials	Explosives, flammables, strong oxidants and corrosives. If leaked, forbidden to contact with strong oxidizing agents, mineral acids, strong alkalis, etc.
Hazardous decomposition products	May include metal oxides, carbon monoxide, carbon dioxide, nitrogen oxides, hydrogen fluoride, hydrogen cyanide, benzene, toluene, methane, phosphorus oxides and other toxic smoke and gas.

### 11. Toxicological information

Routes of Entry:	Dermal contact, eye contact, inhalation, ingestion.
Acute Toxicity	
Ethylene carbonate (CAS 96-49-1)	LD50 (Oral, rat) 500.1 mg/kg (estimate) LC50 (Inhalation, rat) N/A LD50 (Dermal, rabbit) N/A
Lithium hexafluorophosphate(1-) (CAS 21324-40-3)	LD50 (Oral, rat) >50-300 mg/kg LC50 (Inhalation, rat) N/A LD50 (Dermal, rabbit) N/A
Skin corrosion/Irritation	Lithium hexafluorophosphate(1-) (CAS 21324-40-3): Causes skin corrosion.
Serious eye damage/irritation	Ethylene carbonate (CAS 96-49-1): Causes eye irritation. Lithium hexafluorophosphate(1-) (CAS 21324-40-3): Causes serious eye damage.
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	Ethylene carbonate (CAS 96-49-1): May causes damage to organs through prolonged or repeated exposure. Lithium hexafluorophosphate(1-) (CAS 21324-40-3): Causes damage to organs through prolonged or repeated exposure.
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	High persistence (water/soil/air): Ethyl methyl carbonate, Ethylene carbonate, Dimethyl carbonate, Propylene carbonate. Low persistence (water/soil/air): Graphite, Polyvinylidene Fluoride(PVDF), Polypropylene, Polyethylene.
Bioaccumulative potential	Ethyl methyl carbonate: Log Kow 0.7247 (Low) Ethylene carbonate: Log Kow -0.3388 (Low) Dimethyl carbonate: Log Kow 0.2336 (Low) Polyvinylidene Fluoride(PVDF) : Koc 35.04 (Low) Propylene carbonate: Log Kow -0.41 (Low) Polypropylene: Log Kow 1.6783 (Low) Polyethylene: Log Kow 1.2658 (Low)
Mobility in soil	Ethyl methyl carbonate: Koc 15.22 (Low) Ethylene carbonate: Koc 9.168 (Low) Dimethyl carbonate: Koc 8.254 (Low) Polyvinylidene Fluoride(PVDF) : Koc 35.04 (Low) Propylene carbonate: Koc 28.08 (Low) Polypropylene: Koc 23.74 (Low) Polyethylene: Koc 14.3 (Low)
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 Battery Pack with a Watt-hour rating in excess of 100Wh, which contains 16 series-connected cells, and passed the tests required by UN 38.3. The sample do not equipped with battery overcharge protection, are only designed as a component in another battery or equipment which affords such protection. Cells and batteries incorporate a safety venting device.

Cells and batteries are properly protected to prevent short circuits, and have a high quality management programme can be transported as mentioned above. Cells or batteries shall be packed in packagings so that the cells or batteries are protected against damage that may be caused by the movement or placement of the cells or batteries within the packaging. The completed package must meet the Packing Group II performance requirements. In addition, for a cell or a battery with a gross mass of 12 kg or more employing a strong, impact resistant outer casing: (a) Strong outer packagings; (b) Protective enclosures (e.g., fully enclosed or wooden slatted crates); or (c) Pallets or other handling devices. Cells or batteries shall be secured to prevent inadvertent movement, and the terminals shall not support the weight of other superimposed elements. Packagings need not meet the requirements of TDG 4.1.1.3.

Each package must be labeled with the Class 9 Lithium Battery hazard label (Model No.9A ,5.2.2.2.2 in TDG).

According to 2.9.4 (g) of TDG (24th revised 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.

#### 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 (2024 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.

#### Road transport ADR

Being same with TDG

Each package must be labeled with the Class 9 Lithium Battery hazard label (Model No.9A, 5.2.2.2.2 in ADR 2025 edition.).

According to 2.2.9.1.7.1 (g) of ADR (2025 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.

#### Road transport RID

Being same with TDG

Each package must be labeled with the Class 9 Lithium Battery

Regulations concerning road transportation of dangerous goods

hazard label (Model No.9A, 5.2.2.2.2 in RID 2025 edition). According to 2.2.9.1.7.1 (g) of RID (2025 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.

Being same with TDG

According to JT/T 617-2018 Regulations concerning road transportation of dangerous goods—Part 5: Consignment Requirements 6.2.1.1, each package should use a Class 9 hazard label. (JT/T 617.5-2018 Appendix A Table A.1) According to the conditions specified in JT/T 617-2018 Regulations concerning road transportation of dangerous goods—Part 2: Classification 5.9.5.1, it is necessary to prove that lithium batteries meet the requirements of all tests in Section 38.3 of the United Nations Manual of Tests and Criteria.

## 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, Ethyl methyl carbonate, Polyvinylidene Fluoride(PVDF) , Additive, Polypropylene, POLY(ETHYLENE TEREPHTHALATE), Polyethylene) are included in EINECS inventory.

**EPA TSCA Status:**

The main components of this chemical (except Additive) are included in TSCA inventory.

**Canadian DSL/NDSL (Domestic Substances List/ Non-domestic Substances List):**

The main components of this chemical (except Additive) are included in DSL / NDSL.

**HMIS (Hazardous Material Identification System Ratings):**

Health: 1  
Flammability: 0  
Physical hazard: 0  
Personal protection: F  
(4. Severe Hazard; 3. Serious Hazard; 2. Moderate Hazard; 1. Slight Hazard; 0. Minimal Hazard)

**WHMIS (Canadian Workplace Hazardous Material Identification System Ratings): List of dangerous goods (GB**

B6 (Aluminium), B4, D2B (Copper), D2B (Ethylene carbonate), B2(Dimethyl carbonate), D2B (Propylene carbonate), B4, D2A(Carbon black), D1A, D2B, E (Lithium hexafluorophosphate(1-)).  
UN Number: UN3480, Shipping Name: LITHIUM ION BATTERIES, Class or Division: 9, Packing Group: —. The



**Attachment: Sample Photos**

<p><b>内部电芯/Inner Cell</b> (电芯 GSP71173204F / 3.2V 314Ah 1004.8Wh)</p>	
	
<p><b>电池/Battery (可充电锂离子电池系统/ Rechargeable Li-ion Battery System)</b> <b>BOS-B-Pack16-A3 / 51.2V 314Ah 16.08kWh)</b></p>	
	
<p><b>铭牌/Nameplate</b></p>	
	
<p><b>样品标识/ Sample identification</b></p>	
	
<p><b>委托方提供的包装照片 / Package Photos provided by the Applicant</b></p>	
	

\*\*\*报告结束\*\*\*

