



DLG (Shanghai) Electronic Technology Co.,LTD

Add.	No.3492 Jinqian Road, Fengxian District, Shanghai, China	P.C	2019081001
TEL	021-57475847	FAX	021-57474370

MATERIAL SAFETY DATA SHEET

Issue date: 2019-08-10 Rev: A.0

MSDS REF. NO.: ESS48-2U-L 48V 50Ah 2400Wh

LITHIUM-ION RECHARGEABLE BATTERY

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

IDENTITY	Product Category	:	Rechargeable Li-ion Battery Pack
	Model Name	:	ESS48-2U-L 48V 50Ah 2400Wh
	Company	:	DLG (Shanghai) Electronic Technology Co., LTD
	Address	:	No.3492,Jinqian Road, Feng xian District, Shanghai, China
	Email	:	Zhengyang_liu@dlgbattery.cn
	Fax	:	0086-21-57474370-888
	Emergency Phone	:	0086-15821872805
	SDS Number	:	2019081001
	SDS Date	:	2019-08-10

SECTION 2 HAZARDS IDENTIFICATION

Hazards Identification:

Class 9, miscellaneous. The battery has passed the test items of UN Model Regulations, Manual of Test and Criteria Section UN 38.3.

Emergency Overview:

Caution: Avoid contact and inhalation the electrolyte contained inside the battery.

SECTION 3 INFORMATION ON INGREDIENTS

Battery Cell :

Important Note	:	The battery should not be opened or burned since the following ingredients contained within the product that could be harmful under some circumstance if exposed or misuse. The battery contains neither metallic lithium nor lithium alloy.
Cathode	:	Lithium Cobalt Dioxide (active material) Polyvinylidene Fluoride (binder) Graphite (conductive material)
Anode	:	Graphite (active material) Polyvinylidene Fluoride (binder)
Electrolyte	:	Organic Solvent (gel type electrolyte) Lithium Salt
Others	:	Heavy metals such as Mercury, Cadmium, Lead, and Chromium are not used in the batteries.



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Hazardous Components (Specific Chemical Identity; Common Name(s))	%	CAS Number	LD50(mg/kg) (oral-rat)	LC (mg/L)
Aluminum foil	0.1-1 w/w	7429-90-5	N/AV	A/AV
Copper foil	1 -3 w/w	7440-50-8	3.5(ipr-mouse)	N/AV
Linear and Cyclic Carbonic Solvents (See other information)	5 -17 w/w	N/APP	≈11000 (weighted avg)	N/AV
Graphite Powder	12-17 w/w	7440-44-0	440 (ivn-mouse)	N/AV
Lithium cobaltite (LiFePO ₄)	25-30 w/w	12190-79-3	N/AV	N/AV
Lithium hexafluorophosphate (LiPF ₆)	1-5 w/w	21324-40-3	1702	Rat: >20
Poly (vinylidene fluoride) (PVDF)	0.1 -1 w/w	24937-79-9	N/AV	N/AV
Steel, nickel and inert polymer	5-15 w/w	N/APP	N/APP	N/APP
Carbon black and others	0-4.4w/w	N/APP	N/APP	N/APP

Circuit Module:

HAZARDOUS INGREDIENTS	%	CAS number
Lead	<0.1	7439-92-1
Mercury	0	7439-97-6
Chromium	0	7440-47-3
Cadmium	0	7440-43-9

Plastic Parts:

HAZARDOUS INGREDIENTS	%	CAS number
Lead	<0.1	7439-92-1
Nickel	<0.01	7440-02-0
CFCs	0	75-69-4
Polychlorinated Biphenyls	0	1336-36-3

SECTION 3 HAZARDS IDENTIFICATION

PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion: NO SYMPTOMS OF EXPOSURE

Skin contact: No effect under routine handling and use.

Skin absorption: No effect under routine handling and use.

Eye contact: No effect under routine handling and use.

Inhalation: No effect under routine handling and use.

REPORTED AS CARCINOGEN: Not applicable

SECTION 4 FIRST-AID MEASURES

Skin Exposure:

If the internal battery materials of an opened battery cell come into contact with the skin, immediately flush with plenty of water.

Eye Exposure:

In case of the internal battery materials in contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Inhalation Exposure:



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If inhaled the internal materials of battery, remove immediately to fresh air and seek medical attention.

Oral Exposure:

If swallowed the internal materials of battery, do not induce vomiting. Seek immediate medical attention.

SECTION 5 FIRE FIGHTING MEASURE

Extinguishing Media:

Suitable: Dry chemical, Sandy soil, Carbon dioxide or appropriate foam.

Firefighting:

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Procedure of Personal Precaution:

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.

SECTION 7 HANDLING AND STORAGE

Handling:

Keep away from ignition sources, heat and flam. 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.

Storage:

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 CONTROL/PPE

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

Appearance:



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Light grey sprayed steel plate shell

Odor:

Odorless

Melting Point/°C:

>300°C

Solubility:

Partial soluble in water

SECTION 10 STABILITY AND REACTIVITY

Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Avoid exposure to heat and open flame. Avoid mechanical or electrical abuse. Prevent short circuits. Prevent movement which could lead to short circuits.

Materials to Avoid:

Strong oxidizing agents, Corrosives

Hazardous Polymerization:

Will not occur.

Hazardous Decomposition Products:

Metal oxides, CO, CO2

SECTION 11 TOXICOLOGICAL INFORMATION

Toxicity Data:

Not available.

Irritation Data:

The internal battery materials may cause irritation to eyes and skin

SECTION 12 ECOLOGICAL INFORMATION

No data available.

SECTION 13 DISPOSAL CONSIDERATIONS

Appropriate Method of Disposal of Substance:

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.

SECTION 14 TRANSPORT INFORMATION

IATA:

- Proper Shipping Name: Lithium ion batteries.
- UN Number : UN 3480
- Hazard class : 9
- The product shall meet the General Requirements and section IA of Packaging Instruction965(IATA DGR)

IMO:

- Proper Shipping Name: Lithium ion batteries.
- UN Number : UN 3480



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- Hazard class : 9
- EmS No: F-A, S-I

SECTION 15 REGULATORY INFORMATION

ICAO:

- Unless be exempted according to ICAO TI, the lithium ion cell/batteries (UN3840, pi 965) and lithium metal cell/batteries (UN3090, PI 968) are forbidden for carriage on passenger aircraft .
- Unless be approved according to ICAO TI, lithium ion cells/ batteries (UN3840, pi 965) must be offered for transport at a state of charge (SOC) not exceeding 30% of their rated design capacity .
- A shipper is not permitted to offer for transport more than one (1) package prepared according to Section II of PI 963 in any single consignment. Not more than one (1) package prepared in accordance with Section II of PI 965 and PI 968 may be placed into an over pack.
- Packages prepared according to Section II of PI 965 and PI 968 must be offered to the operator separately from other cargo and must not be loaded into a unit load device (ULD) before being offered to the operator.

SECTION 16 OTHER INFORMATION

Date:

2019-8-10

Department:

Shanghai Research Institute of Chemical Industry Testing Centre
Tel (Fax): 8621-52815377

Revision:

0

Other Information:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. We make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of the information for their particular purposes. In no way shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising from using the above information.