Material Safety Data sheet

RI-ENERGYPACK-MODULAR rechargeable Li-ion Battery system

Issue date: July 2024

1. Chemical and enterprise identification

Product Name: RI-ENERGYPACK-MODULAR

Product description: Rating 51.2V d.c., 100Ah, 5.12kWh, 10.24kWh or 15.36kWh
Weight (approx.): 54.6 kg, 113 kg and 113 kg.
Dimensions (approx.): 240 x 540 / 1050 x 530 mm

Company name: Rayleigh instruments
Address: Raytel House, Cutlers Road, South Woodham Ferrers, Chelmsford, Essex CM3 5WA. UK

Email: sales@rayleigh.com
Website: www.rayleigh.com
Telephone: +44 (0) 1245 428500

2. Hazards identification

Classification: Lithium-ion Batteries
Statement: Not dangerous in Normal use & without damage

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Classification			Labelling				Hazard Statement Codes
Hazard class	Hazard Category		Pictogram GHS	Pictogram UN model regulations	Signal word	Hazard statement	
Aspiration Hazard	2			Not required	Warning	May be harmful if swallowed and enters airways	H305
Acute toxicity	3	Oral		Not required	Warning	Harmful if swallowed	H302
		Dermal				Harmful in contact with skin	H312
		Inhalation				Harmful if inhaled	H332
Skin Corrosion/irritation	2			Not required	Warning	Causes skin irritation	H315

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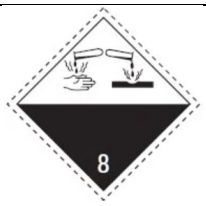
Serious Eye damage/eye irritation	2/2A		Not required	Warning	Causes serious eye irritation	H319
Skin sensitization	1, 1A, 1B		Not required	Warning	May cause an allergic skin reaction	H317
Skin Corrosion/irritation	1, 1A, 1B, 1C			Danger	Causes severe skin burns and eye damage	H314
Serious eye damage/eye irritation	1		Not required	Danger	Causes serious eye damage	H318

3. Ingredients/Composition information

Chemical name	CAS No.	Weight %
Lithium iron phosphate (LiFePO4)	15363-14-7	20-40
Lithium Hexafluorophosphate	21324-40-3	10-20
Aluminium	7429-90-5	10-20
Graphite	7782-42-5	10-20
Copper	7440-50-8	7-13
Poly (vinyl chloride)	9002-86-2	1-5

4. First aid measures

The Lithium-ion batteries are not hazardous with eye and skin contact under normal circumstances. In case of internal hazardous substance leaking a hazardous substance, following measures should be taken if body parts contact with this substance.

After contact: In case of contact, immediately wash skin with soap and copious amounts of water.
After Eye Contact: in case of contact, flush eyes with clean water for 15 minutes while lifting eyelids. Get prompt medical attention.
After Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing give oxygen.
After ingestion: If swallowed, wash out mouth with water provided person is conscious. Call for medical help.

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5. Fire-fighting measures

Characteristics of Hazard
Toxic fumes, gases or vapours may be given off on burning.

Hazardous Combustion Products
CO, CO2, HF phosphorous fluoride.

Fire-extinguishing methods and extinguishing media
Use Class D Dry Powder or Carbon dioxide extinguishers ('All Fires' extinguishers, Sand and earth can also be used). Do not use Halon type extinguishers or water.

Fire fighting attention
Firemen should be using antigas masks and full fire-fighting suits.

6. Accidental release measures

Steps to take in case material is released or spilled.
If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapours to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapours. Remove spilled liquid with absorbent cloths and dispose of following local regulations.

Waste Disposal method.
It is recommended, if possible, to discharge the battery and contact Rayleigh Instruments to discuss disposal arrangements.

7. Handling and Storage

The battery is hermetically sealed, due to the risk of rupture and leaking into the environment the battery should not be opened, destroyed, or incinerated. Do not short circuit terminals, over charge the battery, forced over-discharge or place on a fire. Do not crush. Puncture or immerse in liquids.

Precautions to be taken in handling and storing
Avoid mechanical or electrical abuse. Store in a cool, dry and ventilated area which has a stable temperature. Storage at high temperatures should be avoided. Do not place the battery near heating equipment or expose to direct sunlight for long periods.

Other precautions
The battery may explode or cause burns if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

8. Exposure Control and Personal protection

Respiratory Protection
In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

Ventilation
Not necessary under conditions of normal use.

Protective Gloves
Not necessary under conditions of normal use.

Other Protective Clothing or Equipment
Not necessary under conditions of normal use.

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9. Physical and chemical properties

Appearance:	Cuboid
Colour:	Gray
Odours:	If leaking, smells of medical ether
pH:	Not applicable as supplied.
Flash Point:	Not applicable unless individual components exposed.
Flammability:	Not applicable unless individual components exposed.
Relative density:	Not applicable unless individual components exposed.
Solubility (water):	Not applicable unless individual components exposed.
Solubility (other):	Not applicable unless individual components exposed.

10. Stability and reactivity

Stability:	Stable under normal temperatures and pressures.
Incompatibility:	oxidizing agents.
Conditions to Avoid:	Heat and open flame, short circuit, and water.
Hazardous polymerization:	Will not occur.
Decomposition Products:	CO, CO2, HF, phosphorus fluoride.

11. Toxicological Information

Signs & symptoms:	None, unless battery ruptures. In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
Inhalation:	Lung irritant.
Skin contact:	Skin irritant.
Eye contact:	Eye irritant
Ingestion:	Poisoning if swallowed

Medical conditions generally aggravated by exposure: In the event of exposure to internal contents, moderate to server irritation, burning and dryness of the skin may occur, Target Organs nerves, liver and kidneys.

12. Ecological Information

Mammalian effects:	None known at present.
Eco-toxicity:	None known at present.
Bioaccumulation potential:	Slowly Bio-degradable.
Environmental fate:	None known environmental hazards at present.

13. Waste Disposal

Waste Treatment
Recycle or dispose of in accordance with government, state & local regulations.

Attention for Waste Treatment
Deserted batteries couldn't be treated as ordinary trash. Couldn't be thrown into fire or placed in high temperature. Couldn't be dissected, pierced, crushed, or treated similarly. The best way is recycling.

14. Transport Information

UN No. UN 3480,UN 3481

Proper Shipping Name
Lithium-ion batteries (Including lithium-ion polymer batteries) or Lithium-ion batteries contained in equipment (Including Lithium-ion polymer batteries) or Lithium-ion batteries packed with equipment (Including Lithium-ion polymer batteries)

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Labels for Package Class 9

ICAO / IATA:	(ICAO), TI (IATA), DGR 63rd (2022) (PI) 965 Section IA, (PI) 966 Section I(PI) 967 Section I. Can be shipped by air in accordance with International Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA), DGR Packing Instructions (PI) 965 Section IA, PI 966 Section I and PI 967 Section I appropriate of IATA DGR 63rd (2022 Edition) for transportation.
IMDG CODE:	(IMDG Code 40-20) 《International Maritime Dangerous Goods》Code
ADR:	(ADR 2021) 《European Agreement concerning the International Carriage of Dangerous Goods by Road
RID:	(ADR 2021) 《Regulations concerning the International Carriage of Dangerous Goods by Rail》
The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport.	

15. Regulatory Information

《Dangerous Goods Regulations》
《Recommendation on the Transport of Dangerous Goods Model Regulations》
《International Maritime Dangerous Goods》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《Classification and code of dangerous Goods》
《Occupational Safety and Health Act》(OSHA)
《Toxic Substance Control Act》(TSCA)
《Consumer Product Safety Act》(CPSA)
《Federal Environmental Pollution Control Act》(FEPCA)
《The Oil Pollution Act》(OPA) (302/311/312/313)
《Superfund Amendments and Reauthorization Act Title III (302/311/312/313)》(SARA)
《Resource Conservation and Recovery Act》(RCRA)
《Safety Drinking Water Act》(CWA)
《California Proposition 65》
《Code of Federal Regulations》(CFR)

In accordance with all Federal, State and local laws.

16. Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, 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 investigations to determine the suitability of the information for their particular purposes. In no way shall the company 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, even if the company has been advised of the possibility of such damages. Users should read this file carefully and use the batteries in correct method. Rayleigh Instruments Ltd. doesn't assume responsibility for any damage or loss because of misuse of batteries.

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