

Material Safety Data Sheet MSDS003F

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Modular Energy Devices

401-921-5370

Manufacturer

Phone Number (For Information)

20 Altieri Way, Unit 4,

Chemtrec 1-800-424-9300

Street Address

Emergency Phone Number

Warwick, RI 02886

City, State, Zip

SECTION 1- PRODUCT IDENTIFICATION

Product name: High Energy Lithium-ion Batteries

Model: RKU, ARM, PNU, MPS Series

Nominal Voltage: 12, 24, 36, 48V

Designated for recharge: Yes

SECTION 2-MATERIAL IDENTIFICATION AND INFORMATION

COMPONENTS-Chemical Name and Common Names (Hazardous Components 1% or greater, Carcinogens 0.1% or greater)	%	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED
Lithium <i>Cobaltite</i>	28.0%	/	/	/
Graphite Carbon	16.0%	/	/	/
Lithium Hexafluorophosphate	1.5	/	/	/
Organic solvent	6.5	/	/	/
Non-Hazardous Ingredients	56.0%			
TOTAL	100%			

SECTION 3- PHYSICAL /CHEMICAL CHARACTERISTICS

Specific Gravity (H2O=1)

LiCoO₂:3.80 Grpahite:2.0 - 2.2

Melting Point

LiCoO₂: 1130 °C

Appearance and Odor

LiCoO₂ is a gray odorless powder; Graphite is a black or odorless powder; Organic solvent is a colorless liquid; Lithium salt is a white, crystalline and odorless powder.

SECTION 4- FIRE AND EXPLOSION HAZARD DATA

Extinguisher Media

Water, CO₂ or dry chemical powder

Special Fire-Fighting Procedures

Smoke may contain irritants to skin, eyes and respiratory track. The battery packs are constructed of many small cells. Cells can expel hot gas and smoke if they are exposed to temperatures of greater than 130°C for more than 10 minutes. CO₂ or chemical powder may extinguish flammable materials surrounding battery, but battery container must be cooled to prevent restart of fire. Water is a suitable material for extinguishing flames and cooling the battery. Wait until there is no new release of smoke for 1 hour before assuming the battery is extinguished. Residue left after burning is primarily carbon but may contain small amounts of Hydrofluoric Acid. Use protective gloves and eye protection. Avoid inhalation of fumes from residue.

SECTION 5- REACTIVITY HAZARD DATA 2/3

STABILITY <input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable	Conditions to Avoid Do not heat or incinerate the battery. Never impact, pierce or crush the battery. Do not disassemble or modify the battery. Do not operate the battery under high temperature conditions exceeding 65°C. Do not short-circuit the battery. Do not allow the battery to get wet or be immersed in water except in the case of fire suppression.
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Incompatibility (Materials to Avoid)	Water (except for fire suppression), Salt or Fresh, Strong Oxidizers, Strong Acids
Hazardous Decomposition Products	N/A
HAZARDOUS POLYMERIZATION <input type="checkbox"/> May Occur <input checked="" type="checkbox"/> Will Not Occur	Conditions to Avoid

SECTION 6- HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY	<input checked="" type="checkbox"/> Inhalation <input checked="" type="checkbox"/> Skin Absorption	<input checked="" type="checkbox"/> Ingestion <input type="checkbox"/> Not Hazardous	CARCINOGEN LISTED IN	<input type="checkbox"/> NTP <input type="checkbox"/> LARC Monograph	<input type="checkbox"/> OSHA <input type="checkbox"/> NOT Listed
HEALTH HAZARDS	Acute and chronic All chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused.				
Signs and Symptoms of Exposure	N/A				
Medical Conditions Generally Aggravated By Exposure	An acute exposure will not generally aggravate any medical condition.				
EMERGENCY FIRST AID PROCEDURES - Seek medical assistance for further treatment, observation and support if necessary					

Eye Contact	In case of eye contact, flush with lots of water for 15 minutes.
Skin Contact	In case of skin contact with contents of battery, flush immediately with water except in the case of fire suppression.
Inhalation	In case of light inhalation ,move to an area with fresh air immediately. if irritation persists, get medical help.
Ingestion	In case of ingestion , get medical help.

SECTION 7- CONTROL AND PROTECTIVE MEASURES

Respiratory Protection (Specify Type)	Not necessary under conditions of Normal use.	
Protective Gloves	Not necessary under conditions of Normal use.	Eye Protection
VENTILATION	<input type="checkbox"/> Local Exhaust	<input type="checkbox"/> Mechanical (General)
TO BE USED	Not necessary under conditions of Normal use.	<input type="checkbox"/> Special
	<input type="checkbox"/> Other (Specify)	Not necessary under conditions of Normal use.
Other Protective Clothing and Equipment	Not necessary under conditions of Normal use.	
Hygienic Work Practices	Not necessary under conditions of Normal use.	

SECTION 8- PRECAUTIONS FOR SAFE HANDLING AND USE/LEAK PROCEDURES

Steps to be taken if Material Is Spilled Or Released	If battery has expelled materials, liquids or gas, allow the batteries to cool down, let the vapors dissipate. Avoid skin and eye contact or inhalation of vapors. Wearing plastic gloves, Remove any spilled liquid with absorbent and dispose of absorbent as hazardous waste.
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Waste Disposal Methods	Lithium-ion Batteries are not considered hazardous by the EPA, but local landfill disposal ordinances must be consulted. However, it is recommended that a qualified disposal agency be utilized. A number of disposal organizations will pick-up and dispose Lithium-ion cells such as RI Rechargeable battery recycling corporation (rbrc.com), Battery Solutions Company (batteryrecycling.com), Toxco Inc (toxco.com)
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Precautions to be Taken in Handling and Storage

Take all precautions mentioned in this document. Operate and store the battery at ambient temperature in a clean, dry environment without airborne contaminants. Operate the battery within the temperature range of -40°C and 55°C . Improper handling of lithium-ion batteries may result in injury or damage from electrolyte leakage, heating, ignition or explosion.

Other Precautions and /or Special Hazards

N/A

NFPARating Health=0 Flammability=1 Reactivity=1
