佐茂股份有限公司
JOULES MILES CO., LTD.

MATERIAL SAFETY DATA SHEET

Lithium-ion Battery

Model: 4S1P003RX

Prepared by	Approved by
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MATERIAL SAFETY DATA SHEET

Section 1-Product Information and Company Identification

Manufacturer Information：

Joules Miles Co., Ltd.
10F, No. 1-26, Kuo-Chien Rd., Chien-Chen Dist.,Kaohsiung, Taiwan.
TEL： 886-7-8157868 FAX： 886-7-8154982 www.jms.com.tw
Date: 2021/01/04 Version: F

Product Information

Product Name：	Rechargeable Lithium Ion Battery Pack
Model NO：	4S1P003RX
Rating :	14.4V,1950mAh,28.08Wh

Section 2-Composition / Information on Ingredients

English Name： Rechargeable Lithium Ion Battery Pack

Synonymous Name：

Hazardous Ingredients：

Portion	Chemical Name	CAS NO.	Concentration/ Concentration range
Positive electrode	Lithium transition metal oxidate (Li[M]m[O]n *2)	12190-79-3 12031-65-1 12057-17-9 182442-95-1 207803-51-8	20-60%
Positive electrode’s base	Aluminum	7429-90-5	1-10%
Negative electrode	Carbon	7782-42-5 7440-44-0	10-30%
Negative electrode’s base	Copper	7440-50-8	1-15%
Electrolyte	Ethyl methyl carbonate Diethyl carbonate Ethylene carbonate Lithium hexafluorophosphate	623-53-0 105-58-8 96-49-1 21324-40-3	5-25%
Outer case	Aluminum,Iron,aluminum laminated plastic	7429-90-5 7439-89-6	1-30%

Lithium equivalent content	2.34[g] for battery pack

Section 3-Hazards Identification

Health Hazard Effect	The battery pack interior airtight chemical substance, if the artificial/machinery/electron improper use destroys, causes the chemical substance outside or the gas leaks causes the skin/eye damage and explodes.
Environment	Since a battery cell remains in the environment, do not throw out it

Influence	into the environment.
Physics/Chemical damage	-----
Special damage	-----
Cardinal Condition	Disgusting, vomit, the stupor, the skin fever scalds, the position feeling barrier.
Article damage classification	-----

Section 4- First-aid Measures

Under normal conditions of use, the battery is hermetically sealed.

1. Ingestion：	Swallowing a battery can be harmful Contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract. If battery or open battery is ingested, do not induce vomiting or give food or drink. Seek medical attention immediately.
2. Inhalation：	Contents of an open battery can cause respiratory irritation. Inhalation of vapors may cause irritation of the upper respiratory tract and lungs. Provide fresh air and seek medical attention.
3. Skin Contact：	Contents of an open battery can cause skin irritation and/or chemical burns. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, seek medical attention.
4. Eye Contact：	Contents of an open battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

Section 5-Fire Fighting Measures

If fire or explosion occurs when battery are on charge， should shut off power to charger. In case of fire where lithium ion battery is present, flood the area with water. If any battery is burning, water may not extinguish them, but will cool the adjacent battery and control the spread of fire. CO_2， dry chemical, and foam extinguishers are preferred for small fires.	
extinguishers：	water/CO_2/dry chemical/foam

Section 6- Accidental Release Measures

personal protection：	1. Respiratory Protection： Not necessary under normal conditions.
	2. Eye Protection： Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.
	3. Gloves： Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery
Ventilation Requirements：	Not necessary under normal conditions
Should depend on environmental protection stipulation recycle mode processing.	

Section 7-Handling and Storage

Handling：	Do not expose the battery to excessive physical shock or vibration. Short-circuiting should be avoided; however, accidental short-circuiting for a few seconds will not seriously affect the battery. Prolonged short circuits will cause the battery to rapidly lose energy, could generate enough heat to burn skin. Sources of short circuits include jumbled battery in bulk containers, coins, metal jewelry, metal covered tables, or metal belts used for assembly of battery in devices. To minimize risk of short-circuiting, the protective case supplied with the battery should be used to cover the terminals when transporting or storing the battery. Do not disassemble or deform the battery.
Storage：	Store in cool place (temperature: -20 ~ 35 degree C, humidity: 45 ~ 85%).

Section 8-Exposure Controls

- ENGINEERING CONTROLS：-----

Control parameter		
Common chemical name/ General name	TLV-TWA	BEI
Lithium Cobaltic ($LiCoO_2$)	0.02mg/ m^3 (as cobalt)	-----
Aluminum	10mg/ m^3 (metal coarse particulate) 5mg/ m^3 (inflammable powder) 5mg/ m^3 (weld fume)	-----
Carbon (Natural graphite) (Artificial graphite)	2mg/ m^3 (inhalant coarse particulate)	-----
Copper	0.2mg/ m^3 (fume) 1.0mg/ m^3 (a coarse particulate , mist)	-----
Organic electrolyte	-----	-----

Section 9-Physical and Chemical Properties

Physical state	(Solid)	(Solubility in water)	/
Cell Color	(Metallic color)	(Explosion limit)	/
Odor	(Odorless)	(Auto flammability)	/
Flashpoint	/	(Melting Point)	$LiCoO_2$ about 1130 C
Boiling Point	/	(Freezing Point)	/

Section 10- Stability and Reactivity

Stability：	Stable under normal use
Reactivity：	Avoid contact with water and acids.

Section 11-Toxicological Information

General Note :	Under normal conditions of use, the battery is toxicological sealed. So void to open and damage battery directly.

Section 12-Ecological Information

General Note :	If the battery is scrapped, it should be selected and disposed by professional company.

Section 13-Disposal Considerations

Do not dispose of battery into environment or sewerage. It should be recycled and disposed basing on your local legislation and regulations.

Section 14-Transport Information

The rechargeable lithium Ion battery pack meet all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3. The lithium battery pack comply with IATA DGR 62nd edition lithium ion battery pack UN3480 and comply with Section IB of Packing Instruction of 965 and regulated for Transport under Special provision 188 of the International Maritime Dangerous Goods Code(IMDG). Lithium battery label must be placed on the package when the statement is required.
Lithium ion batteries only transport by air in accordance with PI965 at a state of charge (SOC) not to exceed 30 percent of rated design capacity.
The battery pack belongs to Class 9 dangerous good.

Section 15-Regulatory Information

(ACGIH)	_____Hazardous	___v___Non-hazardous
(OSHA)	_____Hazardous	___v___Non-hazardous
European Union (UN)	_____Hazardous	___v___Non-hazardous
(ISO)	_____Hazardous	___v___Non-hazardous

Section 16-Other Information

- Reference :SANYO LI-ION CELL BATTERY MSDS
- Made by：Joules Miles Co., Ltd.
  10F, No. 1-26, Kuo-Chien Rd., Chien-Chen Dist.,Kaohsiung, Taiwan.
  TEL： 886-7-8157868 FAX： 886-7-8154982 www.jms.com.tw

Note: The reference data provide from supplier.