Material Safety Data Sheet

(MSDS)

Power Battery Stack 1.9

Company: RCT Power GmbH
Line-Eid-Strasse 1
78467 Konstanz
Germany

Creation date: 2017/05/20

1 Identification of the chemical and supplier

Product identifier

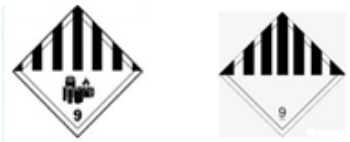
Product name	RCT Power Battery Stack
Type	Power Battery Stack 1.9

Details of the supplier of the MSDS

Company Name	RCT Power GmbH
Company address	Line-Eid-Strasse 1, 78467 Konstanz, Germany
Phone number	+49753199677-0
Email	info@rct-power.com

2 Hazards identication

Lable for hazard identification

Hazard pictograms	
Description	GB6944 9th Goods

Hazard statements

Description	Not classified as dangerous or hazardous with normal use. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused. If this occurs, it may cause electrolyte leakage. Electrolyte is flammable, in case of electrolyte leakage, move the battery from fire immediately
Hazard	It may cause electrolyte leakage and vapour generated from burning batteries, may make eyes, skin and throat irritate
Inhalation	Not classified as dangerous or hazardous with normal use. Vapors or mists from a ruptured cell may cause respiratory irritation.
Ingestion	Not classified as dangerous or hazardous with normal use. Swallowing the contents of an open cell can cause serious chemical burns of mouth and esophagus.
Skin contact	Not classified as dangerous or hazardous with normal use. Skin contact with contents of an open cell can cause severe irritation or burns to the skin.
Eye contact	Not classified as dangerous or hazardous with normal use. Eye contact with contents of an open cell can cause severe irritation or burns to the eye.

Response

Inhalation	Remove to fresh air immediately. Take a medical treatment.
Ingestion	Take a medical treatment. Induce vomiting unless patient is unconscious
Skin contact	Wash the contact areas off immediately with plenty of water and soap. Take a medical treatment.
Eye contact	Flush the eyes with plenty of clean water for at least 15 minutes immediately, without rubbing. Take a medical treatment.

3 Composition / information on ingredients

Ingredient	**Concentration**	**CAS No.**	**EC No.**
Lithium iron phosphate	42%	15365-14-7	/
Graphite	20%	7782-42-5	231-955-3
Copper	9%	7440-50-8	234-159-6
Aluminium	8%	7429-90-5	231-072-3
Poly(vinylidene difluoride)	6%	24937-79-9	/
Carbon black	5%	1333-86-4	215-609-9
Polyacrylic acid	4%	9003-01-4	/
Lithium hexafluorophosphate	2%	21324-40-3	244-334-7
Nickel	1%	7440-02-0	231-111-4

4 First aid measures

Description of first aid measure

Skin contact	If the internal battery materials of an opened battery cell come into contact with the skin, immediately flush with plenty of water.
Eye contact	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. Take a medical treatment.
Inhalation	If inhalated the internal materials of battery, remove immediately to fresh air and seek medical attention.
Ingestion	If swallowed the internal materials of battery, do not induce vomiting. Take a medical treatment.

5 Firefighting measures

Extinguishing media

Small fire	Dry chemical, sandy oil, carbon dioxide, water spray
Large fire	Water spray

Fire precautions and protective measures

Flammable properties	Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperature(＞150℃), when damaged or abused (e.g., mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity. Emit toxic fumes under fire conditions.
Explosion data	Extreme mechanical abuse will result in rupture of the batteries. Throw into the fire will result in burning.
Special protective equipment for firefighters	In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.
NFPA	Health: 0 Flammability: 1 Instability: 0

6 Accidental release measures

Fire precautions and protective measures

1	Remove personnel from area until dissipate
2	Use personal protective equipment. Avoid contact with skin and eyes.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so
2	Do not allow material to contaminate ground water system.
3	Do not throw out into the environment.

Methods and materials for containment and cleaning up

1	Absorb spilled material with an inert absorbent (dry sand or earth).
2	The leaked solid is moved to a container. The leaked place is fully flushed with water.
3	Collect all contaminated wash water and absorbent for proper disposal.

7 Handling and storage

Precautions for handling

1	Technical measures: Prevention of user exposure; not necessary under normal use.
2	Prevention of fire and explosion: Not necessary under normal use.
3	Precaution for safe handling: Do not damage or remove the external shell.
4	Never throw out battery in a fire or expose to high temperatures(above 60℃).
5	Do not soak battery in water and seawater.
6	Do not expose to strong oxidizers.
7	Do not give a strong mechanical shock or throw down. Never disassemble, modify or deform.
8	Do not connect the positive terminal to the negative terminal with electrically conductive material. In the case of charging, use only dedicated charge or charge according to the conditions specified by the supplier.

Precautions for storage

1	Avoid direct sunlight, high temperature, and high humidity.
2	Store in cool place (temperature:-20～45℃,humidity: 45～85%).
3	Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids.
4	Insulated packing material and tear-proof, waterproof materials are recommended.

8 Exposure controls / personal protection

Engineering controls

1	Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapour.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Airborne exposures to hazardous substances are not expected when product is used for its intended purpose.

Personal protection

Respiratory protection	Not necessary under normal conditions. Wear safety respirator if handling an open or leaking cell.
Eye protection	Not necessary under normal conditions. Wear safety glasses if handling an open or leaking cell.
Skin and body protection	Not necessary under normal conditions. Wear neoprene or nature rubber gloves if handling an open or leaking cell.
Hygiene measures	Do not eat, drink or smoke in work areas.

9 Physical and chemical properties

Appearance	Silver grey aluminium foil shell
Odor	Odorless
Melting point / °C	> 300°C
Solubility	Partial soluble in water

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 circuit.
Materials to avoid	Strong oxidizing agents, corrosives.
Hazardous Polymerisation	Will not occur
Hazardous decomposition products	Metal oxides, CO, CO_2

11 Toxicological information

1	None unless internal materials are exposed
2	Toxic information is available on the ingredients noted in section 3, but generally not available to intact batteries as used by customers.
3	In case of internal gas released or electrolyte spilled, electrolyte and organic solvents has small toxicity and may cause irritation of skin or eyes. Released gas may also cause irritation of skin of eyes.

12 Ecological information

Ecological toxicity	No data available
Environmental	Solid cells released into the natural environment will slowly degrade and may release harmful or toxic substances. Cell are not intended to be released into water or on land but should be disposed or recycled according to local regulations.
Bioaccumulation	No data available

13 Disposal considerations

Disposal measures	Dispose of fully discharged in accordance with local, state and federal laws and regulations
Disposal recommendations	Dispose of fully discharged in accordance with local, state and federal laws and regulations

14 Transport information

UN number	UN3480
UN shipping name	Power Battery Stack 1.9
Packing group	II
Marine pollutant	No
Land transport (ADR/RID)	Class 9
Sea transport (IMDG)	Class 9
Air transport (ICAO-TI/IATA DGR)	Class 9
National regulations	This battery type is classified as dangerous goods for transport, because the watt-hour rating of the battery exceeds 100 Wh. We also declare that this battery type meets the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.

15 Regulatory information

Major applicable regulations for the transportation of lithium-ion batteries

1	Recommendations on The Transport of Dangerous Goods (TDG)
2	International Maritime OrganizationCIMO)International Maritime Dangerous Goods Code
3	The International Civil Aviation Organization Technical Instructions on the Safe Transport of Dangerous goods by Air (ICAO-TI)
4	International Air Transport Association Dangerous Goods Regulations (IATA-DGR)
5	Provision of the Civil Aviation Administration of China on the Administration of Transport of Dangerous Goods by Air
6	Recommendations on The Transport of Dangerous Goods, the UN Manual of Tests and Criteria, Part III, sub-section 38.3
7	Safety Code for Inspection of Packaging of Dangerous Goods Transported by Air (GB19433-2009)
8	Standard for Transport of Lithium Batteries by Air (MH/T 1020-2013)

16 Other information

Reference

1 ***The International Civil Aviation Organization (ICAO), http://www.icao.int***

2 ***The International Air Transport Association (IATA), http://iata.org***

3 ***International Maritime Organization (IMO), http://imo.org***

Disclaimer

The material safety data sheet is furnished to every manufacturer as a reference to secure the safe handling of chemical. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in anyway connected with the handling, storage, use or disposal of the product