

PRODUCT SAFETY DATA SHEET

Lithium ion nickel manganese cobalt oxide battery

10S5P INR18650-29E

Item No. 24499-1GP/24499-7GP/24499-8GP/24499-9GP/24499-15GP

According Regulation (EC) No 1907/2006 (REACH) a safety data sheet must be provided for substances and preparations only. Batteries are not affected by the requirements of this Regulation.

1. Identification of the substance and of the manufacturer

Identification:	<i>Product category</i>	<i>Lithium ion battery</i>	
	<i>Model name</i>	<i>10S5P INR18650-29E</i>	
	<i>Nominal voltage</i>	<i>36.2 V</i>	
	<i>Nominal capacity</i>	<i>14.5 Ah</i>	
	<i>Nominal energy</i>	<i>524.9 Wh</i>	
	<i>Chemical system</i>	<i>Lithium NMC / Graphite</i>	
	<i>Rechargeable</i>	<i>Yes</i>	<i>No</i>
Manufacturer:	<i>Name and address</i>	<i>Batterien-Montage-Zentrum GmbH Am Sportplatz 28-30 D-63791 Karlstein am Main</i>	
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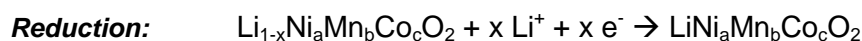
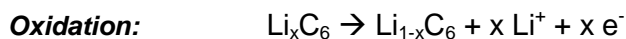
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2. Hazards identification

- Hazards:** *Lithium-ion batteries may present a risk of fire or explosion or chemical burn when mistreated. Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Read instructions carefully.*
- Under normal conditions of use, the chemicals and metals are contained in a sealed can and are not exposed to the outside. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery housing. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/fire/explosion may follow, depending on the circumstances.*
- Touching live parts may cause electrical shock which may result in thermal heating or muscle paralyzing effects. The latter may cause ventricular fibrillation, sudden cardiac arrest or respiratory paralysis with fatal ending.*
- Toxicity:** *If a battery burns, the vapors can irritate eyes, skin and the respiratory tract.*

3 Reaction equation, composition and information on ingredients



The following components are found inside the sealed Li-ion battery can.

Component	Chemical name	CAS number
Cathode	Lithium nickel manganese cobalt oxide	182442-95-1
Anode	Graphite	7782-42-5
Electrolyte	Ethyl acetate	141-78-6
	Ethylene carbonate	96-49-1
	Dimethyl carbonate	616-36-6
	Lithium hexafluorophosphate	21324-40-3
Binder	Polyvinylidene difluoride	24937-79-9

4. First aid measures

The chemicals are contained in sealed cans. Upon normal conditions of use, risk of exposure occurs only if the battery is mechanically, thermally or electrically abused.

:

If chemicals leak attend these advices:

Inhalation: *Contents of an opened battery can cause respiratory irritation.
Provide fresh air and call a doctor.*

Skin contact: *Contents of an opened battery can cause skin irritation.
Wash skin with soap and water.*

Eye contact: *Contents of an opened battery can cause eye irritation.
Immediately flush eyes thoroughly with water for 15 minutes and seek medical attention.*

If it should have come to an electric shock, your acting should be based on the following:

- do not touch the injured person until you have ensured the absence of voltage;*
- take away exposed live cables from the injured person by using non-conductive items;*
- primary objective in the treatment of unconscious patients is the maintenance of their breathing and cardiovascular system. If necessary you have to give cardiopulmonary resuscitation.*
- cool burn injuries and cover them with an aseptic and non-fluffy wound dressing.*

5. Fire fighting measures

In case of fire: *Use dry chemical extinguishers.*

Caution: *Before starting to extinguish the fire, be sure, that you are at windward of fire. So you cannot inhale toxic vapors.*

6. Accidental release measures

Wipe up leaked electrolyte fluid with an absorbent cloth.

If there is a lot of leaked electrolyte, you should wear:

- protective clothing
- gas mask for organic gases
- safety goggles
- gauntlets

7. Handling and storage

Handling: Do not open the battery. Do not crush, disassemble, drop or solder.

Charging: Charge within limits of +32 °F to +113 °F temperature
Charge only with specified charger designed for this battery.

Discharging: Discharge within limits of -4 °F to +140 °F temperature.

Caution: Wrong handling can cause fire or explosion.

Storage: Short circuit can ransom burn.
Do not store with metal objects.

8 Exposure controls and personal protection

Advices under Point 7 must be observed. You have to check continuously that storage temperature is within the specified limits. Additionally, you have to ensure that there is a suitable ventilation in order to avoid water logging.

For normal use you don't need any protective equipment.

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9. Physical and chemical properties

Appearance: 50 cells in plastic housing.

Weight: 2.975 g

Chemical properties: see Point 3

10. Stability and reactivity

*During a long storage the capacity will be reduced and the lifespan of the battery will be shorter.
The plastic housing can be damaged by leaking electrolyte.*

11. Toxicological information

Upon normal use there will be no leaking and, hence, there will be no contact with toxically ingredients of the battery.

12. Ecological information

*Upon normal use there won't be any environmental pollution.
If the battery is unusable, you must recycle it. See Point 13.*

13. Disposal considerations

*The battery is hazardous waste.
It is not allowed to dispose it with common waste.
If the battery is unusable, dispose it according to the applicable recycling regulations.*

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14. Transportation information

14.1 UN number

UN 3480

14.2 UN proper shipping name

ADR/RID/IMDG-Code: LITHIUM-ION-BATTERIES

ICAO-TI/IATA-DGR: LITHIUM-ION-BATTERIES

14.3 Transport hazard class

9 Miscellaneous

14.4 Packing group

II Substances presenting medium danger

Note:

Cells and batteries, cells and batteries contained in equipment, or cells and batteries packed with equipment, containing lithium in any form shall be assigned to UN numbers 3480 or 3481 as appropriate. They may be carried under these entries if they meet the following provisions:

- a) each cell or battery is of the type proved to meet the requirements of each test of the Manual of Test and Criteria, Part III, sub-section 38.3;
- b) each cell and battery incorporates a safety venting device or is designed to preclude a violent rupture under normal conditions of carriage;
- c) each cell and battery is equipped with an effective means of preventing external short circuits;
- d) each battery containing cells or series of cells connected in parallel is equipped with effective means as necessary to prevent dangerous reverse current flow (e.g. diodes, fuses, etc.)
- e) cells and batteries shall be manufactured under a quality management program that includes:
 1. a description of the organizational structure and responsibilities of personnel with regard to design and product quality;
 2. the relevant inspection and test, quality control, quality assurance, and process operation instruction that will be used;
 3. process controls that should include relevant activities to prevent and detect internal short circuit failure during manufacture of cells;
 4. quality records, such as inspection reports, test data, calibration data and certificates. Test data shall be kept and made available to the competent authority upon request;
 5. management reviews to ensure the effective operation of the quality management program;
 6. a process for control of documents and their revision;
 7. a means of control of cells or batteries that are not conforming to the type tested as mentioned in (a) above;
 8. training programs and qualification procedures for relevant personnel; and
 9. procedures to ensure that there is no damage to the final product.

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15. Regulatory information

Notes to regulations concerning the transport of hazardous goods:

Gefahrgutbeförderungsgesetz (GGBefG)

Gefahrgutverordnung Straße, Eisenbahn und Binnenschifffahrt (GGVSEB)

Gefahrgutverordnung See (GGVSee)

Luftverkehrsgesetz (LuftVG), Luftverkehrs-Zulassungs-Ordnung (LuftVZO)

European Agreement concerning the International Carriage of Dangerous Goods by Road

Convention concerning International Carriage by Rail

European Agreement concerning the International Carriage of Dangerous Goods by Inland Navigation

International Maritime Dangerous Goods Code

International Civil Aviation Organization / Technical Instructions for the Safe Transport of Dangerous Goods by Air (ICAO-TI)

International Air Transport Association / Dangerous Goods Regulations (IATA-DGR)

16. Other information

This information has been compiled accurately to the best of our knowledge and belief. However, BMZ excludes any warranty for the accuracy, reliability or completeness of the information contained herein. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

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