

1. Chemical Product and Company Identification

1.1 Product Identification:

Lithium ion high-performance **rechargeable** battery, 29,6 V 18 Ah 532 Wh

1.2 Use of the substance / preparation:

Operation of the Torqeedo electric outboard motor Travel 503 and 1003

1.3 Manufacturer:

Torqeedo GmbH
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 82205 Gilching
 Germany

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Contact for technical information:

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1.4 Emergency Telephone Number:

T 800-424-9300 (US) Chemtrec
 T 703-527-3887 (international) Chemtrec
 Chemtrec Registration Confirmation CRM: 00040936

2. Composition / Information on ingredients

2.1 Description	Manufacturer
US18650V3 (2250 mAh) Lithium-ion Cylindrical cell	Sony
8Serial 8 Parallel 64 pc.	

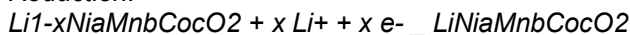
Work in progress

Ingredients	Percent
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Oxidation:



Reduction:



Cathode:

Lithium ion NMC (active material)	20-35 wt%
Polyvinylidene fluoride (binder)	
Carbon black (conductive material)	

Anode:

Graphite	10-25 wt%
Polyvinylidene fluoride (binder)	

Electrolyte:

Organic solvents, lithium salt	10-20 wt%
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Other:

Heavy metals such as mercury, cadmium, lead and chromium are not used in the cells.

2.2 Additional information:

The cells of the batteries are hermetically sealed. The materials contained can only represent a hazard if the cells are damaged.

3. Hazards Identification

In general lithium ion rechargeable batteries are classified as dangerous good class 9 (§2(1) Transport of Hazardous Goods Act).

Do not short circuit, puncture, incinerate, crush, immerse in water or other liquids or expose to temperatures above 212°F (100°C). This risks fire or explosion. The lithium manganese dioxide cells described in this Data Sheet are sealed units that are non-hazardous as long as they are used in compliance with the manufacturer's recommendations.

Primary routes of entry

Skin contact: No
Skin absorption: No
Eye contact: No
Inhalation: No
Ingestion: No

Symptoms of exposure

Skin contact: No under routine handling and use
Skin absorption: No under routine handling and use
Eye contact: No under routine handling and use
Inhalation: No under routine handling and use
Ingestion: No under routine handling and use

Under normal conditions of use, the electrode material and the electrolyte in the cells are not released into the environment as long as the cells remain undamaged and the seals remain intact. They only represent a hazard in case of mechanical, thermal or electrical abuse.

4. FIRST AID MEASURES

4.1 General information:

The battery is equipped with two redundant systems that prevent permanent and therefore hazardous short circuits at the terminals. There is no danger as long as the casing of the battery remains undamaged and no electrolyte leaks out.

If the battery poles of the cells come into direct contact with other metals, this can cause heat development which may lead to electrolyte leakage from the cells. The electrolyte is flammable. The vapors from burning cells or electrolytes can irritate eyes, skin and respiratory system.

In case of contact with the contents of the cells:

- **Skin:** Immediately wash with copious amounts of soap and water. If symptoms persist, seek medical assistance.
- **Eyes:** Immediately flush with copious amounts of clean water, without rubbing, for at least 15 minutes. Consult a physician.
- **Respiratory system:** Leave the room immediately, inhale fresh air. If you have inhaled large quantities and experience irritation of the respiratory system, seek medical assistance.

- **Ingestion:** Rinse mouth and surrounding area with water.
Immediately seek medical assistance.

5. FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media:

CO₂ extinguishers or large quantities of water can be used to cool down burning batteries as long as the fire is not so advanced that the lithium metal of the cells has been exposed.

Only use fire extinguishers suitable for metal fires to extinguish damaged cells.

5.2 Extinguishing media unsuitable for safety reasons:

Do not use sand, dry powder or sodium carbonate, graphite powder or fire blankets to extinguish battery fires.

5.3 Special hazards due to the substance or the product itself, its combustion products or vented vapors:

During water application, caution is advised as lithium particles may be ejected from the fire.

5.4 Protective gear to be used during fire fighting:

Wear full protective clothing and use an SCBA.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal protection:

Do not inhale vapors. Do not touch liquid with bare hands.
If skin comes into contact with the electrolyte, wash thoroughly with soap and water immediately.

6.2 Environment protection measures:

In accordance with local regulations, dispose of the leaked cell and the contaminated absorption material covered in sand or earth and placed in a strong polyethylene bag as hazardous waste.

6.3 Cleaning procedure:

Soak up traces of electrolyte with dry paper towels, and then rinse the area with water. Use earth or sand to soak up larger quantities of leaked material.

7. HANDLING AND STORAGE

7.1 Handling

- Do not open the battery
- Do not crush or puncture
- Do not immerse in water or other liquids.
- Do not short circuit the positive and negative poles of the cells with conductive elements (e.g. metal).
- Do not expose to direct heat or welding.
- Do not throw onto a fire.
- Use sturdy material for shipping boxes to prevent damage from vibrations, impacts, falls or stacking during transport.

- Use packaging that guarantees that short circuits do not occur under normal transport conditions.
- Charge only with specified charger designed for this battery
- Discharge within limits of -4°F to +140°F (-20°C to +60°C)

7.2 Storage

- Storage temperature: -4°F to +113°F (-20°C to +45°C)
- Humidity range: 0% to 80%
- Prevent condensation forming on cells and batteries.
- High temperatures can result in reduced battery life time and impaired performance.
- Do not store batteries over longer periods in very damp conditions.

8. Exposure controls and personal protection

8.1 Exposure protection (in case of leaking of electrolyte)

Permissible concentration: Not specified

Technical aids: Provide an adequate ventilation system in the storage area.

8.3 Personal protective equipment

If the batteries are used normally as intended, no personal protective equipment (respirator, gloves, goggles etc.) is necessary.

(If electrolyte leaks out):

Respiration protection:

In all fire situations, use SCBA.

Hand protection:

Use protective gloves.

Eye protection:

Use safety goggles.

9. PHYSICAL AND CHEMICAL PROPERTIES

Batteries: Ergonomically shaped plastic housing
Electronic and electrical short circuit protection of the battery poles
Nominal voltage 29,6 V

Individual cells: Cylindrical
Cathode : Solid lithium cobalt oxide and lithium manganese oxide
Nominal voltage: 3.7 V

10. STABILITY AND REACTIVITY

This product is stable under ordinary conditions of use and storage (see section 7).

10.1 Conditions to be avoided:

- Heat in excess of 212°F (100°C)
- Mechanical influences such as combustion, deformation, damage, crushing, puncturing, disassembly, short circuiting
- Exposure to damp surroundings over a longer period
- Immersion in water or other liquids

10.2 Substances to be avoided:

Oxidation media, lye solution, water

10.3 Hazardous reactions:

Lithium metal reacts with water, producing highly inflammable vapors

10.4 Hazardous decomposition products:

Toxic fumes and possible generation of peroxides

11. TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

Sensitization	Teratogenicity	Reproductive toxicity	Acute toxicity
NO	NO	NO	NO

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

12. ECOLOGICAL INFORMATION**12.1 Ecological toxicity:**

If used batteries are left in the ground, the battery cell can corrode and electrolyte can leak out. To date no experience of ecological impact is available.

Heavy metal quantities per cell:

Hg < 0.5ppm analysis: atomic absorption spectrometer

Cd < 4.0ppm analysis: atomic absorption spectrometer

13. DISPOSAL INFORMATION

Do not burn, do not expose the battery to high temperatures.

Dispose of in compliance with local statutory regulations.

14. TRANSPORT INFORMATION

- a. Each cell or battery type has been proven to comply with the requirements of all the tests specified in sub-section 38.3 of the Tests and Criteria Part III manual
- b. All cells and batteries are provided with a protection against internal overpressure or designed to prevent breakage under force during normal transport conditions
- c. All cells and batteries are equipped with an effective protection against external short circuits
- d. All batteries with multiple cells or cells in parallel configurations are equipped with effective protection against return current (e.g. diodes, fuses etc.).

14.1 Land transport (ADR/RID/GGVSE):

Class: 9
Hazard sheet: 9
UN No.: UN 3480 or UN 3481
Packaging group: II
Correct technical name: LITHIUM ION BATTERIES
LITHIUM ION BATTERIES CONTAINED IN
EQUIPMENT or
LITHIUM ION BATTERIES PACKED WITH
EQUIPMENT

14.2 Marine transport (IMDG code/GGVSee):

Class: 9
UN No.: UN 3480 or UN 3481
Packaging group: II
EmS: F-A, S-I
Correct technical name: LITHIUM ION BATTERIES
LITHIUM ION BATTERIES CONTAINED IN
EQUIPMENT or
LITHIUM ION BATTERIES PACKED WITH
EQUIPMENT

Marine Pollutant: -

14.3 Air transport (ICAO-IATA/DGR):

Class: 9
UN No.: UN 3480 or UN 3481
Packaging group: II
Correct technical name: LITHIUM ION BATTERIES
LITHIUM ION BATTERIES CONTAINED IN
EQUIPMENT or
LITHIUM ION BATTERIES PACKED WITH
EQUIPMENT

15. REGULATORY INFORMATION

Not applicable

16. OTHER INFORMATION

This information was compiled from sources considered reliable and is correct and reliable according to the best of our knowledge at the time of compilation of the information.