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Material Safety Data Sheet
MSDS 2.001.0010

Lithium primary cylindrical cell (coiled)

1. Identification of the product and of the company undertaking

Product details

Trade name: Lithium primary cylindrical cell (coiled)

Voltage: 3.0 V (or multiples of this in case of multi-cell configurations)

Electrochemical system: Lithium metal | organic electrolyte | manganese dioxide

Anode (negative): Lithium metal

Cathode (positive): Manganese dioxide

Type: Lithium content per cell/battery:

CR 123 A 0.58 g / H024-013-021-1 12v 8 cell 4s2pCR123A Powerone battery 4.64g

Cell Supplier details

Address: VARTA Microbattery GmbH

Daimlerstr. 1

D-73479 Ellwangen/Jagst

Germany

Emergency telephone number: +49 7961 921 110 (VAC)

Legal Remark (U.S.A.)

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration

(OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does

not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as

a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during

manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end

use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or

trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.

Legal remark (EU)

These batteries are no "substances" or "preparations" according to Regulation (EC) No 1907/2006 EC. Instead they

have to be regarded as "articles", no substances are intended to be released during handling.

Therefore there is no

obligation to supply a MSDS according to Regulation (EC) 1907/2006, Article 31.

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General remark

This "Safety Information" is provided as a service to our customers. The details presented are in accordance with our present knowledge and experiences. They are no contractual assurances of product attributes.

2. Hazards identification

The battery is sealed hermetically. Thus, the ingredients have no hazard potential, except the battery is violated or dismantled.

If in case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances.

Attention: If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above

100°C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact

with water or humidity hydrogen gas is formed, which may inflame spontaneously.

3. Composition/information on ingredients

Ingredients

Contents CAS No. Hazard Symbols R Phrases Material

2 - 5 % 7439-93-2 F, C 14/15 - 34 Lithium

13 - 40 % 1313-13-9 Xn 20/22 Manganese dioxide

< 10 % 108-32-7 Xi 36 Propylene carbonate

< 10 % 110-71-4 F T 60 - 61 - 11 - 19 - 20 1,2-Dimethoxy ethane

< 5 % 33454-82-9 Xi 36/37/38 Lithium trifluoromethyl

sulfonate

Heavy Metals

Contents CAS No. Material

< 1 mg/kg 7440-43-9 Cadmium

< 10 mg/kg 7439-92-1 Lead

< 0,1 mg/kg 7439-97-6 Mercury

(none intentionally introduced,
see Chapter 12)

Other Ingredients

Contents CAS No. Material

33 – 74 % Steel and nickel

3 – 10 % Plastic

4. First-aid measures

Measures at accidental release

After inhalation: Fresh air. Seek for medical assistance.

After skin contact: Remove solid particles immediately. Flush affected areas with plenty of water (at least 15 min.). Remove contaminated cloth immediately. Seek for medical assistance.

After eye contact: Flush the eye gently with plenty of water (at least 15 min.). Seek for medical assistance.

After ingestion: Drink plenty of water. Avoid vomiting. Seek for medical assistance.

No trials for neutralization.

5. Fire-fighting measures

Suitable extinguishing media: Metal fire extinction powder, rock salt or dry sand shall be used.

Extinguishing media with limited

suitability:

Carbon dioxide (CO₂) is not suitable. Water has to be avoided.

Special protection equipment during

fire-fighting:

Contamination cloth including breathing apparatus.

Special hazard: Cells may explode and release metal parts.

At contact of anode material with water extremely flammable hydrogen gas

and caustic liquid are released.

Attention: Do not let used extinguishing media penetrate into surface water or ground

water. Dispose off properly.

6. Accidental release measures

Person related measures: Wear personal protective equipment adapted to the situation

(protection gloves,

cloth, face protection, breathing protection).

Environment protection measures: Bind released ingredients with powder (rock salt, sand).

Dispose off according to the local law and rules.

Avoid leached substances to penetrate into the earth, canalization or water.

Treatment for cleaning: If battery casing is dismantled, small amounts of electrolyte may leak.

Package

the battery tightly including ingredients together with lime, sand or rock salt. Then

clean with water.

7. Handling and storage

Guideline for safe handling: Always follow the warning information on the batteries and in the manuals of

devices. Only use the recommended battery types.

Keep batteries away from children.

For devices to be used by children, the battery casing should be protected

against unauthorized access.

Unpacked batteries shall not lie about in bulk.

In case of battery change always replace all batteries by new ones of identical type and brand.

Do not swallow batteries.

Do not throw batteries into water.

Do not throw batteries into fire.

Do not short-circuit batteries.

Do not recharge primary batteries.

Storage: Storage preferably at room temperature (approx. 20°C). Avoid large temperature changes. Avoid direct sunlight. At higher temperature the electrical performance may be reduced.

Storage of unpacked batteries can cause short circuit and heat generation.

Storage of large amounts: If possible, store the batteries in original packaging (because of short circuit

protection and exemptions according to transport regulations);

A fire alarm is recommended;

For automatic fire extinction consider chapter 5 "Fire fighting measures".

VCI storage category: It is recommended to consider the "VCI Guideline for the mixed storage of

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chemicals” and to handle lithium polymer batteries according to storage category 11 (“combustible solids”).

8. Exposure controls/personal protection

Under normal conditions (during discharge) release of ingredients does not occur.

9. Physical and chemical properties

Not applicable if closed.

10. Stability and reactivity

Dangerous reactions: When heated above 100°C the risk of rupture occurs.

11. Toxicological information

Under normal conditions (during charge and discharge) release of ingredients does not occur. In case of accidental

release see information in chapter 2.

Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

12. Ecological information

Lithium primary cylindrical cells do not contain heavy metals as defined by the European directives 2006/66/EC

Article 21.

For the state of California these batteries are considered as “free of perchlorate”.

Mercury has not been “intentionally introduced (as distinguished from mercury that may be incidentally present in

other materials)” in the sense of the U.S.A. “Mercury-Containing and Rechargeable Battery Management Act”

(May 13 1996).

The Regulation on Mercury Content Limitation for Batteries promulgated on 1997-12-31 by the China authorities

including the State Administration of Light Industry and the State Environmental Protection Administration defines ‘low

mercury’ as ‘mercury content by weight in battery as less than 0.025%’, and ‘mercury free’ as ‘mercury content by

weight in battery as less than 0.0001%’. And therefore: Varta lithium primary button cells/batteries belong to the

category of mercury-free battery (mercury content lower than 0.0001%).

13. Transport information

General considerations

Lithium primary cylindrical cells manufactured by VARTA Microbattery are considered to be “lithium metal cells” and

are tested according to 38.3 of the “UN Manual of Tests and Criteria” for compliance with the requirements of special provisions ADR 188, RID 188, IMDG 188, DOT / 49 CFR provision 173.185, and the requirements of IATA DGR packing instruction 968. Positive test results required for non-dangerous goods classification are stated in dedicated

“Declarations of Conformity”. In addition, the following conditions for non-dangerous goods classification are fulfilled

by our products in original packaging:

- The batteries contain an equivalent amount of not more than 1 g lithium per cell and 2 g lithium per battery.
- The batteries are isolated in the packaging to avoid short circuits.

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- The packs are marked with a warning notice, that clearly states that the pack contains lithium batteries and must be

quarantined, inspected and repacked if damaged.

- For air transport, the total mass does not exceed 2.5 kg per pack); for other transports 30 kg are allowed.

USA

Primary (non-rechargeable) lithium batteries and cells are forbidden for transport aboard passenger carrying aircraft.

The outside of each package that contains primary (non-rechargeable) lithium batteries or cells must be marked

"PRIMARY LITHIUM BATTERIES-FORBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT" on a background of contrasting colour.

15. Regulatory information

Marking consideration: European Union: According to Directive 2006/66/EC, the batteries have to be marked with the crossed wheel bin symbol.

Water hazard class: (according to German Federal Water Management Act)
non-water pollution according to VwVwS Appendix 1
(No. 1443 and 766)

16. Other information

Full text of Classification and R-phrases referred to under sections 2 and 3

Classification Xn Harmful

Xi Irritating

F Highly flammable

C Corrosive

T Toxic

R Phrases 11 Highly flammable.

14/15 Reacts violently with water, liberating extremely flammable gases.

19 May form explosive peroxides.

20 Harmful by inhalation.

20/22 Harmful by inhalation and if swallowed

36 Irritating to eyes.

36/37/38 Irritating to eyes, respiratory system and skin.

60 May impair fertility.

61 May cause harm to the unborn child.

Note: Date of issue of the transport regulations: ADR 2009, IATA 2009, IMDG 2006, DOT / 49 CFR 2009.

PMBL Ltd 2010