1. IDENTIFICATION

Trade name: **Rechargeable Lithium-Ion Battery (all sizes)**

Voltage: **3,6 V / 3,7 V (or multiples of this in case of multi-cell configurations)**

Electrochemical system: **Lithium Ion**

Anode (negative electrode): **Carbon**

Cathode (positive electrode): **Metal oxide**

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Alfred-Krupp-Str. 9, 73479 Ellwangen/Germany
Phone ++49 (0) 7961 / 83-0
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Emergency Telephone Number: **++49 (0) 911 / 65372260**

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2. HAZARDS IDENTIFICATION

For the battery cell, chemical materials are stored in a hermetically sealed can, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage.

In case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances (measures according to chapter 4 to 6).

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3. COMPOSITION / INFORMATION on INGREDIENTS

Substance

Lithium Cobaltate
Graphite
Copper
Aluminium
Polypropylene

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4. FIRST AID MEASURES

Contact to internal battery content:

► **Skin:** Remove contaminated clothes and shoes immediately.
Flush affected areas with plenty of water (at least 15 minutes).
Seek for medical assistance.

► **Eyes:** Do not rub eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek for medical assistance.

► **Inhalation:** May the victim blow his/her nose, gargle. Fresh air.
Seek for medical assistance.

► **Ingestion:** Drink plenty of water. Avoid vomiting. No trials for neutralization.
Seek for medical assistance.

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5. FIRE – FIGHTING MEASURES

Suitable extinguishing media:	Metal fire extinction powder, rock salt or dry sand shall be used. In case only water is available, it can be used only in large amounts.
Extinguishing media with limited suitability:	Water in small quantities may have adverse effects.
Special protection equipment during fire-fighting:	Contamination cloth including breathing apparatus.
Special hazard:	Cells may explode and release metal parts. At contact of electrolyte with water traces of hydrofluoric acid may be formed. In this case avoid contact and take care for good ventilation. At contact of charged anode material with water extremely flammable hydrogen gas is generated.
Attention:	Do not let used extinguishing media penetrate into surface water or ground water. If necessary, thicken water or foam with suitable solids. Dispose off properly.

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6. ACCIDENTAL RELEASE MEASURES

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

(protection gloves, 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 get 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.

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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. Avoid deep discharge. Do not short-circuit batteries. Use recommended charging time and current. Do not open or disassemble batteries.
Storage:	Storage preferably at room temperature (approx. 20°C). Avoid large temperature changes. Do not store close to heating devices. Avoid direct sunlight. At higher temperature the electrical performance may be reduced. Preferred storage at 50 % of the nominal capacity. Storage of unpacked batteries can cause short circuit and heat generation.
Storage category according to TRGS 510:	It is recommended to consider the ”Technical Rule for Hazardous Substances TRGS 510 – Storage of hazardous substances in nonstationary containers” and to handle rechargeable Lithium-Ion batteries according to storage category 11 (“combustible solids”).
Storage of large amounts:	Follow the recommendations of the German Insurance Association (GDV - “Gesamtverband der Deutschen Versicherungswirtschaft e.V.”) concerning Lithium batteries: http://vds.de/fileadmin/vds_publikationen/vds_3103_web.pdf In case of storage of large amounts (used storage volume > 7 m^3 and/or more than 6 pallets) batteries shall be stored in

fire-resistant or separated rooms or areas (e.g. warehouse or container for hazardous materials). Mixed storage with other products is not allowed. The storage area shall be monitored by an automatic fire detection system, connected to a permanently manned place. A fire-extinguishing system shall reflect the extinguishing agents mentioned in chapter 5.

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8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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

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9. PHYSICAL AND CHEMICAL PROPERTIES

Not applicable if closed.

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10. STABILITY AND REACTIVITY

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

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11. TOXIOLOGICAL INFORMATION

Under normal conditions (during charge and discharge) release of ingredients does not occur.
In case of accidental release see information in section 2,3 and 4.

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12. ECOLOGICAL INFORMATION

VARTA Lithium-Ion batteries do not contain heavy metals as defined by the European directives 2006/66/EC Article 21; they comply with the chemical composition requirements of this directive.

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-Ion batteries belong to the category of mercury-free battery (mercury content lower than 0,0001 %).

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13. DISPOSAL CONSIDERATIONS

USA: Lithium-Ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream.

These batteries, however, do contain recyclable materials and are accepted for recycling by the Rechargeable Battery Recycling Corporation's (RBRC) battery recycling program. Please go to the RPRC website at www.rbrc.org for additional information.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the directive 2006/66/EC of the European Parliament and of the council of 6. September 2006 on batteries and accumulators and waste batteries and accumulators and repealing directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Battery Association (http://www.epbaeurope.net/legislation_national.html).

Importers and users outside EU should consider the local law and rules.

In order to avoid short circuit and heating, used Lithium-Ion batteries should never be stored or transported in bulk. Proper measures against short circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals
- Embedding in dry sand

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14. TRANSPORT INFORMATION

Lithium-Ion batteries that we supply to our customers are subject to the regulations on dangerous goods. Transport may be facilitated by observing the following special provisions:

Sea transport: IMDG Code Amendment 40-20 Special provision 188/230, packing instruction 903
Road and rail transport: ADR/RID 2021 special provision 188/230, packing instruction 903
Air transport: IATA Dangerous Goods Regulations 63rd Edition Packing instruction 965
Section IA – IB - II.

CARGO AIRCRAFT ONLY (CAO)
Section IA – Net Quantity per package 35 kg
Section IB – Net Quantity per package 10 kg
Section II – see Table 965-II
State of charge (SoC) max. 30%

Additional information: Tel +49 911 65372260 for USA: Tel +18004249300

The requirements of the UN manual of Test and Criteria, Part III, sub-section 38.3 are fulfilled.
All of these batteries are packed and marked within appropriate protection for prevention of short circuits.
The shipping documents observe to the regulations.

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15. REGULATORY INFORMATION

Marking considerations:	According to directive 2006/66/EC, the batteries have to be marked with the crossed wheel bin symbol. According to Commission Regulation (EU) No 1103/2010 portable secondary (rechargeable) batteries and accumulators shall be marked with a capacity marking, except those which are incorporated or designed to be incorporated in appliances before being provided to end-users, and not intended to be removed. Rechargeable Lithium-Ion batteries, which contain electronic

	modules (e.g. PCM) and which are subjected to the EMC directives 2004/108/EC or 2014/35/EU (as they are end-user replaceable devices), must undergo a CE conformity assessment and must wear the CE marking. According to Dangerous Goods Regulations (see 14.) battery packs have to be marked with the Watt-hour rating.
International safety standards:	The basis cells are approved according to UL 1642.
Water hazard class:	The regulations of the German Federal Water Management Act (WHG) are not applicable as Lithium-Ion batteries are articles and not substances, thus there is no risk of water pollution, except the batteries are violated or dismantled.

16. OTHER INFORMATION

Note:	Latest covered modification of the European Battery Directive 2006/66/EC: Directive 2013/56/EU.