



Battery Information Sheet

Rechargeable lithium-ion cells, modules and battery systems

According to REACH regulation (EC 1907/2006, Art 31) and to OSHA regulation (29 CFR 1910.1200), batteries are **ARTICLES** with no intended release. As such, they are not covered by legal requirements to generate and supply an SDS or an MSDS.

This Battery Information Sheet is provided solely as an information document for the purpose of assisting our customers.

1. IDENTIFICATION

1.1 Product

Lithium-Ion rechargeable cells and modules or battery systems composed of these cells

1.2 Supplier

Headquarter Address Phone/Fax	Saft S.A.S. 12 rue Sadi Carnot, 93170 BAGNOLET – France Phone/Fax: +33 (0)1 49 93 19 18 /+33 (0)1 49 93 19 50
Factory Address Phone/Fax	Saft Bordeaux 111-113, boulevard Alfred Daney, 33074 BORDEAUX - France +33 (0)5 57 10 64 00 /+33 (0)5 57 10 68 77
Factory Address Phone/Fax	Saft Jacksonville 13575, Waterworks street, JACKSONVILLE, FL 32221 - USA +1 904 861 1501/+1 904 772 1463
Factory Address Phone/Fax	Saft Nersac Zone industrielle, 16440 NERSAC - France +33 (0)5 45 90 50 26 /+33 (0)5 45 90 50 71
Factory Address Phone/Fax	Saft Raskovice Raskovice 247, 73904 PRAZMO - Czech Republic +420 558 426 257/+420 558 692 226
Factory Address Phone/Fax	Saft Poitiers Rue Georges Leclanché – BP n°1039, 86060 POITIERS Cedex 9 - France +33 (0)5 49 55 48 48 /+33 (0)5 49 55 48 50
Factory Address Phone/Fax	Saft Cockeysville 107 Beaver Court, COCKEYSVILLE, MD 21030 - USA +1 410 771 3200/+1 410 771 1144
Factory Address Phone/Fax	Saft Valdese 313 Crescent Street, VALDESE, NC 28690 - USA +1 828 874 4111/+1 828 874 2431

1.3 Emergency contact

Chemtrec US Service within the USA: +800 424 93 00/outside : +1-202-483-7616 for English speaking
INRS Orfila : +33(0) 1 45 42 59 59 for French speaking



2. HAZARD IDENTIFICATION

2.1 At cell level

Not chemically dangerous with normal use in accordance with Saft recommendations as stated in the user manuals or other similar documentation. In particular, the battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.

EYE CONTACT: contents of an opened cell within a battery can cause eye irritation. Dust may cause inflammation of eyelids

SKIN CONTACT: Electrolyte solution inside cells can cause skin irritation. Contact with positive active material may in addition cause allergic dermatitis or irritation to skin.

INHALATION: Contents of an opened cell can cause respiratory tract and mucus membrane irritation. Overexposure to lithiated nickel compounds may cause an allergic response. If gas is generated during battery disassembly, throat irritation may occur.

2.2 At module and battery system level

HIGH VOLTAGE: Always use the large battery systems in a restricted access area. Only authorized people aware of high voltage hazards and trained to work on such systems are allowed to enter in the battery area.

TEMPERATURE: Do not place the batteries on or near fires or other high-temperature locations (> 70°C). Doing so may cause the batteries to overheat or ignite. Using the batteries in this manner may also result in a loss of performance and a shortened life expectancy.

3. COMPOSITION, INFORMATION OR INGREDIENTS

3.1 At cell level

Component	CAS Number	EINECS/ELINCS	Content (wt. %)*
Lithiated metal Oxide	N/A	N/A	15-30
Organic Electrolyte	N/A	N/A	10-20
Carbon, as Graphite	7440-44-0	231-153-3	10-25
Copper	7440-50-8	231-159-6	1-30
Aluminium	7429-90-5	231-072-3	1-20
Stainless, Nickel and inert material	N/A	N/A	remainder

* Quantities may vary a little with cell model

3.2 At module and battery system level

Depending on the type of battery system, it may contain either a glycol ethylene based coolant or a refrigerated coolant.



4. HANDLING AND STORAGE

IMPORTANT NOTICE: The battery should not be opened without Saft approval, destroyed or incinerated since the battery may cause fire or the ingredients contained in the cells could be harmful under some circumstances if exposed.

STORAGE : Store in a cool, dry and ventilated area. Elevated temperatures can result in shortened battery life. Since short circuit can cause burn hazard, leakage or explosion hazard, keep batteries in original packaging until use and do not jumble them.

HANDLING :

- Do not short (+) or (-) terminal with conductors.
- Do not reverse the polarity
- Do not mix different type batteries or mix new and old ones together.
- Do not open the battery system or modules
- Do not use the unit without its electronic management system.
- Do not submit to excessive mechanical stress.
- Do not expose the unit to water or condensation
- Do not directly heat, solder or throw into fire. Such unsuitable use can cause leakage or spout vaporized electrolyte fumes and may cause fire or explosion.
- Immediately disconnect the batteries if, during operation, they emit an unusual smell, feel hot, change shape, or appear abnormal in any other way. Contact Saft if any of these problems are observed.

CHARGING/DISCHARGING : Charge with specified charger designed for this battery or commercial cycling equipment that has upper voltage fail safe conditions. Do not overcharge as venting and combustion can occur. Do not over-discharge. Discharge limits are dependent on the specific product. Refer to Saft Instructions.

5. PHYSICAL AND CHEMICAL PROPERTIES

The lithium-Ion cell or battery described by this Battery Information Sheet is a sealed unit when offered for sale. It is a manufactured “article” and does not expose the user to hazardous chemicals when used in accordance with manufacturer specifications.

Boiling Point – Not applicable
Vapor Pressure – Not applicable
Specific Gravity – Not applicable

Melting Point – Not applicable
Vapor Density – Not applicable

6. STABILITY AND REACTIVITY – the battery system is stable when handled and stored according to section 4

MATERIALS TO AVOID: Oxidizing agents, acids, bases and reducing agents.

CONDITIONS TO AVOID: Avoid exposing battery to fire or high temperature. Do not disassemble, crush or short or install with incorrect polarity. Avoid mechanical or electrical abuse.

HAZARDOUS DECOMPOSITION PRODUCTS: Lithium hexafluorophosphate may react with water in the atmosphere and produce some traces of hydrogen fluoride, which do not worsen the gas toxicity. Thermal decomposition of the cell may produce release of electrolyte liquid and vapour, harmful materials, and dusts.



7. TOXICOLOGICAL INFORMATION

Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

8. ECOLOGICAL INFORMATION

None known if used/disposed of correctly

9. DISPOSAL CONSIDERATIONS

Battery recycling is either mandatory (European Directive 2006/66/EC) or recommended.

Batteries should be fully discharged prior to disposal and terminals protected.

Dispose in accordance with local laws and regulations. Store material for disposal as indicated in Section 4.

Do NOT dump into any sewers, on the ground or into any body of water.

See:

<http://www.saftbatteries.com/TheSaftGroup/Environment/Takebackpolicy/tabid/104/Language/en-US/Default.aspx>

<http://www.saftbatteries.com/TheSaftGroup/Environment/BringBackPoints/tabid/435/Language/en-US/Default.aspx>

10. TRANSPORTATION INFORMATION

10.1 United Nations Class

Lithium-ion cells and batteries are listed in the hazardous materials list according to UN Recommendations on Dangerous Goods Transportation.

Class UN N°:	3480
Hazard Classification:	9
Packaging:	Group II

10.2 International agreements

By Air International:	IATA
By Sea International:	IMDG
European road transportation:	ADR (road)
European rail transportation:	RID

11. REGULATORY INFORMATION

Marking Consideration

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

Lithium-ion batteries, which contain electronic modules (e.g. PCM) and which are subjected to the EMC directive 93/97/EEC, must be approved and must wear the CE marking.

International safety standards: The basis cells are approved according to UL 1642.



12. FIRST AID MEASURES **(not anticipated under normal use)**

EYE CONTACT : Immediately flush with copious amount of water for more than 15 minutes. Seek immediate medical attention.

SKIN CONTACT: Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes. Wash skin with soap and water. If skin irritation persists, call for a medical attention.

INHALATION: Remove to fresh air and seek immediate medical attention. Obtain medical advice.

INGESTION: Clear mouth with water and afterwards drink plenty of water. Do not induce vomiting. Seek immediate medical attention.

13. FIRE FIGHTING MEASURES **(not anticipated under normal use)**

EXTINGUISHING MEDIA:

- Small fires: use D type fire extinguisher, inert gas (for instance blend of argon and nitrogen), CO₂, dry chemical powder or foam extinguishers
- Large fires: use large quantities of water for the surrounding fire and to prevent propagation. If water is used on live batteries, caution should be taken to avoid the electrical hazard that may be present.





SPECIAL FIRE FIGHTING PROCEDURES: Fire fighters should wear self-contained breathing apparatus.

Use approved / certified vapour respirator to avoid breathing toxic fumes. Wear protective clothing and equipment to prevent potential body contact with electrolyte solution. It is permissible to use any class of extinguishing medium, specified above, on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture.

PARTICULAR HAZARDS RESULTING FROM EXPOSURE TO THE SUBSTANCE/PREPARATION, TO COMBUSTION AND GAS PRODUCTS: The cell can spout vaporized or decomposed electrolyte fumes with fire when being heated over +100°C (+212°F) or disposed in fire. Solvents within the electrolyte are flammable liquids and must be kept away from any kind of ignition source.

14. EXPOSURE CONTROLS AND PERSONAL PROTECTION* **(not necessary under normal use)**

Handle an opened battery only in a well ventilated place.

	Respiratory protection	In case of incident or after an abusive use, in case of a cell opening or a leak, use gas mask which covers the whole face and equipped with ABEK type filters or escape mask type Self-Contained Breathing Apparatus. Fire fighters should wear self-contained breathing apparatus.
	Hand protection	Use polypropylene, polyethylene, rubber or Viton gloves when handling leaking or ruptured cells.
	Eye protection	In case of incident or after an abusive use, in case of a leak or cell opening, wear safety glasses with protected side shields or a mask covering the whole face when handling leaking or ruptured cells
	Other	In the event of leakage or ruptured cells, wear a rubber apron and protective clothes.

*AFNOR pictograms



15. ACCIDENTAL RELEASE MEASURES **(not anticipated under normal use)**

INDIVIDUAL PRECAUTIONS: Evacuate the employees from the contaminated area until fumes dispersal. In case of electrolyte leakage from a cell or battery, do not inhale the gas as possible. In case of skin or eye contact, inhalation or ingestion, follow the measured described in section 4.

ENVIRONMENTAL PRECAUTION: Avoid sewage, surface water and underground water contamination. Avoid ground and atmosphere contamination.

WAYS OF CLEANING: Using protective glasses and gloves, use absorbent material (sand, earth or vermiculite) to absorb any exuded material. Seal leaking battery (unless hot) and contaminated absorbent material in plastic bag and dispose of as Special waste in accordance with local regulations.

16. OTHER INFORMATION

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, neither exhaustively nor perfect reliability can be granted. Information does not imply implicit or specific warranty of it.

This information relates to the specific products designated and may not be valid for such products used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

Saft does not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this battery information sheet provided as a service to our customers. Saft does not offer warranty against patent infringement.

SAFT

12, rue Sadi Carnot
93170 Bagnolet – France
Tel.: +33 (0)1 49 93 19 18
Fax: +33 (0)1 49 93 19 69
www.saftbatteries.com

Doc N° BIS01-2-12
Edition: March 2012
Version 1.1

Data in this document is subject to change without notice and becomes contractual only after written confirmation.