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 informational 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

Headquarters	**Saft S.A.S.**
Address	26 Quai Charles Pasqua, 92300 LEVALLOIS-PERRET – France
Phone/Fax	Phone/Fax: +33 (0)1 58 63 16 00 /+33 (0)1 58 63 16 50
Factory	**Saft Bordeaux**
Address	111-113, boulevard Alfred Daney, 33074 BORDEAUX - France
Phone/Fax	+33 (0)5 57 10 64 00 /+33 (0)5 57 10 68 77
Factory	**Saft Jacksonville**
Address	13575, Waterworks street, JACKSONVILLE, FL 32221 - USA
Phone/Fax	+1 904 861 1501/+1 904 772 1463
Factory	**Saft Nersac**
Address	Zone industrielle, 16440 NERSAC - France
Phone/Fax	+33 (0)5 45 90 50 26 /+33 (0)5 45 90 50 71
Factory	**Saft Raskovice**
Address	Raskovice 247, 73904 PRAZMO - Czech Republic
Phone/Fax	+420 558 426 257/+420 558 692 226
Factory	**Saft Poitiers**
Address	Rue Geoges Leclanché – BP n°1039, 86060 POITIERS Cedex 9 - France
Phone/Fax	+33 (0)5 49 55 48 48 /+33 (0)5 49 55 48 50
Factory	**Saft Cockeysville**
Address	107 Beaver Court, COCKEYSVILLE, MD 21030 - USA
Phone/Fax	+1 410 771 3200/+1 410 771 1144
Factory	**Saft Valdese**
Address	313 Crescent Street, VALDESE, NC 28690 - USA
Phone/Fax	+1 828 874 4111/+1 828 874 2431
Factory	**Friemann & Wolf Batterietechnik GmbH (a company of the Saft Group)**
Address	Industriestrasse 22, 63654 BÜDINGEN - Germany
Phone/Fax	+49 (0)6042 954 150 / +49 (0)6042 954 490

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1.3 Emergency contact

Chemtrec US Service within USA-Canada: +800 424 93 00/outside : +1-703-527-3887
In case of an incident and/or accident involving the battery, this telephone number is available 24 hours a day and is monitored at all times by a person who has comprehensive emergency response and accident mitigation information for the battery or can immediately call upon a person who possesses such knowledge and information.
If needed, the fire brigade may also be called in case of an incident/accident involving the battery.

2. HAZARD IDENTIFICATION

2.1 At cell level

Not chemically dangerous during 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 inside the cells or combustion products could be harmful.

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

SKIN CONTACT: Electrolyte solution contained 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 for VL and VES cells, > 85°C for extended temperature MP range [with xtd extension] and > 125°C for high temperatures VL cells [with –125 extension]). 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 battery life.

3. COMPOSITION, INFORMATION OR INGREDIENTS

3.1 At cell level

Component	CAS Number	EINECS/ELINCS	Content (wt. %)*
Lithiated metal compounds (NCA,NMC, LFP, LCO)	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, the battery may contain either a glycol ethylene based coolant or a refrigerated coolant.

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4. FIRST AID MEASURES (not anticipated under normal use)

EYE CONTACT: Immediately flush eyes with copious amount of water for at least 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.

5. FIRE FIGHTING MEASURES (not anticipated under normal use)

ESTINGUISHING MEDIA:

- Small fires: use A,B or C type fire extinguisher, inert gas (for instance blend of argon and nitrogen), CO_2, 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 batteries in operation, 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) (over 125°C for high temperatures VL cells [with – 125 extension]) or disposed in fire. Solvents within the electrolyte are flammable liquids and must be kept away from any kind of ignition source.

6. 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 measures described in section 4.

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

CLEANING PROCEDURE: Use 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.

7. HANDLING AND STORAGE

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

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

HANDLING :

- Do not short (+) and (-) terminal with conductors.
- Do not short (-) terminal and the can of aluminium can cells with conductors
- Do not short (+) terminal and the can of stainless steel can cells 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, do not 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 charger designed specifically for this battery. 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.

8. 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 leaking or ruptured cells, use a gas mask which covers the whole face and equipped with ABEK type filters or an escape mask such as a 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 leaking or ruptured cells, 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 leaking or ruptured cells, wear a rubber apron and protective clothes.

**AFNOR pictograms*

9. 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 the manufacturer specifications.

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

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10. STABILITY AND REACTIVITY – the battery system is stable when handled and stored according to section 7

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 release of electrolyte liquid and vapour, harmful materials, and dusts.

11. TOXICOLOGICAL INFORMATION

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

12. ECOLOGICAL INFORMATION

None known if used/disposed of correctly

13. DISPOSAL CONSIDERATIONS

Battery recycling is either mandatory (European Directive 2006/66/EC) or recommended.
Batteries should be fully discharged prior to disposal and terminals should be protected.
The recycling of batteries must only be conducted by fully trained personnel of licensed recyclers. Attempting to dismantle batteries or modules into individual cells may lead to serious injuries or death due to high electrical voltage and/or energy.

Dispose in accordance with local laws and regulations. Store material for disposal as indicated in Section 7.
Do not dump into any sewers, on the ground or into any body of water.

See the section on “Environmental Responsibility” on https://saftbatteries.com/about-us/environmental-responsibility

14. TRANSPORTATION INFORMATION

14.1 Regulatory Framework

Shipment of new and used Lithium-ion cells and batteries are classified as Dangerous Goods under the UN model regulation.

- If shipped as such, UN Dangerous Goods Entry is: UN 3480
- If shipped contained in equipment or packed with equipment, UN Dangerous Goods Entry is: UN 3481
- If shipped contained in a vehicle, the vehicle is category UN3171 (battery powered vehicle for full electrical type) or UN3166 (flammable… powered vehicle for hybrid type).

Packaging Group II applies in most situations.

Modal international and national regulations governing transportation by air, sea, road and rail (ICAO/IATA, IMDG, ADR, RID…) are legally binding and persons offering lithium-ion cells and batteries for transport must comply with all requirements governing such activity, including but not limited to special provisions, packing instructions, labelling and training.

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14.2 Overview

Persons offering Lithium cells or batteries for transport need to properly determine the applicable provisions and instructions. More information is available in the official documentation for this purpose (http://www.unece.org/trans/danger/danger.html).
Consideration must inter alia be given to:

- The mode of transport: air (IATA), sea (IMDG) , road (ADR) or rail (RID),
- The country of origin and of destination,
- The applicable UN code and related description: Lithium-ion cells or batteries shipped as such, shipped contained in equipment, or packed with equipment, or shipped in a vehicle,
- The status of the good: new cells or batteries, spent or waste cells or batteries, damaged or defective cells or batteries, prototype for testing, short production run or commercial series product,
- UN test certification status of the cell or the battery.

15. REGULATORY INFORMATION

Marking Consideration
European Union: According to directive 2006/66/EC, the batteries have to be marked with the crossed-out wheel bin symbol.
Lithium-ion batteries, which contain electronic modules (e.g. PCM) and which are subject to the EMC directive 93/97/EEC, must be approved and must be marked with the CE marking.

16. OTHER INFORMATION

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge, accurate and reliable as of the date compiled. However, neither complete exhaustiveness nor perfect reliability can be granted. The communication of this information does not constitute an implicit or specific warranty.

This information relates to the specific products it is applicable to and may be invalid for these products when used in combination with any other equipment 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.

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