

# 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, as an **“Article Safety Datasheet.”**

### 1. IDENTIFICATION

#### 1.1 Product

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

#### 1.2 Supplier

Headquarters Address Phone/Fax	<b>Saft S.A.S.</b> 26 Quai Charles Pasqua, 92300 LEVALLOIS-PERRET – France Phone/Fax: +33 (0)1 58 63 16 00 /+33 (0)1 58 63 16 50
Factory Address Phone/Fax	<b>Saft Bordeaux</b> 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	<b>Saft Jacksonville</b> 13575, Waterworks street, JACKSONVILLE, FL 32221 - USA +1 904 861 1501/+1 904 772 1463
Factory Address Phone/Fax	<b>Saft Nersac</b> Zone industrielle, 16440 NERSAC - France +33 (0)5 45 90 50 26 /+33 (0)5 45 90 50 71
Factory Address Phone/Fax	<b>Saft Raskovice</b> Raskovice 247, 73904 PRAZMO - Czech Republic +420 558 426 257/+420 558 692 226
Factory Address Phone/Fax	<b>Saft Poitiers</b> 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	<b>Saft Cockeysville</b> 107 Beaver Court, COCKEYSVILLE, MD 21030 - USA +1 410 771 3200/+1 410 771 1144
Factory Address Phone/Fax	<b>Saft Valdese</b> 313 Crescent Street, VALDESE, NC 28690 - USA +1 828 874 4111/+1 828 874 2431
Factory Address Phone/Fax	<b>Friemann &amp; Wolf Batterietechnik GmbH (a company of the Saft Group)</b> Industriestrasse 22, 63654 BÜDINGEN - Germany +49 (0)6042 954 150 / +49 (0)6042 954 490
Factory Address Phone/Fax	<b>Saft Urja</b> Plot No. 10/1 A, 1B & 1C, Abbanakuppe, Bidadi Industria Area, Bangalore 562109 Karnataka – India +91 80 2728 7947/+91 80 2728 7716

## 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]). 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%)
<b>Positive Active Materials:</b> among			25-35
LiNiCoAlO <sub>2</sub> (NCA)	177997-13-6	700-042-6	
LiNiCoMnO <sub>2</sub> (NMC)	182442-95-1	480-390-0	
LiFePO <sub>4</sub> (LFP)	15365-14-7	476-700-9	
LiCoO <sub>2</sub> (LCO)	12190-79-3	235-362-0	
<b>Conductor:</b> Carbon black	1333-86-4	215-609-9	0.5-4
<b>Negative Active Materials:</b> among			15-30
Graphite	7782-42-5	231-955-3	
Li <sub>4</sub> Ti <sub>5</sub> O <sub>12</sub> (LTO)	12031-95-7	619-916-2	
<b>Organic Electrolyte:</b> among			15-25
LiPF <sub>6</sub>	21324-40-3	<b>244-334-7</b>	
PC	108-32-7	203-572-1	
EC	96-49-1	202-510-0	

DMC	616-38-6	210-478-4	
EMC	623-53-0	433-480-9	
VC	872-36-6	212-825-5	
Separator	NA	NA	2-8
Aluminium	7429-90-5	231-072-3	5-20
Copper	7440-50-8	231-159-6	1-20
Others: inert material, mechanical parts	NA	NA	Remainder

\* Quantities may vary a little with cell model

In the course of battery production, active substances detailed in the previous table are embedded in a mechanical substrate to form electrodes. These electrodes are then further assembled with the other battery components such as separator, electrolyte, connectors and casing to obtain a finished battery. This battery is defined in the REACH regulation as “an article with no intended release” meaning that, **under normal and reasonably foreseeable conditions of use, no end-user of this battery will be exposed to any chemical substances** (summarized as “not anticipated under normal use” in the rest of the document).

### 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.

## 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)

### EXTINGUISHING MEDIA:

- Small fires: use B or C type fire extinguisher, inert gas (for instance blend of argon and nitrogen), CO<sub>2</sub>, 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, caution should be taken to avoid the electrical hazard that may be present.
- In all cases, the fire extinguisher must be compatible with the level of voltage.

**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.

**PARTICULAR HAZARDS RESULTING FROM EXPOSURE TO THE SUBSTANCE/PREPARATION, TO COMBUSTION AND GAS PRODUCTS:** The cell or battery 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.

## 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.

**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





### 8.1 Leaking or ruptured cells **(not anticipated under normal use)**

Handle an opened battery only in a well ventilated place.

	<b>Respiratory protection</b>	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.
	<b>Hand protection</b>	Use polypropylene, polyethylene, rubber or Viton gloves when handling leaking or ruptured cells.
	<b>Eye protection</b>	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
	<b>Other</b>	In the event of leaking or ruptured cells, wear a rubber apron and protective clothes.
	<b>High voltage</b>	Use tools and protective equipment suitable with live working

### 8.2 High voltage batteries

Use tools and protective equipment suitable with live working when operating and when connecting high voltage batteries:

WHEN OPERATING		WHEN CONNECTING	
			
Safety shoes	Overall	Protective visor	Insulated gloves

## 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  
 Vapor Pressure – Not applicable  
 Specific Gravity – Not applicable

Melting Point – Not applicable  
 Vapor Density – Not applicable

## 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. Do not repair or maintain when not authorized.

**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 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 properly.

## 13. DISPOSAL CONSIDERATIONS

Battery recycling is either mandatory (Batteries Regulation EU 2003/1542) 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://saft.com/about-us/manufacturing-our-batteries/our-sustainability-global-approach>

## 14. TRANSPORTATION INFORMATION

Persons engaged in the transport of dangerous goods shall be trained in the contents of dangerous goods requirements commensurate with their responsibilities (Chapter 1.3, UN Recommendations on the Transport of Dangerous Goods Model Regulations).

### 14.1. UN Proper Shipping Name, Class, and Number

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

Proper shipping Name	Class	UN N°
LITHIUM ION BATTERIES	9	3480
LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT	9	3481
LITHIUM ION BATTERIES PACKED WITH EQUIPMENT	9	3481
BATTERY-POWERED VEHICLE OR BATTERY-POWERED EQUIPMENT	9	3171

NB: When Li-ion batteries are installed in cargo transport unit, UN number is UN 3536 and this case is covered by another Battery Information Sheet (BIS).

### 14.2. International Regulations

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>).

By Air International: IATA: DGR Edition 2024 (65th)  
By Sea International: IMDG: Code 2022 Edition  
European road transportation: ADR: 1 January 2023 Edition  
European rail transportation: RID: Dangerous Goods by Rail 2023  
European inland waterways: ADN: 1 January 2023 Edition

## 14.3 UN Tests Summary Report

Except cases of prototype stage or short production run, Saft cells or batteries have been tested for transport according to the UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria, Part III. subsection 38.3. To access to the UN38.3 Tests Summary report please perform the below two steps;

1. Go on-line to <https://customerportal.saftbatteries.com/tsr> or scan the QR Code:
2. Enter the cell or battery part number from the transport documents (Waybill or Packing Slip) and click "Search" to receive a PDF copy of the relevant UN 38.3 Test Summary Report for the product being shipped.



## 15. REGULATORY INFORMATION

### Marking Consideration

European Union: According to the Batteries Regulation EU 2023/1542, the batteries must be CE marked and carry 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. Depending on the application, lithium-ion batteries may be subject to CE marking according to European Regulation N°765/2008 or E marking according to UNECE Regulations N° R10/R100.

## 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.



26 Quai Charles Pasqua  
92300 Levallois-Perret France  
Tel.: +33 (0)1 49 93 19 18  
Fax: +33 (0)1 49 93 19 69  
[www.saftbatteries.com](http://www.saftbatteries.com)

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