



Battery Information Sheet

Industrial Nickel-Cadmium 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

Industrial Ni-Cd cells and modules or battery systems composed of these cells

1.2 Supplier

Headquarters Address Phone/Fax	Saft S.A.S 26 quai Charles Pasqua, 92300 LEVALLOIS-PERRET – France Phone / Fax : +33 1 58 63 16 00/+33 1 58 63 16 18
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 AB Jungnergaten – Box 709 SE-572 28 OSKARSHAMN- Sweden +46 491 68 000/ +46 491 68 180
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 Ferak a.s Raskovice 247, 73904 PRAZMO – Czech Republic +420 558 426 257/ +420 558 426 300
Factory Address Phone/Fax	Saft Valdosta 711, Industrial Boulevard, VALDOSTA, GA 31601 –USA Tel/ Fax : +1 229 247 2331/ +1 229 247 8486
Factory Address Phone/Fax	Saft Batteries Co., Ltd. Zhuhai Free Trade Zone, Lianfeng Road, ZHUHAI 519030, Provinz Guangdong – China +86 756 881 9318/+86 756 881 9328
Factory Address Phone/Fax	Amco Saft India Ltd. Plot No. 10/1 A, 1B & 1C, Abbanakuppe, Bidadi Industria Area, Bangalore 562109 Karnataka – India +91 80 2728 7947/+91 80 2728 7716
Factory Address Phone/Fax	Saft Poitiers Rue Georges Leclanché - BP n°1089, 86060 POITIERS Cedex 9 – France +33(0)5 49 55 48 48/ + 33 (0)5 49 55 48 50

1.3 Emergency contact

Chemtrec US Service within the USA: + 1 800 424 93 00/outside: +1 703 527 3887



2. HAZARD IDENTIFICATION

2.1 At cell level

Not chemically dangerous with normal use, where the electrode materials and the electrolyte are enclosed within the cell. The battery should not be opened or burned. Exposure to /Ingestion of the ingredients contained within could be harmful.

EYE CONTACT: contents of an opened cell (electrolyte) within a battery can cause severe burns.

SKIN CONTACT: Electrolyte solution inside cells can cause severe burns

2.2 At module and battery system level

HIGH VOLTAGE: Systems with voltages ≥ 100 volts should always be kept 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 ($> 70^{\circ}\text{C}$).

3. COMPOSITION, INFORMATION OR INGREDIENTS

3.1 At cells and modules level

Component	CAS Number	EINECS/ELINCS	Content (wt. %)*
Active nickel**	12054-48-7	235-008-5	4-15
Active cadmium***	21041-95-2	244-168-5	7-12
Cobalt	21041-93-0	244-166-4	0-2
Alkaline electrolyte (pH=14)	N/A	N/A	14-40
Plastics	N/A	N/A	5-20
Steel	N/A	N/A	10-40
Nickel	7440-02-0	231-111-4	5-20
Copper	7440-50-8	231-159-6	0-10

* Quantities may vary with cell model

** Active nickel present as $\text{Ni}(\text{OH})_2$ and NiOOH

***Active cadmium present as $\text{Cd}(\text{OH})_2$ and Cd : the cells and modules, depending on the state of charge, contain cadmium (CAS 7440-43-9, EINECS 231-152-8), listed on REACH candidate list since June 2013 and cadmium hydroxide (CAS 21041-95-2, EINECS 244-168-5), listed on REACH Candidate List since January 2018

During 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.

3.2 At battery system level

Depending on the application and on customers’ requirements, modules are assembled either in a plastic, wood or steel container.

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

For contact with electrolyte:

EYE CONTACT: Rinse immediately with plenty of water during at least 15-30 minutes, **seek** immediate medical attention/treatment



SKIN CONTACT: Rinse immediately with plenty of water and seek medical attention/treatment

INHALATION: Remove to fresh air, rinse mouth and nose with water and seek immediate medical attention/treatment.

INGESTION: If the injured is fully conscious, clear mouth with water and afterwards drink plenty of water. Do not induce vomiting. Send immediately to hospital for medical attention/treatment.

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

EXTINGUISHING MEDIA:

Use Class A, B or C type fire extinguisher and/or sand
Do not use water

SPECIAL FIRE FIGHTING PROCEDURES:

Fire fighters should wear self-contained breathing apparatus and full fire-fighting protective clothing.
If overheated by an external source or by internal shorting, the cell may give off potassium hydroxide mist and/or hydrogen gas.
In fire situations, fumes containing cadmium and nickel compounds may develop; danger of serious acute damage to health by inhalation of fumes.

6. ACCIDENTAL RELEASE MEASURES (not anticipated under normal use)

INDIVIDUAL PRECAUTIONS:

In case of fire, evacuate the employees from the area until fumes dispersal.
In case of electrolyte leakage, flush electrolyte spillage with plenty of water and beware risk of slipping/ falling.
In case of skin or eye contact, inhalation or ingestion, follow the measures described in section 12.

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 or suitable leak proof container and send for recycling in accordance with local regulations.

7. HANDLING AND STORAGE

STORAGE: Store in a dry place. Since short circuit can cause burn hazard, keep batteries in original packaging until use and do not jumble them.

HANDLING:





- Do not short (+) or (-) terminal with conductors/conductive materials.
- Do not reverse the polarity
- Do not open the battery system or modules
- Do not submit to excessive mechanical stress.

CHARGING/DISCHARGING: Refer to Saft Instructions.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION*



Handle an opened battery only in a well-ventilated place.

	Respiratory protection	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

9. PHYSICAL AND CHEMICAL PROPERTIES

The Nickel-Cadmium cell or battery described by this Battery Information Sheet 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
Physical shape and colour as supplied

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

MATERIALS TO AVOID: Do not fill cells with acidic electrolyte for e.g. lead/acid battery

CONDITIONS TO AVOID: Avoid exposing battery to fire or temperature over 85°C. Do not disassemble, crush or short-circuit the electrode connections or install with incorrect polarity. Avoid deformation/crushing of cells

11. TOXICOLOGICAL INFORMATION

If the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure toxic and hazardous internal components may be exposed.

- ACUTE TOXICITY

The electrolyte:

Potassium hydroxide	LD50/oral/rat: 365 mg/kg
Lithium hydroxide	No data available

Exposure monitoring performed with the assistance of battery charging area employees between 1993 and 2012 has consistently resulted in no detectible levels of cadmium or nickel.

- HEALTH HAZARD

Skin contact can cause severe injury.

Eye contact rapidly causes severe damage. Risk of permanent damage.

Ingestion usually results in severe injury. Risk of permanent injuries.

12. ECOLOGICAL INFORMATION



There is no ecological harm when batteries are used correctly and recycled after use has ended.

Spilled/Released electrolyte: The sharp pH rise may cause harmful impact on fish, plankton and stationary organisms. If released to water bodies, the electrolyte contained in the product can be toxic for aquatic organisms because of alkalinity.

13. DISPOSAL CONSIDERATIONS

As with all battery systems, Ni-Cd cells must be collected separately from other waste and recycled – contact your local Saft representative for information

Never incinerate Ni-Cd batteries

Never dispose of Ni-Cd batteries in landfills

Europe: End-of-life management must be performed according to directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators as well as its transposition into each European Union's Member State national legislation. Check with Saft or with your national or local environment authority for details.

For this purpose, within the EU and in many other countries, Saft has implemented a network of bring back points which receive waste industrial Ni-Cd batteries free of charge from end-users.

See the section on "Recycling policy/Circular Economy" in About us " on <https://www.saftbatteries.com/about-us/environmental-responsibility>

14. TRANSPORT INFORMATION

14.1 UNITED NATIONS

- UN N°: 2795

14.2 INTERNATIONAL CONVENTIONS

- Air : IATA manual
- Sea : IMDG code
- Land Europe: ADR (road) or RID (rail)

14.3 APPLICABLE REQUIREMENTS

According to IATA special provision A164, cells, modules and batteries being transported by air have to be protected from short-circuiting (for instance by installation of insulating protection on the + and – connections). Batteries with a management system and batteries installed in a equipment/vehicle, have to be protected from short-circuiting and from any unintended activation when such an activation is possible (for instance by battery disconnection and installation of insulating protection on the connections).

Road transport in Europe of new or used cells and batteries with classification UN2795 (Class 8) is not restricted according to ADR special provision 598, providing that requirements of this special provision are met.

Defective or damaged cells or batteries that have the potential of leading to a hazardous event during transportation must not be shipped.

UN	NAME	LAND: RAIL & ROAD				SEA (IMDG)				AIR (IATA)		
		Hazardous Class	Code	Packing group	Label	Hazardous Class	EmS	Packing group	Label	Hazardous Class	Packing group	Label

UN	NAME	LAND: RAIL & ROAD				SEA (IMDG)				AIR (IATA)		
2795	BATTERIES WET, FILLED WITH ALKALI Electric storage	8	C 11	(ADR) – None (US)(DOT) - III (for packaging: see SP598; no packaging if new or used not damaged) Other case P801/P801a for packaging)	New battery or used not damaged, SP598: None Other case: Corrosive	8	F-A, S-B	None (packaging: no group; and see P801)	Corrosive	8	None (for packaging: group II; and see A802 and P1870)	Corrosive

More information concerning shipping, testing, marking, packaging, special provisions and handling of defective/damaged products can be obtained from your Saft sales representative.

15. REGULATORY INFORMATION

15.1 PRODUCT MARKING (EU)



Cd

15.2 PRODUCT MARKING (US)

Regulated marking includes the three-pointed chasing arrows symbol, the abbreviation Ni-Cd, and the phrase BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY.

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

26, Quai Charles Pasqua
92300 Levallois-Perret - France
Tel.: +33(0)1 58 63 16 00
Fax: +33 (0)1 58 63 16 18
www.saftbatteries.com

Doc N° BIS06-12-12

Edition: May 2018

Version: 2.0

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