BATTERY INFORMATION SHEET

Sealed Nickel-Cadmium cells, modules and battery systems

Creation on January 10th, 2014

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

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

1.2 Supplier

Headquarters:	ARTS Energy S.A.S.
Address:	10 Rue Ampère – Zone industrielle – 16440 Nersac - France
Phone/Fax:	+33 (0)5 45 90 35 50 /+33 (0)5 45 90 37 65

1.3 Emergency contact

Chemtrec US Service within the USA: +800 424 93 00/outside : +1-202-483-7616 for English

INRS Orfila : +33(0) 1 45 42 59 59 for French

2. HAZARD IDENTIFICATION

Not chemically dangerous with normal use, where the electrode materials and the electrolyte are enclosed within the cell. In particular, 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

TEMPERATURE: Do not place the batteries on or near fires or other high-temperature locations (> 70°C).

3. COMPOSITION, INFORMATION OR INGREDIENTS

Component	CAS Number	EINECS/ELINCS	Content (wt. %)*
Active nickel**	12054-48-7	235-008-5	10-25
Active cadmium***	21041-95-2	244-168-5	10-19
Cobalt	21041-93-0	244-166-4	0-2
Alkaline electrolyte (pH=14)	N/A	N/A	14-27
Plastics	N/A	N/A	3-6
Steel	N/A	N/A	25-45

* Quantities may vary with cell model

** Active nickel present as $Ni(OH)_2$ and NiOOH

***Active cadmium present as $Cd(OH)_2$ and Cd

4. 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 ARTS Energy Instructions.

5. 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	Melting Point – Not applicable
Vapor Pressure – Not applicable	Vapor Density – Not applicable
Specific Gravity – Not applicable	Physical shape and colour as supplied

6. STABILITY AND REACTIVITY

The battery system is stable when handled and stored according to section 4

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

7. 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

Fumes containing cadmium compounds:

Cadmium oxide	LD50/oral/rat: 1,3 mg/m3 (30 minutes)
Cadmium oxide	LD50/oral/mouse: 0,7 mg/m3 (30 minutes)

- 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.

8. ECOLOGICAL INFORMATION

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

9. DISPOSAL CONSIDERATIONS

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

Never incinerate Ni-Cd cells

Never dispose of Ni-Cd cells in landfills

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

ARTS Energy has implemented a network of collection and recycling partners for waste industrial Ni-Cd batteries, See:

http://www.arts-energy.com

10. TRANSPORT INFORMATION

Sealed Nickel Cadmium batteries are considered to be "dry cell" batteries and are not subjected to dangerous goods regulation for the purpose of transportation by the U.S. Department of Transportation (DOT), the International Civil Aviation Administration (ICAO), the International Air Transport Association (IATA) or the International Maritime Dangerous Good regulations (IMDG).

International air transport is not restricted provided that, as stated in IATA special provision A123, batteries and battery powered devices/equipment being transported by air are protected from short-circuiting.

Road transport in Europe of new or used cells and batteries with classification UN2800 (Class 8) is not restricted according to ADR special provision 598, providing that requirements of this special provision are met.

More information concerning shipping, testing, marking and packaging can be obtained from your ARTS Energy sales representative.

11. REGULATORY INFORMATION

11.1 PRODUCT MARKING (EU)

Cd

11.2 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**".

12. 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.

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

ESTINGUISHING MEDIA:

Use Class D-Dry chemical 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.

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

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*

15. 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 proff container and send for recycling 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.

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