ALCAD

Safety Data Sheet (SDS)

Alcad Sintered/PBE Nickel-Cadmium (Ni-Cd) cells and batteries for Railway and Industrial Standby Applications

Alcad Nickel-Cadmium batteries are manufactured articles which contain hazardous chemicals. Alcad batteries are manufactured to specific shapes and designs and have end use functions that are dependent in whole or in part upon those shapes and designs. Under normal conditions of use, Alcad batteries do not release hazardous chemicals and do normally not pose a physical hazard or health risk to the end user.
Under situations involving neglect, misuse, abuse, and/or improper handling and storage, exposure to hazardous chemicals normally contained inside the batteries can result.

1. IDENTIFICATION of PRODUCT AND COMPANY

1.1 Product

Nickel-Cadmium cells and battery systems composed of these cell models: **XHP**

1.2 Supplier

EUROPE	**Alcad Limited** **BORDEAUX - France +33 (0)5 57 10 64 00 /+33 (0)5 57 10 68 77** **Bordeaux 111-113, boulevard Alfred Daney, 33074**
United States	**Alcad Standby Batteries** **3 Powdered Metals drive - NORTH HAVEN- CT 06473 - US +1 203-985-2500 /+1 203-985-2539**

1.3 Emergency contact **Chemtrec US Service within the USA: 1-800-424 9300 / outside: 1-202-483-7616**

2. HAZARDS IDENTIFICATION

2.1 At cell level

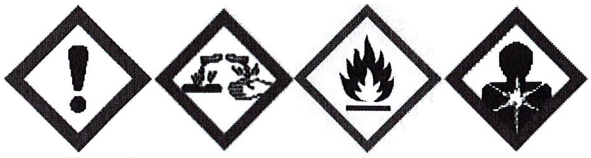
Not chemically dangerous under normal conditions of use where the electrode materials and the **electrolyte (potassium hydroxide solution)** are enclosed within the cell. The battery should not be opened or burned. Exposure to or ingestion of the ingredients contained within the cell could be harmful. The following information regarding the hazardous constituents contained within the battery is provided for the user's information:

EYE CONTACT: Contact with the electrolyte inside the cells can cause severe eye damage.

SKIN CONTACT: Contact with the electrolyte contained inside cells can cause severe burns.

CARCINOGENIC COMPONENTS: Cadmium and Nickel compounds.

(Hazards Identification – continued)



Signal Word: Danger

Hazard statements (regarding internal component exposures under abnormal conditions):

H301 Toxic if swallowed.
H314 Causes severe skin burns and eye damage.
H402 Harmful to aquatic life.

Major Health Hazards: Corrosive. Causes burns to the respiratory tract, skin, eyes, and gastro-intestinal tract. CAUSES PERMANENT EYE DAMAGE. Effects of contact or inhalation MAY BE DELAYED.

3. COMPOSITION, INFORMATION ON INGREDIENTS

3.1 At cell level

Component	CAS Number	Exposure Limits	Content (wt. %)*
Cadmium (as Cadmium and Cadmium Hydroxide)	7440-43-9 21041-95-2	5.0 µg/m³ dust – OSHA OSHA Action Level = 2.5 µg/m³ dust 0.05 mg/m³ ACGIH CEILING-Fume	~ 16%
Nickel (as Nickel and Nickel Hydroxide)	7440-02-0 12054-48-7	1 mg/m³ (dust) – OSHA	~ 22%
Cobalt (as Cobalt Hydroxide)	21041-93-0	0.1 mg/m³ (dust) – OSHA	~ 1%
Alkaline Electrolyte Solution (18-28% potassium hydroxide)	1310-58-3	2 mg/m³ OSHA & ACGIH CEILING-Air	~ 28%
Lithium Hydroxide	1310-66-3	None Established – OSHA	~ 1%
Acrylic Polymer Container		None Established – OSHA	~ 10%
Polysulfone Container		None Established – OSHA	~ 10%
Polypropylene container		None Established – OSHA	~ 10%
Steel		None Established – OSHA	~ 39%
Antifoaming Agent – proprietary	proprietary	1 mg/m³ – OSHA	~ 0 - 0.5%

** Quantities may vary with cell model and capacity*

3.2 At battery system level

Depending on the application and on customers' requirements, cells are assembled either in a plastic or steel container and in turn they are electrically connected normally in series and/or parallel in a tray, or crate made of steel, wood, plastic, or connected directly in a battery box/tray, cabinet or rack.

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).

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

The following measures should be taken in case of contact with or exposure to the contents of a ruptured or leaking cell:

Eye Contact: Immediately flush eyes **within seconds of contact** with a stream of water and for at least 15 minutes. Hold eyelids apart for complete irrigation of the eye and eyelid tissue. Get medical attention.

Skin Contact: Remove contaminated clothing/jewelry/shoes and immediately flush affected areas with plenty of water or soap and water for at least 15 minutes. Thoroughly clean and dry contaminated clothing prior to reuse. Discard contaminated leather goods. Get medical attention in case of chemical burns.

Ingestion: Do not induce vomiting. Dilute by drinking 2 to 4 cups of water. If vomiting occurs, keep airway clear. Give more water when vomiting stops. **Do not give anything by mouth to an unconscious person.** Get immediate medical attention.

Inhalation: If adverse effects occur, move individual to an uncontaminated area with fresh air. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be given. If respiration or pulse has stopped, administer Cardio-Pulmonary Resuscitation (CPR) or Automatic External Defibrillator (AED) and call for emergency medical services immediately.

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

EXTINGUISHING MEDIA: Use Class C, ABC, CO2 and/or sand. Do not use water.

SPECIAL FIRE FIGHTING PROCEDURES:
Firefighters should wear self-contained breathing apparatus (SCBA) and full fire-fighting protective clothing.
Cells overheated by an external source or by internal shorting may emit potassium hydroxide mist and/or hydrogen gas.
In fire situations, fumes containing carcinogenic cadmium and nickel compounds may develop which could result in 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 area until after fumes have dissipated.
In case of electrolyte leakage, flush electrolyte spillage with plenty of water and beware of risk of slipping/ falling.
In case of skin or eye contact, inhalation or ingestion, follow the measures described in Section 12.

ENVIRONMENTAL PRECAUTION:
Avoid releases of internal components to sewage, surface water and underground water.

SPILL RESPONSE/CLEANING:
Wear protective goggles or safety glasses with a face shield and appropriate gloves. Use absorbent clay-based material (oil dry), sand, earth or vermiculite to absorb any exuded or otherwise released electrolyte or internal cell materials. Seal leaking cells/batteries (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. Keep batteries in original packaging until use and do not mishandle or abuse them. Refer to and follow detailed storage instructions in battery manual.

HANDLING:

- Do not short (+) or (-) terminal with conductors/conductive materials.
- Do not reverse the polarity
- Do not open cells

- Do not submit to excessive mechanical stress

CHARGING/DISCHARGING: Refer to and follow Alcad Instructions.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION*

Battery operating areas must be well ventilated for removal of potentially dangerous and harmful gases generated. Normal reactions inside the battery liberate explosive and flammable hydrogen gas.

	Respiratory protection	Respiratory protection is not needed under normal conditions of use with adequate ventilation. If battery is involved in a fire, fire fighters should wear self-contained breathing apparatus.
	Hand protection	Use polypropylene, polyethylene, rubber or Viton gloves when handling a battery or cells. DO NOT use leather or fabric gloves.
	Eye protection	Wear splash goggles or safety glasses with protected side shields or a mask covering the whole face when handling a battery or cells.
	Other	Wear a rubber apron and protective clothes when handling a battery or cells. Avoid materials that induce static electricity, and avoid wearing jewelry.

**AFNOR pictograms*

9. PHYSICAL AND CHEMICAL PROPERTIES

The Nickel-Cadmium cell or battery described by this Safety Data Sheet is a manufactured article and does not expose the user to more than very small quantities or trace amounts of hazardous chemicals when used in accordance with manufacturer's specifications / instructions.

Physical Appearance: Cell/Battery
Molecular Weight: Not applicable
Boiling Point: Not applicable
Melting Point: Not applicable
pH: Not applicable

Molecular Formula: Not applicable
Vapor Pressure: Not applicable
Vapor Density: Not applicable
Specific Gravity: Not applicable
Color: Not applicable

10. STABILITY AND REACTIVITY

The battery system is stable when handled and stored according to Section 7.

MATERIALS TO AVOID: Do not fill cells with acidic electrolyte (sulfuric acid solution) used for lead-acid batteries.

CONDITIONS TO AVOID: Avoid exposing battery to fire or temperature over 85°C. Do not disassemble, crush or short-circuit the electrical 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 cell container, toxic and hazardous internal components may be exposed. Contact with internal cell/battery components can be hazardous and cause injury.

ACUTE TOXICITY

- The electrolyte:
  - Potassium hydroxide — LD50/oral/rat: 365 mg/kg
  - Lithium hydroxide — No data available
- Cadmium compounds:
  - Cadmium oxide — LD50/oral/rat: 1.3 mg/m^3 (30 minutes)
  - Cadmium oxide — LD50/oral/mouse: 0.7 mg/m^3 (30 minutes)

HEALTH HAZARD

Skin contact with electrolyte can cause severe injury.
Eye contact with electrolyte rapidly causes severe damage with risk of permanent damage.
Ingestion electrolyte can result in severe injury with risk of permanent damage.

12. ECOLOGICAL INFORMATION

There is no ecological harm when batteries are used correctly and returned to Alcad for recycling after use has ended.

Spilled/Released electrolyte: If spilled electrolyte reaches surface water bodies, 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.

Spills of electrolyte may be characterized as EPA D002 hazardous waste due to characteristic of corrosivity.

13. DISPOSAL CONSIDERATIONS

It is recommended that Alcad Ni-Cd industrial batteries be returned to Alcad for recycling at their end of life. Ni-Cd cells must be collected separately from other waste. Contact Alcad or your local representative or your national or local environmental authority for details.
Never incinerate Ni-Cd cells.
Never dispose of Ni-Cd cells in landfills.

14. TRANSPORT INFORMATION

14.1 U.S. Department of Transportation:

Batteries being forwarded or being returned to Alcad for repair should be shipped as Hazardous Material using the following description:
UN2795, Batteries, Wet, Filled with Alkali, 8.

Spent batteries being sent to Alcad for recycling should be shipped as Universal Waste using the following description:
UN2795, Used Batteries, Wet, Filled with Alkali, 8.

14.2 UNITED NATIONS

- UN 2795

14.3 INTERNATIONAL CONVENTIONS

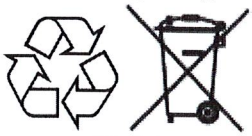
- Air: IATA
- Sea: IMDG
- Land: ADR (road) or RID (rail) Batteries exempted according to special paragraph number 598.

UN #	NAME	LAND: RAIL & ROAD			SEA (IMDG)					AIR (IATA)			
	Proper shipping name	Hazard Class	Packing group	Labelling	Hazard Class	Risk	EmS	Packing group	Labelling	Hazard Class	Risk	Packing group	Labelling
2795	BATTERIES WET,FILLED WITH ALKALI Electric storage	8	None	Corrosive	8	None	F-A, S-B	None (for packaging: no group; and see P801)	8	8	None	None (for packaging: group II; and see A802 and P1870)	8

15. PRODUCT MARKINGS

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

The following are typical markings on each cell.



Ni-Cd

16. OTHER INFORMATION

NFPA Hazard Ratings:

Reactivity 1

EPCRA Section 313 Supplier Notification – This product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372):

CAS #	Chemical Name	Percent by Weight
7440-43-9	Cadmium	16%
7440-02-0	Nickel	22%
7440-48-4	Cobalt	1%

A copy of this SDS may be required to be filed with your local emergency planning commission, state emergency response commission, and local fire department in accordance with sections of the Emergency Planning and Community Right-To-Know Act.

Disclaimer:

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 exhaustive 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.

Alcad 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. Alcad does not offer warranty against patent infringement.

Reliability inside

ALCAD

3 Powdered Metal Drive
North Haven, Connecticut, 06473
1-203-985-2500
www.alcad.com