

Information for the Safe Handling of Ni-Cd Batteries

11- 10 -2021

1. Name of material, formulation and company

- **Product specifications: NiCd-accumulator (wet, filled with potash lye, rechargeable, alkaline, closed)**
- **Trade name: KL, KM, KH, KGL, KGM, VGL, VGM, TP, TSP, RL, RM, RH and other plastic/ steel cells**
- **Nominal voltage: 1.2 V**
- **Producer / supplier:**
GAZ Geräte- und Akkumulatorenwerk Zwickau GmbH
Postfach 200457
08004 Zwickau, phone: +49 375 86-0
GERMANY
- **24 Hr. Emergency Assistance call: +49 / (0)700 24112112 (contact ID: GAZ)**
- **For USA deliveries: +49 / (0)700 24112112 (contact ID: GAZ)**
- **+ 1 872 5888 271 (Kontakt ID: GAZ)**

2. Potential hazards:

Under normal conditions of usage and in compliance of the instruction, there are no particular dangers from NiCd batteries.








Take note:

- Potash lye causes severe chemical burns of skin and severe eye damage and effects health by swallowing.
- Potash lye can be corrosive to certain metals
- While operating and especially during loading it could emerge hydrogen fumes and health damaging potash lye fumes
- Batteries can provide high voltage and currents.
- The standard IEC 62485-2:2010 includes security requirements of batteries and battery systems and describes the fundamental measurements for protection of danger, which can accrue through electronic power, leaking of gases and electrolyte

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3. Composition / ingredient specifications

ingredients				classifications		
name	chemical formular	Index number	CAS number	content (% of weight),	GHS symbols	hazards
Nickel oxide hydroxide	NiOOH	xx	55070-72-9	6-7		Carc. 1 - H350i Repr. 1B - H360D Muta. 2 - H341 STOT RE 1 - H372 Skin Irrit. 2 - H315 Skin Sens. 1 - H317 Resp. Sens. 1 - H334 Acute Tox. 4 - H302, Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410
Nickel-hydroxide	Ni(OH)2	028-008-00-X	12054-48-7			
Cadmium	Cd	048-002-00-0	7440-43-9	8-10		Carc. 1B - H350 Repr. 2 - H361fd Muta. 2 - H341 STOT RE 1 - H372 Acute Tox 2 - H330 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410
Cadmium hydroxide	Cd(OH)2	048-001-00-5	21041-95-2			
Potassium hydroxide solution	KOH	215-181-3	1310-58-3	28-33		Skin Corr. 1A - H314 Met. Corr. 1 - H290 Acute Tox. 4 - H302
lithium hydroxide	LiOH	xx	1310-66-3	0,2-0,8		tox - H301 skin burns and eye damage - H314
Cobalt	Co	027-001-00-9	7440-48-4	0,2-0,8		Carc. 1 - H350i Resp. Sens. 1 - H334
Iron	Fe	xx	7439-89-6	28-33		
Polystyrene		xx	9003-53-6	20-25		

4. First-aid measures in case of contact with potash lye

- **general information:**
Remove clothes contaminated with potash lye immediately.
- **after inhalation:**
Supply of fresh air or oxygen; seek medical attention.
- **after skin contact:**
Clean immediately with large amounts of water.
Seek medical attention
- **after eye contact:**
Flush immediately eye with open eyelid fissure with running water for at least 10 minutes.
Contact immediately an eye specialist/ physician.
- **after ingestion:**
Rinse mouth and drink plenty of water.
Do not induce vomiting. Seek immediately medical attention.

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5. Measures of fire fighting

5.1 Suitable fire-extinguishing agent:

powder, carbon dioxide, sand

5.2 Special hazards

Cells being overheated by an external source or an internal short circuit, can release potassium hydroxide vapours and hydrogen gas. In case of fire, cells can release fumes of cadmium oxide, nickel and of combustion products from Polyamide.

5.3 Special protective equipment

protective suit, self-contained breathing apparatus

6. Accidental release measures (potash lye)

6.1 Small spills

Flush spilled electrolyte with large amounts of water or soak with chemical fleeces. Neutralize with acetic acid or boric acid (5%).

6.2 Large spills

Contain large amounts of spilled electrolyte and pump or vacuum-suck them into vessels. Prevent slip-hazard. If applicable absorb the remainder with absorbent materials and dispose of this properly in accordance with product or local rules. Do not allow the spilled electrolyte to enter streams, sewers etc.

7. Handling and storage

- Keep away from exposed flames, sparks and other ignition sources
- Handle cells with care avoiding shorting or misuse.
- Do not transport cells without transportation caps in place
- Always handle and store cells filled with electrolyte in upright position.
- For periods >3months store in deep discharged conditions between 5°C and 30°C in a dry place.

8. Exposure controls and personal safety equipment

Under normal usage conditions, special personal protective equipment is not necessary, use safety goggles and protective gloves.

Wear prescribed PPE safety goggles or face shield, protective gloves of rubber and rubber apron during any disassembly, cleaning, reassembly on the cells. Any PPE must resist 50% KOH-solution within useful life.

Cells can emit electrolyte aerosols, when topped up with water prior to the end of charge.

Hazard statements:

H314	Causes severe burns and eye damage.
H302	Harmful if swallowed

Precautionary Statements:

P102	Keep out of reach of children.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P305+P351 +315	IF in eyes. Rinse cautiously with water for several minutes. Get immediate medical advice/attention.
P309+315	IF exposed or if you feel unwell. Get immediate medical advice/attention.

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9. Physical properties

9.1 Appearance

Physical form and colour as delivered.

9.2 Temperature range (environment in °C)

cell type	permanent	temporary
steel case	- 40 to +50	- -50 to +85
plastic case	- 40 to +50	- -50 to +70

9.3 Specific energy:

10 – 27 Wh/kg

Wh: nominal voltage x nominal capacity in Ah as defined in IEC standard

kg: medium cell weight in kg

9.4 Specific immediate performance:

20 – 97 W/kg

W= 0.5 x nominal voltage x Is (Is = discharge current over one second to half nominal voltage)

kg: medium cell weight in kg

9.5 Mechanical resistance:

As defined in IEC standard.

10. Stability and reactivity:

10.1 Conditions to be avoided

temperatures over 85°C, short circuits of electrodes, deformation of cells

10.2 Materials to be avoided

Do not fill cells with acids or electrolyte of lead accumulators, and avoid contact between the cells and the acids or electrolyte.

10.3 Hazardous products of decomposition

nickel compounds, cadmium compounds, caustic vapours in case of fire

11. Toxicological information:

Substance	LD50 / oral / rat
nickel hydroxide	1520 mg/kg
cadmium hydroxide	72 mg/kg
potassium hydroxide	273 mg/kg
lithium hydroxide	210 mg/kg

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12. Ecological information (potash lye)

- **Information on elimination (persistence and degradability)**
Potassium hydroxide is degraded by reactions with the carbon dioxide of the air.
- **Reactions in environmental compartments:**
Potassium hydroxide is water-soluble. It has only a low bioaccumulation potential. Mobility in soils: high
Liquid with low volatility.
- **Eco-toxicological effects:** Can damage vegetation.
Aquatic toxicity:
Harmful to fish.
PH-Values ≥ 10.5 can cause death in fish and other aquatic organisms.
Causes severe damages in aquatic plants.
High concentrations have great damaging effects on sewage treatment plants.
- **General information:**
Do not let it get into waters, effluent waters or soils.
Water Hazard Classification 1 (self-declared): slightly hazardous to water

13. Instructions for treatment:

13.1 Burning

Never burn NiCd-cells.

13.2 Disposal

Never throw NiCd-cells in the trash.

Never dispose of them in a landfill.

Use the international waste classification key 16 06 02*



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13.3 Recycling

NiCd-cells need to be recycled. Please contact the representative of the company GAZ.

* hazardous waste

14. Transport regulations:

- **Overland transport ADR / RID and GGVS / GGVE (trans-border/ inland):** It is not subject to the regulations, see special regulation 598, chapter 3.3
- **ADR / RID – GGVS / E class:**
- **Number / letter:**
- **Kemler number:**
- **UN number:**
- **Description of goods:**
- **Marine transport IMDG/GGVSee**
- **IMDG / GGVSee class:** 8
- **UN number:** 2795
- **Packaging classification:**
- **EMS number:** F-A , S-B
- **Correct technical name:** NiCd-accumulator (wet, filled with potash lye)
- **Air transport ICAO – TI and IATA – DGR:**
- **ICAO / IATA class:** 8
- **UN/ID number:** 2795
- **Packaging classification:**
- **Correct technical name:** NiCd-accumulator (wet, filled with potash lye)

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15. Markings:

In accordance with the EU Battery Directive and German law, Nickel Cadmium batteries have to be marked by a crossed out dust bin with the chemical symbol for cadmium shown below, together with the ISO return/recycling symbol.



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16. Miscellaneous indications:

The information given above is provided in good faith based on existing knowledge and does not constitute an assurance of safety under all conditions. It is the user's responsibility to observe all laws and regulations applicable for storage, use, maintenance or disposal of the product. If there are any queries, the supplier should be consulted. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.