



Material - Safety - Data Sheet (MSDS)

No.12

for
Ansmann Hearing Aid (Zinc-Air) Button Cells
single cells and multi-cell batteries

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1. Product and Supplier Identification

Product name: ANSMANN Hearing Aid
Designation: Zinc-Air
Models / types: PR44(675); PR41(312); PR48(13); PR70(10)

Electrochemical system: Zinc - Oxygen - (KOH electrolyte)

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EMERGENCY CONTACT: For chemical emergency only (spill, leak, fire, exposure or accident)
call CHEMTREC at: 800-424-9300 within the USA and Canada
+1 703-527-3887 outside the USA and Canada
Non-emergency calls cannot be serviced at this number.

2. Product and Supplier Identification

The Zinc-Air batteries described in this MSDS are hermetically sealed units, which are not hazardous when used according to the recommendations of the manufacturer. Under normal condition of use of the batteries, the electrode materials and the liquid electrolyte they contain are non-reactive provided the battery integrity is maintained. Risk of exposure exists only in case of mechanical, electrical or thermal abuse. Thus the batteries should not short circuited, recharged, punctured, incinerated, crushed, immersed in water, force discharged or exposed to temperatures above the temperature range of the cell or battery. In these cases there is risk of leakage, fire or explosion.

3. Composition and Informations on Ingredients

IMPORTANT NOTE: The product is a manufactured article as described in 29 CFR 1910.1200. The battery cell is contained in a hermetically-sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery cell. The battery cell should not be opened or exposed to heat because exposure to the following ingredients contained within could be harmful under some circumstances. The following information is provided for the user's information only.

Ingredient	Content	CAS No.	Hazard Symbols	Classification	R Phrases
Zinc (Zn)	15 - 50%	7440-66-6		N	50/35
Manganese Oxide (MnO)	0 - 15%	1313-13-9		Xn	20/22
Potassium hydroxide (KOH)	1 - 4%	1310-58-3	 	Xn C	22 35
Nickel plated steel	25 - 70%				
Copper (Cu)	2 - 5%	7440-50-8			
Polymers	2 - 7%				
Lead (Pb) see chapter no. 12	0.01 - 0.06%	7439-92-1	 	T N	61, 62 20/22-33 50-53
Cadmium (Cd) see chapter no. 12	<5mg/kg	7440-43-9	 	T F	11, 25, 26 45
Mercury (Hg) see chapter no. 12	<5mg/kg	7439-97-6	 	T N	23, 33 50/53

Full text of Classification and R Phrases see section 16

4. First Aid Measures

Inhalation:	If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical advice.
Skin Contact:	Wash off skin thoroughly with water. Remove contaminated clothing and wash before re-use. In severe cases obtain medical attention.
Eye Contact:	Irrigate thoroughly with water for at least 15 minutes. Lifting upper and lower lids, until no evidence of the chemical remains. Obtain medical attention.
Ingestion:	Wash out mouth thoroughly with water. Do not induce vomiting or give food. Drink plenty of water. Seek medical attention immediately.
Further treatment:	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a doctor.

5. Fire Fighting Measures

Fire and explosion hazards:	Batteries may burst and release hazardous decomposition products when exposed to a fire situation.
Proper extinguishing media:	Use foam, water, carbon dioxide (CO ₂), as appropriate
Special fire fighting procedures:	Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing.
Hazardous combustion products:	Thermal degradation may produce hazardous fumes of zinc, manganese, lead, hydrogen gas, caustic vapors of potassium hydroxide and other toxic by-products.

6. Accidental Release Measures

- Person related measures:** Wear personal protective equipment adapted to the situation (protection gloves, cloth)
- Environment protection measures:** In the event of battery rupture, prevent skin contact and collect all released material in a plastic lined container.
 Dispose off according to the local law and rules.
 Avoid leached substances to get into the earth, canalization or waters.
- Treatment for cleaning:** If battery casing is dismantled, small amounts of electrolyte may leak. Pack the battery including ingredients as described above. Then clean with water (diluted acetic acid may be helpful)

7. Precautions for safe Handling and Use

- Storage:** Store batteries in a dry place at normal room temperature.
 Do not refrigerate – this will not make them last longer.
 Elevated temperatures can result in shortened battery life. Temperatures above 60°C may result in battery leakage and rupture.
 Storage of unpacked batteries can cause electrical short circuit and heat generation. Avoid large temperature changes and direct sunlight.
- Storage of big quantities:** If possible, store the batteries in the original packaging (short circuit protection).
 A fire alarm is recommended.
 For automatic fire extinguisher consider chapter 5 "Fire Fighting Measures"
- Handling:** Avoid mechanical or electrical abuse. **DO NOT** short circuit or install incorrectly.
 Install batteries in accordance with equipment instructions.
 Do not carry batteries loose in a pocket or bag.
 Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access.
 Do not swallow batteries.
 Do not throw batteries into fire.
 Do not throw batteries into water.
 In case of battery change always replace all batteries by new ones of identical type and brand.
- Charging:** **Do not charge this batteries!** This battery type is manufactured in a ready-to-use-state. It is not designed for recharging.
- Disposal:** Dispose in accordance with all applicable federal, state and local regulations.

8. Special Protection Information

- Ventilation Requirements:** Not necessary under normal conditions. Room ventilation may be required in areas where there are open or leaking batteries.
- Respiratory Protection:** Not necessary under normal conditions. Avoid exposure to electrolyte fumes from open or leaking battery. In all fire situations, use self-contained breathing apparatus
- Eye Protection:** Not necessary under normal conditions. Wear safety glasses with side shields if handling an open or leaking battery.
- Hand Protection:** Not necessary under normal conditions. Use neoprene or natural rubber gloves if handling an open or leaking battery





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9. Physical and Chemical Properties

Appearance:	small round cylinders	Odour:	n/a
Vapour Density:	n/a	Vapour Pressure:	n/a
Boiling Point:	n/a	VOC Content:	n/a
Evaporation Rate:	n/a	Solubility in Water:	n/a
Specific Gravity:	not determined	pH:	not determined

10. Stability and Reactivity

Product is stable under conditions described in Section 7.

Conditions to avoid: Heat above 60° or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit. Expose over a long period to humid conditions.

Hazardous decomposition products: Thermal decomposition may produce hazardous fumes of zinc and manganese; caustic vapors of potassium hydroxide and other toxic by-products.

Hazardous polymerization: Will not occur.

11. Toxicological Information

Potential Health Effects: The chemicals and metals in this product are contained in a sealed can. Exposure to the contents will not occur unless the battery leaks, is exposed to high temperatures or is mechanically, physically, or electrically abused. Damaged battery will release concentrated potassium hydroxide, which is caustic.

Inhalation: Inhalation of vapors or fumes released due to heat or a large number of leaking batteries may cause respiratory and eye irritation.

Skin contact: Contact with battery contents may cause severe irritation and burns.

Eye contact: Contact with battery contents may cause severe irritation and burns. Eye damage is possible.

Ingestion: Swallowing of zinc-air button cells is possible and can be harmful.

Acute Toxicity Data:
Manganese Dioxide: LD50 oral rat >3478 mg/kg
Potassium Hydroxide: LD50 oral rat 273 mg/kg
Zinc powder: LC50 inhalation rat 2500mg/m³
Lead: LC50 inhalation rat 10000ppm/7hours

Chronic Effects: The chemicals in this product are contained in a sealed can and exposure does not occur during normal handling and use. No chronic effects would be expected from handling a leaking battery.

Target Organs: Skin, eyes and respiratory system.

Carcinogenicity: None of the components of this product are listed as carcinogens by the EU Directive on the classification and labeling of substances.



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12. Ecological Information

Primary zinc-air button cells do contain lead, and do not contain mercury and cadmium as defined by the European Directive 2006/66/EC Article 21.

Mercury has not been "intentionally introduced (as distinguished from mercury that may be incidentally present in other materials)" in the sense of the U.S.A. "Mercury -Containing and Rechargeable Battery Management Act" (May 13 1996)

The Regulation on Mercury Content Limitation for Batteries promulgated on 1997-12-31 by the China authorities including the State Administration of Light Industry and the State Environmental Protection Administration defines 'low mercury' as mercury content by weight in battery as less than 0.025%, and mercury free' as 'mercury content by weight in battery as less than 0.0001%'. And therefore: Ansmann zinc-air button cells belong to the category of low-mercury battery (mercury content lower than 0.025%).

13. Disposal Information

USA: Primary zinc-air button cells are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream.

In the European Union, manufacturing, handling and disposal of batteries is regulated on the basis of the DIRECTIVE 2006/66/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC. Customers find detailed information on disposal in their specific countries using the web site of the European Portable Batteries Association (http://www.epbaeurope.net/legislation_national.html)

Importers and users outside EU should consider the local laws and rules.

In order to avoid short circuit and heating, used primary zinc-air cells/batteries should never be stored or transported in bulk. Proper measures against short circuit are:

- Storage of batteries in original packaging
- Coverage of the terminals

14. Transport Information

Ansmann primary zinc-air button cells are considered to be "dry cell" batteries and are unregulated for purpose of transportation by the U.S. Department of Transportation (DOT), International Civic Aviation Administration (ICAO), International Air Transport Association (IATA), the International Maritime Organization (IMO), the "Accord Européen Relatif au Transport International des Marchandises Dangereuses par Route" (ADR) and the "Règlement concernant le transport international ferroviaire de marchandises Dangereuses" (RID).

IATA DGR: Special Provision A123: "Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal-hydride and nickel-cadmium batteries. Any electrical battery...having the potential of a dangerous evolution of heat must be prepared for transport as to prevent:

- (a) a short circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals...)
- (b) an accidental activation

The words "Not Restricted" and the Special Provision number must be included in the description of the substance on the Air Waybill as required by 8.2.6, when an Air Waybill is issued.

EU: Special Provision 304 (ADR/RID): "Batteries dry, containing corrosive electrolyte, which will not flow out of the battery if the battery case is cracked, are not subject to the requirements of ADR/RID provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are: alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries"

USA: 49 CFR § 172.102 Special Provision 130: "For other than a dry battery specifically covered by another entry in the § 172.101. table, "Batteries, dry" are not subject to the requirements of this subchapter when they are securely packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short-circuits".

Code of practice for packaging and shipment of primary batteries given in IEC 60086-1: The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture. Shock and vibration shall be kept to a minimum. For instance, boxes should not be thrown off trucks, slammed into position or piled so high as to overload battery containers below. protection from inclement weather should be provided.



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15. Regulatory Information

Marking consideration: According to Directive 2006/66/EC of THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 6 September 2006 on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EEC all batteries have to be marked with the crossed bin. According to Article 21 of this directive Ansmann primary zinc-air button cells have to be marked with the element symbols "Pb" and "Hg". Due to the size of the battery this marking has to be placed on the packaging.

International safety standard: IEC 60086-5

Water hazard class: (according to German Federal Water Management Act)
non-water pollution according to VwVwS Appendix 1 (no.1443 and 766)

16. Other Information

Full text of Classification and R-phrases referred to under section 3

Classification:	T	Toxic
	F	Highly flammable
	Xn	Harmful
	C	Corrosive
	N	Dangerous for the environment

R-Phrases:	20/22	Harmful by inhalation and if swallowed
	22	Harmful if swallowed
	33	Danger of cumulative effects
	35	Causes severe burns
	61	May cause harm to the unborn child
	62	Possible risk of impaired fertility.
	50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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