



# Material - Safety - Data Sheet (MSDS)

for

Ansmann Air Depolarised Alkaline Batteries

No.18

1/7

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The information contained within is provided as a service to our customers and for their information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate at the date of preparation. ANSMANN AG makes no warranty expressed or implied.

## Section 1

### Product and Supplier Identification

#### 1.1 Product identifier

Product name: Primary Batteries AS2/AS3/AS6/AS8/AS10

Alternate names: Air Alkaline Batteries

#### 1.2 Relevant identified uses of the substance and uses advised against

Primary electric cell (primary energy source).

##### Supplier:

Germany

ANSMANN AG

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5, Place Copernic; Immeuble Boréal - Courcouronnes; F-91023 Evry Cedex; France

#### EMERGENCY CONTACT:

For chemical emergency (spill, leak, fire, exposure or accident)  
call phone no.: +49 6294 4204 0

#### Legal remark (USA)

Safety Data Sheets are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". According to OSHA, "article" means a manufactured item other than a fluid particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.



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Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard.

## Legal remark (EU)

These batteries are no "substances" or "mixtures" according to Regulation (EC) No 1907/2006EC. Instead they have to be regarded as "articles", no substances are intended to be released during handling. Therefore there is no obligation to supply a "safety data sheet according to Regulation (EC)1907/2006, Article 31"

## General remark

This safety data sheet is provided as a service to our customers. The details presented are in accordance with our present knowledge and experiences. They are no contractual assurances of product attributes.

## Section 2 Hazards Identification







Incorrect handling of the batteries may lead to an accidental release of liquid, overheating or explosion and cause injury to people or damage to equipment. Especially if contact is made with the escaping liquid, which can cause injuries such as loss of sight.

Improper use of batteries may result in the following risks:

- Contact with corrosive substances (leakage of electrolyte)
- Splashes and projections (sudden mechanical failure of the battery)

Each battery is made up of a plastic container that contains a number of chemical products and materials which might be potentially dangerous in the event of accidental release. The batteries have aeration holes that allow oxygen to enter in order to regenerate the manganese.

## Section 3 Composition and Informations on Ingredients

Ingredient	Content	CAS No.	Hazard Symbols	Classification	R Phrases
Zinc (Zn)	25 - 50%	7440-66-6	  	GHS02,GHS07 GHS09	11,19 36/37, 51/53
Manganese Dioxide (MnO <sub>2</sub> )	5 - 20%	1313-13-9		GHS07	20/22
Potassium Hydroxide (KOH)	8 - 15%	1310-58-3	 	GHS05 GHS07	22 35
Lead (Pb)	< 0.05%	7439-92-1			
Cadmium (Cd)	< 0.001%	7440-43-9			
Mercury (Hg)	< 0.0005%	7439-97-6			
Paper, Water, Plastic	residue				

## Control parameters

Each battery is made up of a plastic container that contains a number of chemical products and materials which might be potentially dangerous in the event of accidental release.

COMPONENT	PEL (OSHA)	TLV (ACGIH)
Manganese dioxide	5 mg/m <sup>3</sup> maximum limit (of Mn)	0.2 mg/m <sup>3</sup> TWA (of Mn)
Zinc	<ul style="list-style-type: none"><li>• 15 mg/m<sup>3</sup> TWA (particulates / powder, not otherwise regulated)</li><li>• 5 mg/m<sup>3</sup> TWA (particulates / breathable fraction, not otherwise regulated)</li></ul>	<ul style="list-style-type: none"><li>• 10 mg/m<sup>3</sup> TWA (particulates / powder, not otherwise regulated)</li><li>• 3 mg/m<sup>3</sup> TWA (particulates / breathable fraction, not otherwise regulated)</li></ul>
Potassium hydroxide	Not established	2 mg/m <sup>3</sup> maximum limit



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## Section 4 First Aid Measures

**None**, unless internal material exposure

### 4.1 Description of necessary first aid measures

- 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.
- Inhalation:** If battery is leaking, contents may be irritating to respiratory passages. Move to fresh air. If irritation persists, seek medical advice.
- 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.

### 4.2 Most important symptoms / effects, acute and delayed

The chemicals mentioned in section 3 are contained in a plastic housing. Risk of exposure occurs only if the battery is mechanically or electrically abused or if the battery leaks caused by other reasons. Swallowing of battery content can lead to chemical burns, perforation of soft tissues and death. Severe burns can occur within 2 hours of ingestion. In case of ingestion, seek medical attention immediately. See emergency phone number in section 1.

In case of exposure to inner components/material of the battery:

Harmful if swallowed (Manganesedioxide, Zinc, electrolyte)

Harmful if inhaled (Manganesedioxide, Zinc)

May cause damage to organs (brain) through prolonged or repeated exposure (inhalation) (Manganesedioxide)

### 4.3 Indication of immediate medical attention and special treatment needed

No further information available.

## Section 5 Fire Fighting Measures

### Fire and explosion hazards

Batteries may burst and release hazardous decomposition products when exposed to a fire situation.

### 5.1 Suitable extinguishing media

Use foam, water, carbon dioxide (CO<sub>2</sub>), as appropriate

### 5.2 Specific hazards arising from the chemical

Thermal degradation may produce hazardous fumes of zinc and manganese, hydrogen gas, caustic vapors of potassium(sodium) hydroxide and other toxic by-products

### 5.3 Special protective actions for firefighters

Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing. Fight fire from a distance or protected area.

## Section 6 Accidental Release Measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Steps to be taken in case material is released or spilled:

The preferred response is to leave the area and allow batteries to cool and the vapours to dissipate.

Avoid skin and eye contact or inhalation of vapours.

### 6.2 Environmental precautions

Do not allow product to reach sewage system or any water course

In the event of spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

### 6.3 Methods and material for containment and cleaning up

In the event of spill or accidental release, collect all released material in a plastic lined metal container and remove spilled liquid with absorbent. Doing this, protect your skin and eyes with chemical resistant protective (EN374) and tightly sealed protective goggles (EN166). Avoid direct contact with internal components.



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## Section 7

### Precautions for safe Handling and Storage

When used correctly, alkaline batteries provide a safe and dependable source of power. However, if they are misused or abused, leakage, heating or in extreme case, explosion may result. Therefore pay attention to the following recommendations:

#### 7.1 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 100°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.

#### 7.2 Storage of big quantities:

If possible, store the batteries in the original packaging.  
A fire alarm is recommended.  
For automatic fire extinguisher consider chapter 5 "Fire Fighting Measures"

#### 7.3 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.

#### 7.4 Charging:

**Do not charge this batteries!** This battery type is manufactured in a ready-to-use-state. It is not designed for recharging.

#### 7.5 Disposal:

Dispose in accordance with all applicable federal, state and local regulations.

## Section 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

## Section 9

### Physical and Chemical Properties

Appearance:	cylindrical or paralleiped plastic boxes	Odour:	basic
Relative Density:	3.05 g/cm <sup>3</sup>	Vapour Density:	n/a*
Boiling Point:	n/a*	VOC Content:	n/a*
Evaporation Rate:	n/a*	Solubility in Water:	n/a*
Melting Point:	MnO <sub>2</sub> breaks down at 553°C Zn breaks down at 420°C KOH breaks down at -35°C	pH:	not applicable internal product: pH14
Flammability (solid, gas):	not flammable	n/a*:	not applicable for closed batteries



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## Section 10

### Stability and Reactivity

Product is stable under conditions described in Section 7.

**Conditions to avoid:** Heat above 100° 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.

## Section 11

### Toxicological Information

**Potential Health Effects:** The chemicals and metals in this product are contained in a plastic container. 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 battery contents 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/m<sup>3</sup>  
Lead: LC50 inhalation rat 10.000ppm/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.

## Section 12

### Ecological Information

Primary Air Depolarised Alkaline Batteries 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%).



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### Section 13

#### Disposal Considerations

USA: Air Depolarised Alkaline Batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. End-users may, however, go to the website of Call2Recycle, Inc. at [www.call2recycle.org](http://www.call2recycle.org) to obtain additional information for local options of collection and recycling.

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](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 Air Depolarised Alkaline Batteries should never be stored or transported jumbled-up. Proper measures against short circuit are:

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

### Section 14

#### Transport Information

##### **14.1 General considerations**

Air Depolarised Alkaline Batteries are considered to be "dry cell" batteries and are unregulated for purposes of transportation by the U.S. Department of Transportation (DOT), International Civil 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).

Ansmann Air Depolarised Alkaline Batteries are packed in such a way to prevent short circuits or the generation dangerous quantities of heat and meet the special provisions listed below.

##### **14.2 IATA DGR:**

Special Provision A123: "Examples of such batteries are: alkali-manganese, zinc-carbon 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.

##### **14.3 EU: ADR / RID / IMDG Code:**

As Air Depolarised Alkaline batteries are not explicitly mentioned in these Dangerous Goods regulations, there are no special Dangerous Goods shipment requirements for these products.

##### **14.4 USA: 49 CFR § 172.102 Special Provision 130:**

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".

##### **14.5 IEC 60086-1**

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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## Section 15

### Regulatory Information

#### Marking consideration:

Ansmann Air Depolarised Alkaline Batteries conform to the requirements of the requirements of the Medical Devices Directive 93/42/EEC class I and are thus marked with the CE symbol.

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 symbol "Pb". Due to the size of the battery this marking has to be placed on the packaging.

#### International safety standard:

IEC 60086-5

US DOT:

Air Depolarised Alkaline Batteries marketed by ANSMANN are not classified as dangerous goods by the US Department of Transportation or the major international regulatory bodies and are therefore not regulated.

#### Water hazard class:

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

## Section 16

### Other Information

#### Full text of Hazard Statements referred to under section 3

Pictograms acc. GHS

GHS07

Harmful if swallowed

Harmful if inhaled



GHS05

May cause an allergic skin reaction

Causes severe skin burns and eye damage



GHS09

Very toxic to aquatic life with long lasting effects

Harmful to aquatic life with long-lasting effects



GHS02

Flammable if exposed to ignition sources, sparks, heat.

Some substances may give off flammable gases.



#### Risk Phrases

R11

Highly flammable

R19

May form explosive gases

R22

Harmful if swallowed

R35

Causes severe burns

R20/22

Harmful by inhalation and if swallowed

R36/37

Irritating to eyes and respiratory system

R51/53

Toxic to aqua organisms, may cause long-term adverse effects in the quatic environment

#### Note:

Date of issue of the transport regulations: ADR 2019; RID 2019, IATA 2020 (61<sup>st</sup> edition),

IMDG 2018, DOT / CFR 2019

Latest covered modification of the European Battery Directice 2006/66/EC: Directive 2013/56/EU

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