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1. Product and Supplier Identification

Product name:	ANSMANN "Mercury Free" Silver Oxide Button Cells
Designation:	Zinc Silver Oxide
Models / types:	SR41; SR44; SR45; SR54; SR57; SR58; SR59; SR60; SR63; SR66; SR69
Electrochemical system:	Silver oxide / Manganese dioxide - Zinc - KOH (electrolyte)
Supplier:	
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email:	france@ansmann.de
EMERGENCY CONTACT:	For chemical emergency (spill, leak, fire, exposure or accident) call phone no.: +49 6294 4204 0

2. Product and Supplier Identification

The zinc / silver oxide 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 maintainted.
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)	7 - 15%	7440-66-6		GHS09	50/53
Silver Oxide (Ag_2O)	5 - 35%	20667-12-3		GHS03 GHS05 GHS09	36/37/38/44 8
Manganese Dioxide (MnO_2)	20 - 40%	1313-13-9		GHS07	20/22
Potassium hydroxide (KOH)	2 - 5%	1310-58-3		GHS05 GHS07	22 35
Carbon (C) (Graphite)	1 - 6%	7782-42-5		GHS07	36/37-20
Lead (Pb) see chapter no.12	≤ 0.004%	7439-92-1		GHS07 GHS08 GHS09	61, 62 20/22 33
Cadmium (Cd) see chapter no.12	≤ 0.001%	7440-43-9		GHS06 GHS08 GHS09	11, 25, 26 45
Mercury (Hg) see chapter no.12	≤ 0.0001%	7439-97-6		GHS06 GHS08 GHS09	23, 33 50/53
Nickel plated steel	25 - 70%				

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 casualities 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 dry chemical, foam, water, carbon dioxide (CO_2), as appopriate

Special fire fighting procedures:	Firefighters should wear positive pressure self-contained breathing apparatus and full protective clothing.
Hazardous combustion products:	In case of fire, carbon dioxide, carbon monoxide and other toxic organic substances will be generated. Do not inhale fumes and smoke.

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 rapture, prevent skin contact and collect all released material in a plastic lined container. Dispose off acording 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 ingredientsas 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. Temperautes 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

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 mercury, zinc, silver, and manganese; hydrogen gas, caustic vapours 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 / silver oxide button cells is possible and can be harmfull.

Acute Toxicity Data: Manganese dioxide: LD50 oral rat >3478 mg/kg
Potassium hydroxide: LD50 oral rat 273 mg/kg
Silver oxide: LD50 oral rat 2820mg/kg
Mercuric oxide: LD oral rat: 18mg/kg; LD50 dermal rat: 315mg/kg

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.

12. Ecological Information

Ansmann primary zinc / silver oxide "mercury free" button cells do not contain heavy metals as defined by the European Directive 2006/66/EC Article 21. They comply with the chemical composition requirements of this Directive.

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 mercury free primary zinc / silver oxide button cells belong to the category of mercury free battery (mercury content lower than 0.0001%)

13. Disposal Information

USA: Primary zinc / silver oxide 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 zinc-silver oxide button 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 zinc / silver oxide button cells are considered to be "dry cell" batteries and are unregulated for purposes 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 Europeèn Relatif au Transport International des Merchandises 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 accidential 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.

ADR/RID/IMDG: As primary zinc-silver oxide button cells are not explicitly mentioned in these Dangerous Goods regulations, there are no special Dangerous Goods shipment requirements for these products.

USA: 49 CFR § 172.102 Special Provision 130: "Dry batteries not specifically covered by another entry in the §172.101 Table are covered by this entry (i.e. Batteries, dry, sealed n.o.s.) and are not subject to requirements of this subchapter except for the following: […] (b) Preparation for transport. Batteries and battery-powered device(s) containing batteries must be prepared and packaged for transport in a manner to prevent:
(1) A dangerous evolution of heat; (2) Short circuits, including but not limited to the following methods: […](ii) Separating or packaging batteries in a manner to prevent contact with other batteries, devices or conductive materials (e.g. metal) in the packagings […]; and (3) Damage to terminals. If not impact resistant, the outer packaging shoud not be used as the sole means of protecting the battery terminals from damage or short circuiting. Batteries must be secuerly cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals to produce 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.

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.
Due to the size of the products the battery need to be marked, but a symbol measuring at least 1 x 1cm shall be printed on the packaging.

International safety standard:
IEC 60086-5 "…system S button cells or batteries under 250mAh capacity are exempt from any testing"

Water hazard class:
The regulations of the German Federal Water Management Act (WHG) are not applicable as primary zinc / silver oxide button cells are articles and not substances, thus there is no risk of water pollution, except the batteries are violated or dismantled.

16. Other Information

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

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

R-Phrases:	8	Contact with combustible material may cause fire
	11	Highly flammable
	20/22	Harmful by inhalation and if swallowed
	22	Harmful if swallowed
	23	Toxic by inhalation
	25	Toxic if swallowed
	26	Very toxic by inhalation
	33	Danger of cumulative effects
	35	Causes severe burns
	36	Irritating to eyes
	37	Irritating to respiratory system
	38	Irritating to skin
	44	Risk of explosion if heated under confinement
	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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