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1. Product and Supplier Identification

Product name:	ANSMANN (Super) Heavy Duty Battery
Designation:	Zinc Manganese Dioxide Battery
Models / types:	R03, R03P (AAA); R6, R6P (AA); R14, R14P (C); R20, R20P (D); 6F22 (9V E-Block); 3R12P; 4R25X
Electrochemical system:	MnO_2 (Manganese Dioxide) (positive electrode) Zn (negative electrode) NH_4Cl, $ZnCl_2$ (electrolyte)

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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-carbon 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 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 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.	ACGIH (TLV)	R Phrases	Classification
Manganese Dioxide (MnO_2)	20 - 50%	1313-13-9	0.2mg/m^3 TWA (as Mn)	20/22	Xn
carbon, black (C)	2 - 12%	1338-86-4	3.5mg/m^3		-
Zinc (Zn)	20 - 35%	7440-66-6	5mg/m^3 TWA (as ZnO)	50/53	N
Ammonium Chloride (NH_4Cl)	5 - 20%	12125-02-9	10mg/m^3 TWA (fume) 20mg/m^3 STEL (fume)	22, 36	Xi, Xn
Zinc Chloride ($ZnCl_2$)	5 - 20%	7646-85-7	1mg/m^3 TWA (fume)	22, 34, 50/53	Xn, C, N
Acetylene	0 - 5%	74-86-2	200ppm 8hours TWA	5, 6, 12	F+
Lead (Pb) Cadmium (Cd) Mercury (Hg) see chapter No.13	< 0.4% < 0.002% < 0.0001%	7439-92-1 7440-43-9 7439-97-6	0.025mg/m^3 0.01mg/m^3 0.025mg/m^3		
paper, water, plastic	residue				

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 or drink. 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.

Extinguishing media: Use any extinguishing media that is appropriate for the surrounding fire

Extinguishing media with limited suitability: -

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

Hazardous combustion products: Thermal degradation may produce hazardous fumes of zinc and manganese; caustic vapours of zinc chloride and ammonium chloride and other toxic by-products

6. Accidental Release Measures

Notify safety personnel of large spills. Caustic Ammonium and Zinc chloride may be released from leaking or ruptured batteries. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact and inhalation of vapours or fumes. Increase ventilation. Carefully collect batteries and place in an appropriate container for disposal.

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 100°C may result in battery leakage and rupture.

Mechanical Containment: If potting or sealing the battery in an airtight or watertight container is required, consult Ansmann AG representative for precautionary suggestions. Do not obstruct safety release vents on batteries. Encapsulation of batteries will not allow cell venting and can cause high pressure rupture.

Handling: Avoid mechanical or electrical abuse. DO NOT short circuit or install incorrectly. Batteries may explode, pyrolize or vent if disassembled, crushed, recharged or exposed to high temperatures. Install batteries in accordance with equipment instructions. Do not mix battery systems, such as alkaline and zinc carbon, in the same equipment. Replace all batteries in equipment at the same time.
Do not carry batteries loose in a pocket or bag. Do not remove the battery label.

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

Recharging can cause battery leakage, or in some cases, can cause the safety release vent to open. Inadvertent charging can occur if a battery is installed backwards.

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:	cylindrical battery	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 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 vapours of zinc chloride, ammonium chloride 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 ammonium chloride and zinc chloride , which may cause burns. Anticipated potential leakage of ammonium and zinc chloride is up to 100ml, depending on battery size.

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: For big carbon zinc batteries (e.g. 4R25, 3R12) swallowing is not anticipated due to battery size. Choking may occur if smaller batteries are swallowed. Ingestion of battery contents (from a leaking battery) may cause mouth, throat and intestinal burns and damage.

Acute Toxicity Data: Manganese Dioxide: LD50 oral rat >3478 mg/kg
Ammonium Chloride: LD50 oral rat 1650mg/kg
Zinc Chloride: LD50 oral rat 350mg/kg. LCLo inhalation rat 1960mg/m ^{3}

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: Carbon Black is classified by IARC as possibly carnicogen to humans (group 2B) None of the other components of this product are listed as carnicogens by the Australien HSIS, ACGIH, IARC, the US NTP or the EU Directive.

12. Ecological Information

ANSMANN zinc-carbon cells/batteries do contain lead, and do not contain cadmium and mercury 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 USA "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 cylindrical primary alkaline cells/batteries belong to the category of mercury-free battery (mercury content lower than 0.0001%).

13. Disposal Information

Do not incinerate, recharge, disassemble short, or subject cells to temperatures in excess of 100°C. Such abuse can result in loss of seal, leakage, and/or cell explosion.

In order to avoid short circuit and heating, used zinc-carbon 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

Dispose of in accordance with appropriate national and local regulations.

USA: Zinc-carbon cells/batteries 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.

14. Transport Information

ANSMANN zinc-carbon cells/batteries 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.

EU: As zinc-carbon cells/batteries are not explicitly mentioned in RID/ADR, there are no special Dangerous Goods shipment requirements for these products.

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.

15. Regulatory Information

Ansmann zinc-carbon batteries do not release toxic chemicals under normal conditions of processing or use. They are not classified as dangerous goods by the US Department of Transportation or the mayor international regulatory bodies and are therefore not regulated.

As an article, this battery and it's contents are not subject to the requirements of the Emergency Planning and Community Right-To-Know-Act.

16. Other Information

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

Classification:	Xn	Harmful
	Xi	Irritant
	C	Corrosive
	N	Dangerous for the environment
	F+	Extremely explosive
R-Phrases:	5	Heating may cause an explosion
	6	Explosive with or without contact with air
	12	Extremely flammable
	20/22	Harmful by inhalation and if swallowed
	22	Harmful if swallowed
	34	Causes burns
	36	Irritating to eyes
	50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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