Material Safety Data Sheet

1. Product & Company Identification

Product name:	Alkaline zinc-manganese dioxide battery, non-rechargeable

Size	Nominal Voltage	Capacity	Energy content
LR20, Mono (D)	1.5 V	18000 mAh	27.0 Wh

Manufacturer:	Conrad Electronic SE
Address:	Klaus-Conrad-Str. 1, D-92240 Hirschau
Telephone:	+49 (0) 9604 / 40 - 8988
Date of issue:	18.01.2019

2. Hazardous Ingrediens / Identity Information

MATERIALS	CAS#	APPROXIMATE PERCENT OF TOTAL WEIGHT (~%)
Manganese Dioxide (MnO2)	1313-13-9	41.8
Zinc (Zn)	7440-66-6	17.4
Water (H2O)	7732-18-5	11.1
Potassium Hydroxide (KOH)	1310-58-3	7.0
Graphite	7782-42-5	3.4
Brass	12597-71-6	0.8
Steel	7439-89-6	16.3
Ni-plating	7440-02-0	0.2
Nylon-66	None	1.4
Fiber	None	0.6
Mercury (Hg)	7439-97-6	≤0.0001
Lead (Pb)	7439-92-1	≤0.0040
Cadmium (Cd)	7440-43-9	≤0.0020
Arsenic (As)	7440-38-2	≤0.0001

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3. Physical / Chemical Characteristics

Form :	N.A.
Specific Gravity (H2O=1)	N.A.
Boiling Point	N.A.
Melting Point	N.A.
Vapor Pressure (mm Hg)	N.A.
Evaporation Rate (Buty 1 Acetate=1)	N.A.
Vapor Density (AIR=1)	N.A.
pH	N.A.
Solubility in Water	N.A.
Appearance and Odor	N.A

4. Hazard classification

N.A.

5. Reactivity Data

Stability	Stable
Conditions to Avoid	N/A

Incompatibility (Materials to Avoid)

Hazardous Decomposition or By products

When heated, battery may emit hazardous vapour of KOH

Hazardous Reactions:	May not Occur.

6. Health Hazard Data

Route(s) of Entry

Inhalation	N.A.
Skin	N.A.
Ingestion	N.A.

Health Hazard (Acute and Chronic) / Toxicological in formation

In case of electrolyte leakage, skin will be itchy when contaminated with electrolyte. In contact with electrolyte can cause severe irritation and chemical burns. Inhalation of electrolyte vapors may cause irritation of the upper respiratory tract and lungs.

7. First Aid Measures

If electrolyte leakage occurs and makes contact with skin, wash immediately.

If electrolyte comes into contact with eyes, wash with copious amounts of water for fifteen minutes, and contact a physician.

If electrolyte vapors are inhaled, provide fresh air and seek medical attention if respiratory irritation develops. Ventilate the contaminated area.

8. Fire and Explosion Hazard Data

Flash point (Method Used):	N.A.
Ignition temp.:	N.A.
Flammable Limits:	N.A.
LEL:	N.A.
UEL:	N.A.
Extinguishing Media:	N.A.
Special Fire Fighting Procedures:	N.A.
Extinguishing Media:	Carbon Dioxide, Dry Chemical or Foam extinguishers

Unusual Fire and Explosion Hazards

Do not dispose of battery in fire - may explode.

Do not short - circuit battery - may explode.

9. Accidental Release or Spillage

Steps to Be Taken in Case Material is Released or Spilled

Batteries that are leaking should be handed with rubber gloves. Avoid direct contact with electrolyte.

10. Handing and Storage

Safe handing and storage advice

The battery is extremely sensitive to adverse effects of humidity. Be sure to store them in a place that is dry and subject to little temperature change. Do not place near boiler or radiator, nor expose to direct sun light. Do not dispose of the battery in fire. Do not charge the battery. Do not short-circuit the battery. Do not put in backward position. Do not store in disorderly fashion, or allow metal objects to be mixed with stored batteries. Do not disassemble the battery, handing in such manner can cause the battery to explode, leak and injury.

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11. Exposure Controls / Personal Protection

Occupuational Exposure Limits:		LTEP N.A.
		STEP N.A.
Respiratory Protection(Specify Type)		N.A.
Ventilation	Local Exhausts	N.A.
	Special	N.A.
	Mechanical(general)	N.A.
	Other	N.A.
Protection Gloves		N.A.
Eye protection		N.A.
Other Protective Clothing or Equipment		N.A.
Work /Hygienic Practices		N.A.

12. Ecological Information

N.A.

13. Disposal Method

Dispose of batteries according to government regulations

14. Transportation Information

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) and International Maritime Dangerous Goods Regulations (IMDG).

The only DOT requirement for shipping these batteries is special provision A123 which states: "Batteries, dry are not subject to the requirement of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (For example, by the effective insulation of exposed terminals). As per 59th edition of IATA (2018) requires that batteries being transported by air must be protected from short-circuiting and protected from movement that could lead to short-circuiting.

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15. Regulatory Information

Special requirement be according to the local regulatory.

16. Other Information

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

17. Measures for fire extinction

In case of fire, it is permissible to use any class of extinguishing medium on these batteries or their packing material. Cool exterior of batteries if exposed to fire to prevent rupture. Fire fighters should wear self-contained breathing apparatus.