MSDS REPORT

Applicant :	**HUIZHOU DEANDA BATTERY CO.,LTD**
	Jin Nengyuan Industrial Park, Shuikou Road 25, Huicheng District, Huizhou city, Guangdong, China
Manufacturer :	**HUIZHOU DEANDA BATTERY CO.,LTD**
	Jin Nengyuan Industrial Park, Shuikou Road 25, Huicheng District, Huizhou city, Guangdong, China
Product Description :	**Alkaline batteries**
Product Code :	**LR03(DEANDA), LR6(DEANDA)**
Rating :	**--**
Trade Mark :	**N/A**

This report is limited to the above applicant company and the product model only.

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Product Name: Alkaline batteries Establishment / Revision: August 11, 2016

MATERIAL SAFETY DATA SHEET

(according to ISO 11014: 2009)

Section 1: Identification Of The Substance/Preparation And Of The Company / Undertaking

Product identifier

Product Name: Alkaline batteries

Sample Model No.: LR03(DEANDA), LR6(DEANDA)

Rating: --

Other means of identification

UN-No. None - Not Required

Synonyms: None

Recommended use of the chemical and restrictions on use

Recommended Use: Alkaline batteries

Uses advised against: No information available

Details of the supplier of the safety data sheet

Supplier Name: HUIZHOU DEANDA BATTERY CO.,LTD

Supplier Address: Jin Nengyuan Industrial Park, Shuikou Road 25, Huicheng District, Huizhou city, Guangdong, China

Supplier Phone Number: Phone: +86-752-209 1659
Fax: +86-752-209 1593

Supplier Email : xiajh@desaypow.com

Emergency telephone number : +86-752-209 1659

Section 2: Hazards Identification

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Product Name: Alkaline batteries Establishment / Revision: August 11, 2016

Classification :

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Acute toxicity - Dermal	Category 3
Skin corrosion/irritation	Category 1 Sub-category B
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (repeated exposure)	Category 1

GHS Label elements, including precautionary statements

Emergency Overview:

Signal word **Danger**

Hazard Statements

Harmful if swallowed or if inhaled

This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold. Intended use of the product should not result in exposure to the chemical substance. This is a battery. In case of rupture: the above hazards exist.

Appearance: Cylinder **Physical State:**Solid **Odor:** Odorless

Precautionary Statements - Prevention:

Wear protective gloves/protective clothing/eye protection/face protection

Do not breathe dust/fume/gas/mist/vapors/spray

Wash face, hands and any exposed skin thoroughly after handling

Do not eat, drink or smoke when using this product

Precautionary Statements - Response:

Specific measures (see on this label)

Immediately call a POISON CENTER or doctor/ physician

Specific treatment (see supplemental first aid instructions on this label)

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Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Immediately call a POISON CENTER or doctor/physician

Skin

Call a POISON CENTER or doctor/physician if you feel unwell

Wash contaminated clothing before reuse

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Immediately call a POISON CENTER or doctor/physician

Ingestion

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Unknown Toxicity

16.3% of the mixture consists of ingredient(s) of unknown toxicity

Other information

May be harmful if swallowed

Very toxic to aquatic life with long lasting effects

Interactions with Other Chemicals

Use of alcoholic beverages may enhance toxic effects.

SECTION 3: Composition / Information on Ingredients

Chemical characterization: Mixtures

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- **Description:** Mixture of the substances listed below with nonhazardous additions.

Common chemical name / General name	CAS number	Weight-%	Classification and hazard labeling
Manganese dioxide (MnO_2)	1313-13-9	37.3%	Health: 2 Flammability: 0 Reactivity: 0
Graphite (C)	7782-42-5	3.24%	Health: 1 Flammability: 1 Reactivity: 0
Potassium hydroxide (KOH)	1310-58-3	6.77%	Health: 3 Flammability: 0 Reactivity: 2
Steel (Fe)	7439-89-6	32.43%	Health: 1 Flammability: 2 Reactivity: 1
Zinc oxide (ZnO)	1314-13-2	0.2%	Health: 2 Flammability: 0 Reactivity: 0
Zinc (Zn)	7440-66-6	14.54%	Health: 1 Flammability: 3 Reactivity: 1
Indium hydroxide ($In(OH)_3$)	20661-21-6	0.01%	Health: 1 Flammability: 0 Reactivity: 0
Nylon 66	32131-17-2	1.19%	Health: 1 Flammability: 1 Reactivity: 0
Copper (Cu)	7440-50-8	4.21%	Health: 2 Flammability: 1 Reactivity: 0
Water (H_2O)	7732-18-5	0.11%	Health: 0 Flammability: 0 Reactivity: 0

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SECTION 4: First Aid Measures

First aid measures

General Advice : First aid is upon rupture of sealed battery. Call emergency medical service. Remove and isolate contaminated clothing and shoes.

Skin contact : Wash off skin thoroughly with water.
Remove contaminated clothing and wash before re-use.
In severe cases obtain medical attention.

Eye contact : Do not rub one's eyes.
Immediately flush eyes with water continuously for at least 15 minutes.
Seek medical attention immediately.

Inhalation : Provide fresh air.
In severe cases obtain medical attention.

Ingestion : Wash out mouth thoroughly with water.
Do not induce vomiting or give food or drink.
Seek medical attention immediately.

Self-protection of the first aider : Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.
Avoid contact with skin, eyes or clothing. Avoid direct contact with skin.
Use barrier to give mouth-to-mouth resuscitation.
Use personal protective equipment as required.
Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Most Important Symptoms/Effects: Coughing and/ or wheezing. Itching. Burning sensation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: The breaked Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur.

SECTION 5: Fire Fighting Measures

Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Dry chemical, CO2, water spray or regular foam. Move containers from fire area if you can do it without risk. Water spray, fog or regular foam.

Large Fires: Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media

CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical

The breaked product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.

Hazardous Combustion Products

Carbon oxides.

Explosion Data

Sensitivity to Mechanical Impact: No.

Sensitivity to Static Discharge No.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Move containers from fire area if you can do it without risk.

SECTION 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Attention! Corrosive material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material.

Other Information: Refer to protective measures listed in Sections 7 and 8.

Environmental precautions:

Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

Methods and material for containment and cleaning up

Methods for Containment: Prevent further leakage or spillage if safe to do so. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Method of cleaning up: Pick up and transfer to properly labeled containers.

SECTION 7: Handling and Storage

Precautions for safe handling

Handling: In case of rupture: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

Conditions for safe storage, including any incompatibilities

Storage:

Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store locked up. Keep out of the reach of children. Store away from other materials.

Incompatible Products: heat, Strong oxidizing agents. Strong acids.

SECTION 8: Exposure Controls / Personal Protection

If the battery is integral, storage and handle with care, there is no any dangers.

It is suggested to handle the batteries in a ventilated place, to don't smoke, eat or drink during the assembling.

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting batteries. Respiratory Protection is not necessary under conditions of normal use.

Control parameters

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH

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Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Manganese dioxide (MnO_2) 1313-13-9	TWA: 0.2 mg/m^3 Mn	Ceiling: 5 mg/m^3 Ceiling: 5 mg/m^3 Mn	IDLH: 500 mg/m^3 Mn TWA: 1 mg/m^3 Mn STEL: 3 mg/m^3 Mn
Graphite (C) 7782-42-5	15 mg/m3 TWA (total dust) 3.5 mg/m3 TWA (respirable fraction)	15 mg/m^3 TWA (total dust) 5 mg/m^3 TWA (respirable fraction)	TWA: 15 mg/m^3
Potassium hydroxide (KOH) 1310-58-3	TWA : 2 mg/m^3	TWA : 2 mg/m^3	TWA : 2 mg/m^3
Zinc oxide (ZnO) 1314-13-2	TWA : 10 mg/m^3	TWA : 5 mg/m^3	--
Copper (Cu) 7440-50-8	TWA: 25 mg/m^3	TWA : 10 mg/m^3	TWA: 25 mg/m^3

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value

OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits

Immediately Dangerous to Life or Health

Other Exposure Guidelines: Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

Appropriate engineering controls

Engineering measures: Showers; Eyewash stations; Ventilation systems

Individual protection measures, such as personal protective equipment

- **Eye/Face Protection:** Face protection shield.

- **Skin and body protection:** Wear protective gloves and protective clothing. Long sleeved clothing. Chemical resistant apron. Impervious gloves.

- **Respiratory protection:** No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

- **Hygiene Measures:** Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection.

Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended.

Wash hands before breaks and immediately after handling the product.

For environmental protection, remove and wash all contaminated protective equipment before re-use.

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SECTION 9: Physical and Chemical Properties

Physical and Chemical Properties

Appearance:

- **Physical state:** cylinder Solid
- **Color:** depend on design
- **Odor:** Odorless
- **Odor Threshold:** No information available

Property	Values	Remarks Method
pH	No data available	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known

Property	Values	Remarks Method
Flammability Limit in Air		
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	Insoluble in water	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	No data available	None known
Explosive properties	No data available	
Oxidizing Properties	No data available	

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	

SECTION 10: Stability and Reactivity

Reactivity:

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid:

When a battery cell is exposed to an external short-circuit, crushes, deformation, high temperature above 100 degree C, it will be the cause of heat generation and ignition. Direct sunlight and high humidity.

Incompatible materials

Materials to avoid: Acids. Bases. Oxidizing agent.

Hazardous decomposition products:

Carbon oxides.

SECTION 11: Toxicological Information

Information on likely routes of exposure

There is no available data on the product itself.

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Product Information: Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture.

Inhalation	Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.
Eye Contact	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
Skin Contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.
Ingestion	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component Information

Information on toxicological effects

Symptoms: Erythema (skin redness). Burning. May cause blindness. Coughing and/ or wheezing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization: No information available.

Mutagenic Effects: No information available.

Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

Reproductive Toxicity: No information available

STOT - single exposure: No information available.

STOT - repeated	Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this

exposure	product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).
Chronic Toxicity	No known effect based on information supplied. Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse effects on the bone marrow and blood-forming system. May cause adverse liver effects.
Target Organ Effects	Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Blood. Central Nervous System (CNS). Central Vascular System (CVS). Kidney. Liver. Lungs.

Aspiration Hazard: No information available.

Numerical measures of toxicity: Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)

2 024.00 mg/kg

ATEmix (dermal)

1 215.00 mg/kg (ATE)

SECTION 12: Ecological Information

Ecotoxicity

The environmental impact of this product has not been fully investigated.

Persistence and degradability:

No further relevant information available.

Bioaccumulation:

No further relevant information available.

Other Adverse Effects

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

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SECTION 13: Disposal Consideration

Waste treatment methods

Waste Disposal Methods:

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. when disposed of as waste, are considered non-hazardous waste according to Federal RCRA regulation (40 CFR 261).

Contaminated Packaging: Disposal must be made according to official regulations.

California Hazardous Waste Codes: None

Alkaline batteries can be safely disposed of with normal household waste. Do not accumulate large quantities used batteries for dispo sal as accumulation could cause batteries to short-circuit. Do not incinerate.

SECTION 14: Transport Information

Products covered by this MSDS, in their original form, are considered “dry cell” batteries and are not regulated for transportation as “DANGEROUS GOODS”.

The batteries must be packaged in a manner that prevents the generation of a dangerous quantity of heat and short circuits.

For finished packaged product transported by ground (US DOT):-- not regulated

For finished packaged product transported by sea (IMDG) -- not regulated

For finished packaged product transported by air (IATA): -- not regulated

Special provisions apply and shippers should consult the most current versions of the transportation regulations.

Special Provision A123 in the IATA Dangerous Goods Regulations and ICAO Technical Instructions and Special Provision 130 in 49 CFR 172.102 of the U.S. DOT regulations require alkaline batteries be packed in such a way to prevent short circuits or generating a dangerous quantity of heat.

In addition, the IATA Dangerous Goods Regulations and ICAO Technical Instructions require the words “not restricted” and the Special Provision number “A123” be provided on the air waybill, when an air waybill is issued.

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Special Provision 304 of the IMDG Code (Amdt. 33-06) provides batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the provisions of this Code provided the batteries are securely packed and protected against short-circuits.

Examples of such batteries are zinc-manganese, alkali-manganese, zinc-carbon, nickel-metal hydride and nickel-cadmium batteries.

SECTION 15: Regulation Information

International Inventories

TSCA Complies

DSL All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

SARA 355 (extremely hazardous substances): None of the ingredients is listed.

SARA 313 (Specific toxic chemical listings): None of the ingredients is listed.

TSCA (Toxic Substances Control Act): None of the ingredients is listed.

U.S. State Regulations

California Proposition 65

Chemicals known to cause cancer: None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients is listed.

Chemicals known to cause developmental toxicity: None of the ingredients is listed.

Carcinogenic categories

EPA (Environmental Protection Agency): None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH): None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health): None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration): None of the ingredients is listed.

- **GHS label elements:** Void

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- **Hazard pictograms:** Void
- **Signal word:** Void
- **Hazard statements:** Void
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

International Regulations:

Canada: WHMIS Hazard Class: Non-hazardous

EU Directive 2006/66/EC

The International Civil Aviation Organization (ICAO) Technical Instructions

The International Air Transport Association (IATA) Dangerous Goods Regulations

The International Maritime Dangerous Goods (IMDG) Code (2010 Edition) : special provision 188,

The UN Recommendations on the Transport of Dangerous Goods Model Regulations and the Manual of Tests and Criteria. The UN classification number: Class 9, UN3090 / UN3091.

SECTION 16: Other Information

NFPA Health Hazard: 1 Flammability: 0 Instability: 0
Physical and Chemical Hazards: -

HMIS Health Hazard: 0 Flammability: 0 Physical Hazard: 0
Personal Protection: X

General Disclaimer

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.

Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use.

This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

MSDS Creation Date: August 11, 2016