

# Primary Gas Cell: Button Type



Hydrogen Gas Cell

## Product Safety Data Sheet

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This "Safety information" is provide as a service to our customers

### Disclaimer:

(EU)

These batteries are no "substances" nor "preparations" according to Regulation (EC) No 1907/2006 EC. 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 MSDDS according to Regulation (EC) 1907/2006, Article 31. This PSDS is intended to be unsolicited information without any further legal commitment. The details presented are in accordance with our present knowledge and experiences. They are no contractual assurances of product attributes.

(U.S.A.)

Material Safety Data Sheets (MSDS) 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". OSHA has defined "article" as a manufactured item other than a fluid or 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, and does not pose a physical hazard or health risk to employees.

This sheet is provided as technical information only. The information contained in this Product Safety Data Sheet has been established to the best of RENATA SA's knowledge and belief. RENATA SA makes no representation and provides no warranty or guarantee regarding the contents of this Product Safety Data Sheet and excludes its liability, express or implied.

### Section 1 – Product & Company Information

|                         |  |
|-------------------------|--|
| Product Name:           | <b>Primary Gas Cell</b>                                |
| Nominal Voltage:        | 0.3 - 1.3V   |
| Electrochemical System: | Zinc/ KOH Electrolyte/Ni-Catalyst                      |
| Sizes / Models:         | See section 2  |
| Date of Preparation:    | December, 2021   |
| Company:                | Renata SA  |
| Telephone Number:       | +41 61 975 75 75                                       |
| Address:                | CH 4452 Itingen, Switzerland                           |
| Mail:                   | <a href="mailto:sales@renata.com">sales@renata.com</a> |

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## **Section 2 – Composition/Information on Ingredients**

### **Ingredients (new battery)**

| Name                       | CAS Nr.    | Content % of Total Weight |
|----------------------------|------------|---------------------------|
| Ni-Catalyst*               | 12003-78-0 | 0.1 - 5                   |
| Zinc powder (Zn)*          | 7440-66-6  | 20 - 40                   |
| Potassium hydroxide (KOH)* | 1310-58-3  | 4 - 20                    |
| Nickel plated Steel        |            | 35 - 50                   |
| Copper                     |            | 2 - 5                     |
| Mercury (Hg)*              | 7439-97-6  | (< 5mg/kg)                |
| Lead (Pb)*                 | 7439-92-1  | (< 40mg/kg)               |
| Cadmium*                   | 7440-43-9  | (< 20mg/kg)               |
| Nickel                     | 7440-02-0  | 2 - 6                     |
| Technical Polymers         |            | 4 - 7                     |

\* All cell types are sealed button cells, no chemical hazard will be posed as long as the cell remains in sealed condition.

## **Section 3 – Hazardous identification**

A primary gas cell is not hazardous in normal use (see section 7 for proper handling)

Risk of exposure occurs, only if battery is mechanically, thermally or electrically abused, skin or eye contact with the contents of an opened battery should be avoided.

Skin contact with the contents of an opened battery can cause irritation and/or chemical burns.

Eye contact with the contents of an opened battery can cause severe irritation and chemical burns.

Ingestion of a battery can be harmful.

Please strictly observe safety instructions.

## **Section 4 – First Aid Measure**

**None** unless internal material exposure.

If contact with internal components, observe following instructions

### **Swallowing:**

Ingestion of a battery can be harmful. Contents of an opened battery can cause serious chemical burns of mouth, oesophagus, and gastrointestinal tract. Drink a plenty of water. Avoid vomiting. Consult a physician immediately. No trials for neutralization.

**Inhalation:** Fumes of alkaline solution can cause respiratory irritation. Provide fresh air and consult a physician.

**Skin Contact:** Contents of an opened battery can cause skin irritation and/or chemical burns. Remove contaminated clothing and wash skin with soap and water. If a chemical burn occurs or if irritation persists, consult a physician.

**Eye Contact:** Contents of an opened battery can cause severe irritation and chemical burns. Immediately flush eyes thoroughly with water for at least 15 minutes. Consult a physician immediately.

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## **Section 5 – Fire Fighting Measures**

When exposed to fire, battery may emit hazardous fumes of alkaline.

Refer to "inhalation" in section 4.

### Extinguishing Media:

Any class of extinguisher is effective.

### Fire fighting procedure:

Use self-contained breathing apparatus and full gear not to inhale or that eyes or skin come in contact with harmful alkaline mist.

Special dangers: Metal fragments flying around

Attention: Avoid the release of used extinguishing agents into surface water or groundwater.

If necessary, absorb water or foam with appropriate solid materials. Dispose the used extinguishing agents properly.

## **Section 6 – Accidental Release Measures**

**Damaged Battery** should be handled with rubber gloves, avoid direct contact with internal components. Collect all released material with absorptive material in a plastic lined container. Dispose off according to the local law and rules.

Avoid released substances to get into the earth, canalization or waters.

If battery is dismantled, small amounts of electrolyte may leak. Pack the battery including ingredients as described above, then clean the area with a plenty of water (diluted acetic acid may be helpful)

## **Section 7 – Handling and Storage**

(Detailed information can be found in IEC 60086-5, chapter 7)

### Handling:

Always follow the warning information on the batteries packaging and in the manuals of devices, use only recommended battery types.

Keep out the reach of children, never swallow.

For devices to be used by children, the battery casing should be protected against unauthorized opening.

Unpacked batteries shall not lie about bulk.

Avoid mechanical, thermal or electrical abuse. Never touch the ingredients of a dismantled battery (see section 6).

Never short-circuit, force discharge, charge/recharge, overheat, dispose in fire, throw into water, deform, dismantle; the battery may vent, explode or leak.

In case of battery change always replace all batteries by new ones of identical type and brand.

### Storage:

Store the batteries preferably at room temperature (approx. 20°C) and in a dry place. Avoid high temperature fluctuations. Do never store the battery in hot and high humid place. Avoid direct solar radiation, do not store next to heaters, at higher temperature the electrical performance may be reduced. Never heat above 60°C. Never let the battery in contact with water. Do not store in disorderly fashion or allow metal parts to be mixed with stored batteries, this can cause short circuit and heat generation.

## **Section 8 – Exposure Controls, Personal Protection**

**Under normal conditions (discharge, avoid prolonged deep discharge) release of ingredients does not occur.**

Respiratory Protection: NA

Ventilation Local Exhaust / Mechanical / Special / Other: NA

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|                            |    |
|----------------------------|----|
| Eye Protection:            | NA |
| Protective Gloves:         | NA |
| Other Protective Clothing: | NA |

### **Section 9 – Physical / Chemical Characteristics**

NA if the battery is not opened

### **Section 10 – Stability and Reactivity**

|  |               |
|--|---------------|
| Stability:                             | Stable        |
| Incompatibility:                       | NA            |
| Hazardous Polymerization:              | NA            |
| Condition to Avoid:                    | See section 7 |
| Hazardous Decomposition or Byproducts: | NA            |

### **Section 11 – Toxicological Information**

**Under normal conditions (discharge, avoid prolonged deep discharge) release of ingredients does not occur.** If accidental release occurs see information in sections 2, 3 and 4.

### **Section 12 – Ecological Information**

Primary gas cells provided by Renata SA 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 0.0005%.

### **Section 13 – Disposal Condition**

USA: Primary gas 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 REGULATION 2023/1542/EU and 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 law and rules.

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In order to avoid short circuit and heating, used zinc/air button cells should never be stored or transported in bulk. Proper measures against short circuit are:

Storage of batteries in original packaging  
Coverage of the terminals

### **Section 14 – Transport Information**

#### **IEC 60086-1 (Packing handling/instructions)**

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.

#### **General transport considerations**

Renata primary gas cells are considered to be “dry cell/dry batteries” and are regulated 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) exceptionally as **non-dangerous goods**.

#### **IATA DGR 2026 (67<sup>th</sup> Edition)**

Special Provision A123: “Examples of such batteries are: alkali-manganese, zinc-carbon and nickel-cadmium batteries. Any electrical battery or battery powered device, equipment or vehicle having the potential of a dangerous evolution of heat must be prepared for transport so as to prevent:

- (a) a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or, in the case of equipment, by disconnection of the battery and protection of exposed terminals); and
- (b) accidental activation.

The words “Not Restricted as per SP A123” 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 Code**

As primary gas cells are not explicitly mentioned in these Dangerous Goods regulations, there are no special Dangerous Goods shipment requirements for these products.

#### **USA (49 CFR)** For information about 49 CFR visit <https://www.phmsa.dot.gov>

§ 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

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conductive materials (e.g., metal) in the packaging [...]; and (3) Damage to terminals. If not impact resistant, the outer packaging should not be used as the sole means of protecting the battery terminals from damage or short circuiting. Batteries must be securely cushioned and packed to prevent shifting which could loosen terminal caps or reorient the terminals to produce short circuits.”

### **Section 15 – Regulatory Information**

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

### **Section 16 – Other Information**

If you need further information, please contact Renata SA sales representative.