



# Alkaline Batteries for HP Products

## PURPOSE OF THIS DOCUMENT

Hewlett-Packard Company ("HP") is providing the information in this document voluntarily as a service to its customers. The products addressed in this document are generally viewed as "articles" that are exempt from requirements for Material Safety Data Sheets ("MSDSs") such as the Hazard Communication Standard of the U.S. Occupational Safety and Health Administration ("OSHA") and similar requirements in other countries. In particular, these products are manufactured according to a specific design, have an end-use dependent upon such design, and do not normally release more than trace amounts of hazardous chemicals.

## PRODUCT IDENTIFICATION

The products covered by this document are alkaline batteries originally contained in HP-branded electronic products or otherwise provided by HP for use in or with such electronic products.

Such batteries may be produced by a number of manufacturers. Information about individual battery types can be found in documents provided to HP by the manufacturers. HP has not conducted an independent assessment of the information in the documents.

The information in this document is based on the documents provided by the manufacturers, and is intended to provide a generalized, composite view of the information in such documents for the convenience of HP's customers. The information in this document is not intended to be, and should not be used as, a substitute for the information provided by the manufacturers. To the extent that a manufacturer's information differs from any information in this document, the manufacturer's information should govern.

## HAZARDS IDENTIFICATION

Under normal conditions of handling and use, the battery is sealed. The battery may rupture violently or leak and cause burn injury if disposed of in fire, mixed with a different battery type, inserted backwards, disassembled, or attempted to be recharged if the battery is non-rechargeable. Ingestion of the contents of an open battery can cause serious chemical burns of the mouth, esophagus, and gastrointestinal tract. Contact between battery contents and the skin or eyes may cause severe irritation and burns. Inhalation of the battery contents may cause respiratory irritation. Choking may occur if batteries are swallowed.

## COMPOSITION

The composition of the alkaline batteries originally contained in HP-branded electronic products (or otherwise provided by HP for use in or with such products) may vary. The composition information below is intended to provide a generalized, composite view of the constituents of the relevant alkaline batteries. For information on the composition of individual battery types, please see the information available from the individual battery manufacturers.

Chemical	CAS No.	Percent (Max.)
Manganese dioxide	1313-13-9	45
Zinc metal	7440-66-6	25
Iron	7439-89-6	22
Potassium hydroxide	1310-58-3	18
Graphite	7782-42-5	6
Lead	7439-92-1	0.004
Cadmium	7440-43-9	0.002
Mercury	7439-97-6	0.0001

The constituents above are listed in one or more of the alkaline battery documents provided by the manufacturers, at concentrations up to the levels indicated in the last column of the table. One manufacturer document lists “water, paper, plastic and other,” but this is not listed in the table because these materials seem unlikely to be of regulatory concern. Additionally, the manufacturer does not identify the specific plastic or other component(s). One manufacturer lists “steel” (an alloy mostly of iron) as a component, but lists the CAS Number for iron. The information in the table above is based on the composition of the alkaline battery cells only, and does not reflect the constituents that may be present in other parts of an alkaline battery pack.

## FIRST AID MEASURES

Intact batteries do not represent a danger to health. If outer casing is damaged and exposure to internal materials results, the following first-aid actions are recommended:

In response to inhalation, provide fresh air and refer for medical attention. In addition, ventilate the contaminated area.

In response to eye contact, wash with copious amounts of water for fifteen (15) to thirty (30) minutes, lifting upper and lower lids, until no evidence of the chemical remains. Contact a physician.

In response to skin contact, remove contaminated clothes and rinse skin with soap and water. If irritation persists or chemical burn occurs, seek medical attention.

In response to ingestion, do not induce vomiting or provide food or drink. Rinse the mouth and surrounding skin with water. Seek immediate medical attention.

## FIRE FIGHTING MEASURES

In case of fire, use any class of extinguishing medium on batteries or their packing material. Suitable extinguishing media include water, carbon dioxide, dry chemical, or foam extinguishers. At the first sign of fire, move batteries away from the heat. In order to prevent rupture, cool exterior of batteries. Thermal degradation may produce hazardous fumes. Fire fighters should wear self-contained breathing apparatus and full protective clothing.

## ACCIDENTAL RELEASE MEASURES

Avoid direct contact with electrolyte. Clean-up personnel should wear appropriate protective clothing to avoid eye and skin contact, including safety glasses with side shields, neoprene or natural rubber gloves, and a positive pressure self-contained breathing apparatus. Room ventilation may be required. Battery materials should be collected in a sealed container.

## HANDLING AND STORAGE

Advice on safe handling: If battery is misused or abused, leakage, heating, or rupture may result. Do not charge alkaline batteries unless the batteries are labeled as rechargeable. Do not short. Ensure that batteries are installed in the correct direction. Do not mix different types of batteries or mix new and old batteries together. Do not directly heat, solder, or expose to fire. Do not disassemble, modify, or deform batteries. Do not allow children to replace batteries unless supervised by an adult.

Advice on storage: Batteries should be stored in well-ventilated, cool, and dry conditions. Storage temperatures should be between +10°C (50°F) and +25°C (77°F) and never exceed +30°C (86°F). Exposure to high temperature will speed the deterioration of performance and could cause electrolyte leakage. Do not refrigerate; this will not extend the performance of the battery. Extended exposure to extremes of humidity (over 95% RH and below 40% RH) should be avoided. Do not let batteries get wet.

## EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protective equipment is not required for handling intact cells. In response to ruptured cells, use the following equipment: gloves, safety glass, safety goggles, and a dust respirator.

## PHYSICAL AND CHEMICAL PROPERTIES

Form	Solid
Color	Various
Odor	Odorless
pH	n/a
Flash point	n/a
Vapor pressure	n/a
Density	n/a
Water solubility	Insoluble
Ignition temperature	n/a

## STABILITY AND REACTIVITY

Stability: Stable under normal handling and use. Thermal decomposition may produce hazardous fumes of zinc and manganese; caustic vapors of potassium hydroxide; and other toxic by-products. Hazardous polymerization will not occur.

Conditions to avoid: Keep away from fire and do not short, heat, or disassemble batteries as rupture of the battery or leakage of contents may occur. Do not charge batteries unless the batteries are labeled as rechargeable.

## TOXICOLOGICAL INFORMATION

Routine handling and use of this product does not result in significant exposure to substances of toxicological concern.

## ECOLOGICAL INFORMATION

To avoid improper exposure to environment, battery should be disposed of per the "Disposal Considerations" guidance below.

## DISPOSAL CONSIDERATIONS

Dispose of batteries in accordance with any applicable federal, state/provincial, and local regulations. HP encourages the environmentally sound recycling of these products. Some communities offer recycling or collection of alkaline batteries—contact your local government for disposal practices in your area.

## TRANSPORTATION

The alkaline batteries originally contained in HP-branded electronic products (or otherwise provided by HP for use in or with such electronic products) are generally of a type that are classified for purposes of transportation as “dry cell” batteries that are not regulated as hazardous materials or dangerous goods under most national and international regulations, and/or are subject to only limited transport requirements. In general, the batteries must be securely packaged to prevent a dangerous evolution of heat, short circuits, or damage to terminals. See, e.g., Special Provision 304 of the International Maritime Dangerous Goods (“IMDG”) Code (2012 Edition).

Additional requirements may also apply, relating to shipping documents, incident reporting, and the like. For example, under Special Provision A123 of the Dangerous Goods Regulations (55th Edition, 2014) of the International Air Transport Association (“IATA”), if the batteries are shipped by air under an air waybill, the document must include the words “Not Restricted” and the Special Provision number (A123) in the description of the material being shipped. Under Special Provision 130 of the U.S. Hazardous Materials Regulations, when dry cell batteries greater than 9 volts are shipped by air, the words “Not Restricted” must be placed on each package or on a transport document such as an air waybill; in addition, certain incidents involving alkaline batteries must be reported to proper authorities. See 49 C.F.R. § 172.102.

## ISSUE DATE

This document was issued on November 2014.