

Alkaline batteries are one of the most widely used types of primary batteries. Recycling and environmental impact Recycling alkaline batteries is essential to reduce environmental damage. Electrolyte: Potassium hydroxide (KOH) acts as the ionic conduction medium Advantages of alkaline batteries 1. Alkaline batteries work on the principle of an electrochemical reaction between zinc (Zn) and manganese dioxide (MnO<sub>2</sub>). Alkaline batteries were developed in the 1960s and have become the standard power source for portable devices such as remote controls, flashlights, and toys. Environmentally friendly: Unlike older batteries, alkaline batteries do not contain mercury, which reduces the impact on the environment. Leakage: When stored for long periods of time, potassium hydroxide can leak, damaging the device. Application areas Alkaline batteries are used in the following devices: o Low-power devices such as watches and remote controls. Many countries have initiatives to encourage the recycling and proper disposal of used batteries. Cathode (positive electrode): The cathode is made of manganese dioxide, which is reduced during the reaction: 3. High energy density: Alkaline batteries provide more energy per unit weight than traditional zinc-carbon batteries. 1.2.3.