

CATALYTIC RECOMBINATION OF HYDROGEN IN ALKALINE CELLS

ABSTRACT OF THE DISCLOSURE:

In rechargeable or primary electrochemical cells, hydrogen may evolve. The invention concerns the use of an auxiliary electrode material comprising manganese dioxide and a catalyst as the oxidant providing for the recombination of pressurized hydrogen, for example, the hydrogen being at pressures ranging from substantially zero gauge pressure up to the relief pressure of the cell. The cell is a sealed cell having a manganese dioxide cathode, a zinc anode and aqueous electrolyte contacting both anode and cathode. The aqueous electrolyte may be alkaline or it may be ammonium chloride or zinc chloride, or mixtures thereof. The auxiliary electrode material, which may be mixed with the cathode material or be formed into a discrete auxiliary electrode, may optionally comprise a porous substrate, and in any event comprises MnO_2 and a catalyst for the recombination of pressurized hydrogen with the MnO_2 . The substrate may be carbon black or graphite; the catalyst may be a metal, metal salt or metal oxide of elements such as lead, nickel, titanium, lanthanum, chromium, vanadium, tantalum and catalytically active alloys thereof. Most particularly, the catalyst may be silver, platinum, silver oxide, or silver dioxide.

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