[0005] The described claims and embodiments are directed to reduction and termination of shorting in the alkaline cells containing zinc oxide or zinc hydroxide.

SUMMARY

[0006] An alkaline electrochemical cell with both solid and dissolved zinc oxide or zinc hydroxide that has increased efficiency over the prior art resulting in increased runtime due to mechanisms within to decrease or eliminate shorting.

[0007] In one aspect, the present disclosure refers to an alkaline electrochemical cell, comprising:

a) a container; and

b) an electrode assembly disposed within the container and comprising a cathode, an anode, a separator located between the cathode and the anode, and an electrolyte shot solution;

wherein the anode comprises 1) solid zinc, 2) anolyte, 3) solid zinc oxide particles, solid zinc hydroxide particles, zinc oxide dissolved in said anolyte, or zinc hydroxide dissolved in said anolyte, and 4) a silicon donor; and

wherein the silicon donor is present in an amount of at least 0.036 weight percent of the alkaline electrochemical cell's full cell electrolyte solution.

[0008] In one example, the present disclosure refers to an alkaline electrochemical cell, comprising:

a) a container; and

b) an electrode assembly disposed within the container and comprising a cathode, an anode, a separator located between the cathode and the anode, and an electrolyte shot solution;

wherein the anode comprises 1) solid zinc, 2) anolyte, and 3) solid zinc oxide particles, solid zinc hydroxide particles, zinc oxide dissolved in said anolyte, or zinc hydroxide dissolved in said anolyte; and

wherein the alkaline electrochemical cell comprises a total zinc oxide weight of at least 3.0 weight percent; and

wherein the separator is a bilayer type separator, or a low-porosity separator, or a laminated separator with a cellophane layer.

BRIEF SUMMARY OF THE DRAWINGS

[0009] Figure 1 is a cross-sectional elevational view of an alkaline electrochemical cell of an embodiment.