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devices will understand that solar and ac power sources are suitable for use with the materials of the invention.

Example 11

Secondary Solution Preparation

A solution of chlorine dioxide was prepared by mixing hydrochloric acid with sodium chlorite in tap water. After formation of a yellow colored solution with a strong chlorine odor, polyacrylic acid and polyacrylamide copolymer particles were introduced. The particles rapidly absorbed the solution containing dissolved chlorine dioxide gas. The particles were stable and retained the yellow color for many weeks. When 5-10 individual particles were transferred to a one liter container of water, the chlorine dioxide concentration was determined to be approximately 1 ppm, using a DPD chlorine test kit.

Example 12

Polycarbonate Storage Materials

A solution of chlorine dioxide, yellow in color, was prepared by mixing aqueous solutions of chlorite and hydrochloric acid. This solution was used to fill a transparent polycarbonate container. The container was sealed and stored for several days. After removing the chlorine dioxide solution, the polycarbonate container retained a yellow color. The empty container was placed in a refrigerator with an unpleasant odor. After several minutes the unpleasant odor was not longer detected. The polycarbonate container slowly lost all yellow color over a period of weeks when exposed to the atmosphere.

The invention claimed is:

1. A composition for the generation and storage of a reactive gas consisting of:
 - one or more particles consisting of one or more super-absorbent polymers, and
 - a solvent containing one or more dissolved reactive gas precursors, wherein the solvent is absorbed to the one or more super-absorbent polymers, and
 - at least one or more of an inhibiting chemical agent able to stabilize the generation of the reactive gas, a suspended agent, and a dissolved agent, wherein the inhibiting chemical agent is a base.

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2. The composition of claim 1, wherein the reactive gas precursors are selected from a cation, inorganic acid, organic acid, oxidation agent, reduction agent, base, anion, soluble salt, and combinations thereof.

3. The composition of claim 2, wherein the anion is selected from a chlorite, chlorate, sulfite, bisulfite, sulfide, sulfate, carbonate, bicarbonate, cyanide, hypochlorite, nitrite, nitrate, hydroxide, chloride, bromide, iodide, and fluoride anion.

4. The composition of claim 2, wherein the oxidizing agent is selected from hypochlorite, hypochlorous acid, ozone, peroxide, and monopersulfate.

5. The composition of claim 1, wherein the gas is a halogen-containing gas, a carbon containing gas, an oxygen-containing gas, a phosphorous-containing gas, a sulfur-containing gas, or a nitrogen-containing gas.

6. The composition of claim 5, wherein the gas is chlorine, bromine, iodine, carbon dioxide, oxygen, nitrogen, sulfur dioxide, hydrogen sulfide, hydrogen cyanide, chlorine monoxide, chlorine dioxide, nitrogen monoxide, and nitrogen dioxide.

7. The composition of claim 1, wherein the solvent is a polar liquid, a non-polar liquid, or a combination thereof.

8. The composition of claim 1, wherein the one or more particles is a liquid absorber incorporating natural or synthetic polymers of organic, inorganic, or combined origin.

9. The composition of claim 1, wherein the particle is a liquid absorber incorporating natural or synthetic minerals.

10. The composition of claim 1, wherein the one or more super-absorbent polymers is a polyacrylic acid, a polyacrylamide or a copolymer thereof.

11. The composition of claim 1, wherein the composition is packaged in a gas permeable packaging material that allows gas transport but not liquid transport.

12. The composition of claim 1 wherein the composition comprises a gas concentration high enough to impart color to the composition.

13. The composition of claim 1, wherein the suspended agent comprises polycarbonate, polycarbonate derivatives, or combinations thereof.

14. The composition of claim 1, wherein a first reactive gas precursor is selected from a cation, inorganic acid, organic acid, and oxidation agent, and a second reactive gas precursor is selected from a reduction agent, base, anion, and soluble salt.

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