Claims

1. A process to reduce the corrosion of equipment containing a chromium-containing alloy in the oil and/or gas industry, comprising a step of contacting the equipment containing a chromium-containing alloy with a solution containing at least 1 wt% on total weight of the solution of glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or methylglycine N,N-diacetic acid or a salt thereof (MGDA) having an acidic pH.

2. A process to reduce the corrosion of equipment containing a chromium-containing alloy in the treatment of a subterranean formation wherein an acidic solution is introduced into the formation and at least part of the acid in the acidic solution is glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or methylglycine N,N-diacetic acid or a salt thereof (MGDA), and the acidic solution comes into contact with the equipment containing a chromium-containing alloy.

3. The process of claim 2 wherein the amount of GLDA and/or MGDA is at least 1 wt% on total weight of the solution.

4. The use of acidic solutions containing at least 1 wt% on total weight of the solution of glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or methylglycine N,N-diacetic acid or a salt thereof (MGDA) to prevent or reduce corrosion in equipment containing a chromium-containing alloy in the oil and/or gas industry.

5. The use of claim 4 to clean or descale the equipment.

6. The use of claim 4 to treat a subterranean formation to produce oil and/or gas therefrom.

7. The use of any one of claims 4 to 6 wherein the solution replaces another chelating agent –containing and/or acidic chemical.

8. The use of any one of claims 4 to 7 in oil and/or gas production in completions and stimulation by acidizing, or fracturing.

9. The use of any one of claims 4 to 8 or the process of any one of claims 1 to 3 wherein the solution contains in addition water, a surfactant, an acid and/or a corrosion inhibitor.

10. The use of any one of claims 4 to 9 or the process of any one of claims 1 to 3 or 9 wherein the solution in addition contains one or more additives of the group of solvents like water or other solvents like alcohols, glycols, further organic solvents or mutual solvents, soaps, surfactants, dispersants, emulsifiers, pH control additives, such as further acids or bases, biocides/bactericides, water softeners, bleaching agents, enzymes, brighteners, fragrances, antifouling agents, antifoaming agents, anti-sludge agents, corrosion inhibitors, corrosion inhibitor intensifiers, viscosifiers, wetting agents, diverting agents, oxygen scavengers, carrier fluids, fluid loss additives, friction reducers, stabilizers, rheology modifiers, gelling agents, scale inhibitors, breakers, salts, brines, particulates, crosslinkers, salt substitutes, relative permeability modifiers, sulfide scavengers, fibres, and nanoparticles.

11. A system containing a piece of equipment applied in the oil and/or gas industry made at least partly from a chromium-containing alloy in contact with an acidic solution containing at least 1 wt% on total weight of the solution of glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or methylglycine N,N-diacetic acid or a salt thereof (MGDA).

12. The system of claim 11 wherein the solution contains in addition water, a surfactant, an acid and/or a corrosion inhibitor.

13. The system of claim 11 or 12 wherein the piece of equipment is a pump, tap, tube, tank, container, vessel, pipe or a device that holds or contains the solution or through which the solution flows.

14. The system of any one of claims 11 to 13 wherein the chromium-containing alloy contains a stainless steel comprising 5 to 30 wt% of chromium on total metal content.

15. The system of claim 14 wherein the stainless steel is chosen from the group of austenitic stainless steels, superaustenitic stainless steels, ferritic stainless steels, martensitic stainless steels, precipitation-hardening martensitic stainless steels, and Duplex stainless steels.

Claims

1. A process to reduce the corrosion of equipment containing a chromium-containing alloy in the oil and/or gas industry, comprising a step of contacting the equipment containing a chromium-containing alloy with a solution containing between 2 and 50 wt% on total weight of the solution of glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or between 2 and 40 wt% methylglycine N,N-diacetic acid or a salt thereof (MGDA) having an acidic pH.

2. A process to reduce the corrosion of equipment containing a chromium-containing alloy in the treatment of a subterranean formation wherein an acidic solution is introduced into the formation and at least part of the acid in the acidic solution is glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or methylglycine N,N-diacetic acid or a salt thereof (MGDA), and the acidic solution comes into contact with the equipment containing a chromium-containing alloy.

3. The process of claim 2 wherein the amount of GLDA and/or MGDA is at least 1 wt% on total weight of the solution.

4. The use of acidic solutions containing between 2 and 50 wt% on total weight of the solution of glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or between 2 and 40 wt% methylglycine N,N-diacetic acid or a salt thereof (MGDA) to prevent or reduce corrosion in equipment containing a chromium-containing alloy in the oil and/or gas industry.

5. The use of claim 4 to clean or descale the equipment.

6. The use of claim 4 to treat a subterranean formation to produce oil and/or gas therefrom.

7. The use of any one of claims 4 to 6 in oil and/or gas production in completions and stimulation by acidizing, or fracturing.

8. The use of any one of claims 4 to 7 or the process of any one of claims 1 to 3 wherein the solution contains in addition water, a surfactant, an acid and/or a corrosion inhibitor.

9. The use of any one of claims 4 to 8 or the process of any one of claims 1 to 3 or 9 wherein the solution in addition contains one or more additives of the group of solvents like water or other solvents like alcohols, glycols, further organic solvents or mutual solvents, soaps, surfactants, dispersants, emulsifiers, pH control additives, such as further acids or bases, biocides/bactericides, water softeners, bleaching agents, enzymes, brighteners, fragrances, antifouling agents, antifoaming agents, anti-sludge agents, corrosion inhibitors, corrosion inhibitor intensifiers, viscosifiers, wetting agents, diverting agents, oxygen scavengers, carrier fluids, fluid loss additives, friction reducers, stabilizers, rheology modifiers, gelling agents, scale inhibitors, breakers, salts, brines, particulates, crosslinkers, salt substitutes, relative permeability modifiers, sulfide scavengers, fibres, and nanoparticles.

10. A system containing a piece of equipment applied in the oil and/or gas industry made at least partly from a chromium-containing alloy in contact with an acidic solution containing between 2 and 50 wt% on total weight of the solution of glutamic acid N,N-diacetic acid or a salt thereof (GLDA) and/or between 2 and 40 wt% methylglycine N,N-diacetic acid or a salt thereof (MGDA).

11. The system of claim 10 wherein the solution contains in addition water, a surfactant, an acid and/or a corrosion inhibitor.

12. The system of claim 10 or 11 wherein the piece of equipment is a pump, tap, tube, tank, container, vessel, pipe or a device that holds or contains the solution or through which the solution flows.

13. The system of any one of claims 10 to 12 wherein the chromium-containing alloy contains a stainless steel comprising 5 to 30 wt% of chromium on total metal content.

14. The system of claim 13 wherein the stainless steel is chosen from the group of austenitic stainless steels, superaustenitic stainless steels, ferritic stainless steels, martensitic stainless steels, precipitation-hardening martensitic stainless steels, and Duplex stainless steels.