CLAIMS

1. A method for coating an aluminum alloy heat exchanger, comprising:

subjecting at least one surface of the heat exchanger to a pre-treatment process including cleaning;

conversion coating the at least one surface of the heat exchanger with a trivalent chromium compound; and

subjecting the at least one conversion coated surface to an electro-coating in an aqueous solution containing an organic corrosion inhibitor.

2. The method of claim 1, further comprising subjecting the at least one surface to a surface coating including an application of a top coat of a solvent borne solution comprising a corrosion inhibiting pigment.

3. The method of claim 2, wherein the solvent borne coating composition comprises a polyurethane.

4. The method of claim 1, wherein the conversion coating further comprises immersing the heat exchanger in a conversion treatment bath having dissolved species of a water soluble trivalent chromium compound and a salt of hexafluorozirconic acid.

5. The method of claim 4, wherein the trivalent chromium compound is trivalent chromium sulfate.

6. The method of claim 1, wherein the conversion coating further comprises immersing the heat exchanger in a conversion treatment bath for a predetermined contact time in an ambient temperature environment.

7. The method of claim 1, wherein the pre-treatment process includes subjecting the heat exchanger to at least one of vapor degreasing using trichloroethylene, solvent emulsion cleaning, and immersion in a surfactant.

8. The method of claim 1, wherein the electro-coating further comprises subjecting the heat exchanger to a cathodic electro-coating with the heat exchanger being the cathode.

9. The method of claim 1, wherein the heat exchanger comprises fins, tubes, or plates.

10. The method of claim 1, wherein the electro-coating further comprises subjecting the heat exchanger to an anodic electro-coating with the heat exchanger being the anode.

11. A method for coating an aluminum alloy heat exchanger, comprising:

subjecting at least one surface of the heat exchanger to a pre-treatment process including cleaning;

conversion coating the at least one surface of the heat exchanger with a trivalent chromium compound;

subjecting the at least one surface to an electro-coating in an aqueous solution containing an organic corrosion inhibitor; and

subjecting the electro-coated heat exchanger to a surface coating including application of a top coat comprising a solvent borne coating composition comprising a corrosion inhibiting pigment.

12. The method of claim 11, wherein the solvent borne coating composition comprises a polyurethane.

13. The method of claim 11, wherein the conversion coating further comprises immersing the heat exchanger in a conversion treatment bath having dissolved species of a water soluble trivalent chromium compound and a salt of hexafluorozirconic acid.

14. The method of claim 13, wherein the trivalent chromium compound is trivalent chromium sulfate.

15. The method of claim 11, wherein the conversion coating further comprises immersing the heat exchanger in a conversion treatment bath for a predetermined contact time in an ambient temperature environment.

16. The method of claim 11, wherein the conversion coating further comprises spraying a solution containing the trivalent chromium compound onto the at least one surface.

17. The method of claim 11, wherein the pre-treatment process further comprises at least one of vapor degreasing using trichloroethylene, solvent emulsion cleaning, and immersion in a surfactant.

18. The method of claim 11, wherein the heat exchanger comprises fins, tubes, or plates.

19. The method of claim 11, wherein the electro-coating further comprises subjecting the heat exchanger to a cathodic electro-coating with the heat exchanger being the cathode.

20. The method of claim 11, wherein the electro-coating further comprises subjecting the heat exchanger to an anodic electro-coating with the heat exchanger being the anode.

CLAIMS

1. A method for coating an aluminum alloy heat exchanger, comprising:

subjecting at least one surface of the heat exchanger to a pre-treatment process including cleaning;

conversion coating the at least one surface of the heat exchanger with a trivalent chromium compound;

subjecting the at least one conversion coated surface to an electro-coating in an aqueous solution containing an organic corrosion inhibitor; and

subjecting the at least one electro-coated surface to a surface coating including application of a top coat comprising a solvent borne coating composition comprising a corrosion inhibiting pigment.

2. The method of claim 1, wherein the solvent borne coating composition comprises a polyurethane.

3. The method of claim 1, wherein the conversion coating further comprises immersing the heat exchanger in a conversion treatment bath having dissolved species of a water soluble trivalent chromium compound and a salt of hexafluorozirconic acid.

4. The method of claim 3, wherein the trivalent chromium compound is trivalent chromium sulfate.

5. The method of claim 1, wherein the conversion coating further comprises immersing the heat exchanger in a conversion treatment bath for a predetermined contact time in an ambient temperature environment.

6. The method of claim 1, wherein the conversion coating further comprises spraying a solution containing the trivalent chromium compound onto the at least one surface.

7. The method of claim 1, wherein the pre-treatment process further comprises at least one of vapor degreasing using trichloroethylene, solvent emulsion cleaning, and immersion in a surfactant.

8. The method of claim 1, wherein the heat exchanger comprises fins, tubes, or plates.

9. The method of claim 1, wherein the electro-coating further comprises subjecting the heat exchanger to a cathodic electro-coating with the heat exchanger being the cathode.

10. The method of claim 1, wherein the electro-coating further comprises subjecting the heat exchanger to an anodic electro-coating with the heat exchanger being the anode.