

Abstract of the Disclosure

A chromium free conversion coating at least equivalent in corrosion protective quality to conventional chromate conversion coatings can be formed on metals, particularly cold rolled steel, by a dry-in-place aqueous acidic liquid comprising:

- 5 (A) a component of anions, each of said anions consisting of (i) at least four fluorine atoms and (ii) at least one atom of an element selected from the group consisting of titanium, zirconium, hafnium, silicon, and boron, and, optionally, (iii) ionizable hydrogen atoms, and, optionally, (iv) one or more oxygen atoms;
- 10 (B) a component of cations of elements selected from the group consisting of cobalt, magnesium, manganese, zinc, nickel, tin, zirconium, iron, and copper; the ratio of the total number of cations of this component to the total number of anions of component (A) being at least 1:5;
- (C) sufficient free acid to give the composition a pH in the range from 0.5 to 5.0;
- (D) a component selected from the group consisting of phosphorus-containing
15 inorganic oxyanions and phosphonate anions; and
- (E) a component selected from the group consisting of water-soluble and water-dispersible organic polymers and polymer-forming resins.

This Sheet Has Been Replaced

