WE CLAIM:

1. ~~A pretreatment composition for treating a metal substrate comprising: (a) a rare earth metal and (b) a zirconyl compound~~A pretreatment composition for treating a metal substrate comprising: (a) a soluble rare earth metal., (b) a zirconyl compound, and c) an electropositive metal, wherein the pretreatment composition has no more than 1 ppm of free fluoride (based on elemental fluoride), wherein a pH of the pretreatment composition ranges from 2.9 to 4.4, and wherein upon contact with the metal substrate, the pretreatment composition reacts with and chemically alters a surface of the metal substrate and binds to the surface of the metal substrate to form a protective layer.

2. The pretreatment composition of Claim 1, wherein said zirconyl compound (b) comprises zirconyl nitrate, zirconyl acetate, zirconyl carbonate, protonated zirconium basic carbonate, zirconyl sulfate, zirconyl chloride, zirconyl iodide, zirconyl bromide or a mixture thereof.

~~3. The pretreatment composition of Claim 1 further comprising: (c) an electropositive metal.~~

~~4. The pretreatment composition of Claim 1 further comprising: (c) a group IVB and/or group VB metal.~~

~~5~~3. The pretreatment composition of Claim ~~3~~ 1 further comprising: (d) a group IVB and/or group VB metal.

~~6~~4. The pretreatment composition of Claim 1, wherein said rare earth metal (a) comprises yttrium, praseodymium, cerium, or mixtures thereof.

~~7~~5. The pretreatment composition of Claim 1, wherein a source of said rare earth metal (a) comprises a rare earth metal compound.

~~8~~6. The pretreatment composition of Claim ~~7~~5, wherein said rare earth metal compound comprises a compound of yttrium, cerium, praseodynium, or a mixture thereof.

~~9~~7. The pretreatment composition of Claim 1, wherein the ratio of zirconium from said zirconyl compound to said rare earth metal in the pretreatment composition is between 200/1 and 1/1.

~~10~~8. The pretreatment composition of Claim 1, wherein the amount of zirconium from said zirconyl compound in the pretreatment composition comprises from 10 ppm to 5000 ppm.

~~11~~9. The pretreatment composition of Claim 1, wherein said pretreatment composition is substantially free of free fluoride.

~~12~~10. A metal substrate treated with the pretreatment composition of Claim 1.

~~13. A metal substrate treated with the pretreatment composition of Claim 3.~~

~~14. A metal substrate treated with the pretreatment composition of Claim 4.~~

~~15~~11. A metal substrate treated with the pretreatment composition of Claim ~~5~~3.

~~16~~12. The pretreatment composition of Claim 3, wherein the amount of metal from said zirconyl compound and from said group IVB and/or group VB metal in the pretreatment composition comprises from 10 ppm to 5000 ppm.

~~17~~13. ~~A method for treating a metal substrate comprising:~~
~~(a) contacting the metal substrate with a pretreatment composition comprising a rare earth metal and a zirconyl compound~~A method for treating a metal substrate comprising:
contacting the metal substrate with a pretreatment composition comprising a soluble rare earth metal, a zirconyl compound, and an electropositive metal, wherein the pretreatment composition has no more than 1 ppm of free fluoride (based on elemental fluoride), wherein a pH of the pretreatment composition ranges from 2.9 to 4.4, and wherein upon contact with the metal substrate, the pretreatment composition reacts with and chemically alters a surface of the metal substrate and binds to the surface of the metal substrate to form a protective layer.

~~18~~14. The method according to Claim ~~17~~13, wherein said pretreatment composition is contacted to the metal substrate without the prior application of an electropositive metal.

~~19~~15. The method of Claim ~~17~~13, wherein said pretreatment composition further comprises a group IVB and/or group VB metal ~~and/or (d) an electropositive metal~~.

~~20~~16. The method of Claim ~~17~~13 further comprising electrophoretically depositing a coating composition onto the metal substrate after step (a).