19. The method according to any one of claims 1 to 18, wherein the neutral titanium dioxide sol has a viscosity of about 40 centipoise to about 100 centipoise.

20. A method for preparing a photocatalytic, neutral titanium dioxide sol, the method comprising:

processing a hydrous titanium dioxide gel in a filter press with demineralized water having a Ca^{2+} concentration of about 50 ppm or less until achieving a filtrate conductivity of about 500 µS/cm or less and forming a titanium dioxide filter cake;

peptizing the titanium dioxide filter cake by adding the filter cake to an alkaline peptizing agent with mixing to provide a peptized alkaline titanium dioxide sol with a TiO_2 concentration of about 30% by weight or greater, said peptizing being substantially completed in a time of about 60 minutes or less;

neutralizing the peptized alkaline titanium dioxide sol with phosphoric acid at a concentration of about 85% w/w or greater to provide a photocatalytic, neutral titanium dioxide sol with a pH of about 8 to about 9 and a TiO_2 concentration of about 35% by weight or greater.