WHAT IS CLAIMED IS:

1. A method of catalyzing a chemical reaction comprising adding a catalyst to a reaction mixture, wherein the catalyst comprises a ~~tri-substituted~~trioctyl phosphine~~ having at least one substituent that is an alkyl group~~; and wherein the reaction mixture comprises:

i) a) ~~an isocyanate-functional material~~ uretdione and b) a hydroxyl-, thiol- and/or amine-functional material wherein the reaction mixture components i) a) and i) b) are provided in separate packages and are mixed together immediately prior to the reaction; or

~~ii) a) a uretdione and b) a hydroxyl-, thiol- and/or amine- functional material ; or~~

iii) a) an anhydride and b) a hydroxyl-functional material.

~~2. The method of claim 1, wherein the tri-substituted phosphine is trioctyl phosphine.~~

~~3~~2. The method of claim 1, wherein the chemical reaction is conducted at ambient temperature.

~~4~~3. The method of claim 1, wherein the chemical reaction is conducted at a temperature greater than 30 °C.

~~5. The method of claim 1, wherein the reaction mixture components are provided in separate packages and are mixed together immediately prior to the reaction.~~

~~6~~4. A method of catalyzing a chemical reaction comprising adding a catalyst to a reaction mixture, wherein the catalyst comprises a tri-substituted phosphine that is blocked with an acid and ~~having~~ has at least one substituent that is an alkyl group, and wherein the reaction mixture is essentially free of Michael acceptors and the reaction mixture comprises:

i) an isocyanate-functional material that is essentially free of oxadiazinetrione rings; and

ii) a hydroxyl-functional material.

~~7~~5. The method of claim ~~6~~4, wherein the tri-substituted phosphine is trioctyl phosphine.

~~8~~6. The method of claim ~~6~~4, wherein the catalyst further comprises a tin compound.

~~9~~7. The method of claim ~~6~~4, wherein the catalyst and the reaction mixture are essentially free of tin compounds.

~~10. The method of claim 6 wherein the phosphine is blocked with an acid.~~

~~11~~8. The method of claim ~~6~~4, wherein the reaction mixture is a powder or liquid curable composition that ~~may be~~ is capable of being cast, extruded, rolled, or applied to a substrate as a coating or laminated film.

~~12~~9. The method of claim ~~11~~8, wherein the reaction mixture yields a transparent reaction product.

~~13~~10. A method of catalyzing a chemical reaction comprising adding a catalyst to a reaction mixture, wherein the catalyst is essentially free of tin compounds and comprises a tri-substituted phosphine that is blocked with an acid and ~~having~~ has at least one substituent that is an alkyl group, and the reaction mixture is essentially free of Michael acceptors and tin compounds, and the reaction mixture comprises:

i) an isocyanate-functional material; and

ii) a hydroxyl-functional material.

~~14~~11. The method of claim ~~13~~10, wherein the tri-substituted phosphine is trioctyl phosphine.

~~15~~12. The method of claim ~~13~~10, wherein the reaction mixture is a powder or liquid curable composition that ~~may be~~is capable of being cast, extruded, rolled, or applied to a substrate as a coating or laminated film.

~~16~~13. The method of claim ~~15~~12, wherein the reaction mixture yields a transparent reaction product.

~~17~~14. A curable composition comprising:

a) a reaction mixture comprising:

i) a) a polyisocyanate and b) a polythiol and/or a polyamine; ii) a) a uretdione and b) a polyol, a polythiol and/or a polyamine;

or

iii) a) an anhydride and b) a polyol; and

b) a catalyst comprising a tri-substituted phosphine having at least one substituent that is an alkyl group.

~~18~~15. A curable composition comprising:

a) a reaction mixture comprising:

i) a polyisocyanate; and

ii) a polyol; and

b) a catalyst comprising a tri-substituted phosphine that is blocked with an acid and ~~having~~ has at least one substituent that is an alkyl group; wherein the polyisocyanate is essentially free of oxadiazinetrione rings, and the reaction mixture is essentially free of Michael acceptors.

~~19~~16. A curable composition comprising:

a) a reaction mixture comprising:

i) a polyisocyanate; and

ii) a polyol; and

b) a catalyst, wherein the catalyst is essentially free of tin compounds and comprises a tri-substituted phosphine that is blocked with an acid and ~~having~~ has at least one substituent that is an alkyl group, and the reaction mixture is essentially free of Michael acceptors and tin compounds.