WHAT IS CLAIMED IS:

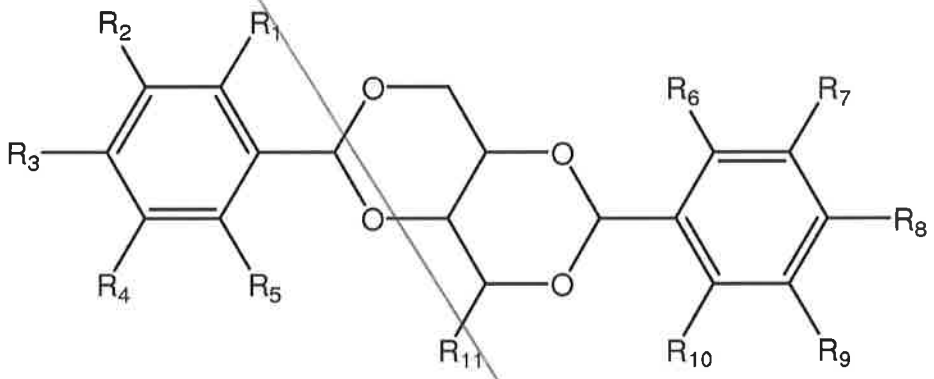
1. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing an additive composition comprising:

(i) at least one clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(ii) a coloring agent; and

(c) mixing the thermoplastic polymer and the additive composition to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer and the additive composition are separately provided; wherein the amount of clarifying agent in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring

agent present in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting a Δa* value and a Δb* value satisfying each of the following inequalities

$$\Delta b^* \leq 0 - (2.8571 \times \Delta a^*)$$
$$\Delta b^* \geq -1.5231 + (5.8461 \times \Delta a^*)$$
$$\Delta b^* \geq -2.6000 - (1.0909 \times \Delta a^*)$$
$$\Delta b^* \leq 0 + (1.2727 \times \Delta a^*)$$

wherein Δb* is not zero; wherein the Δa* value and the Δb* value are calculated by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from a control thermoplastic polymer composition, measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition, and subtracting the a* and b* values for the plaque made from the control thermoplastic polymer composition from the a* and b* values for the plaque made from the thermoplastic polymer composition; and wherein the control thermoplastic polymer composition contains the thermoplastic polymer and the clarifying agent but does not contain the coloring agent.

2. The method of claim 1, wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

3. The method of claim 1, wherein the thermoplastic polymer is a polyolefin.

4. The method of claim 3, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

5. The method of claim 1, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

6. The method of claim 5, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

7. The method of claim 6, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

8. The method of claim 1, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

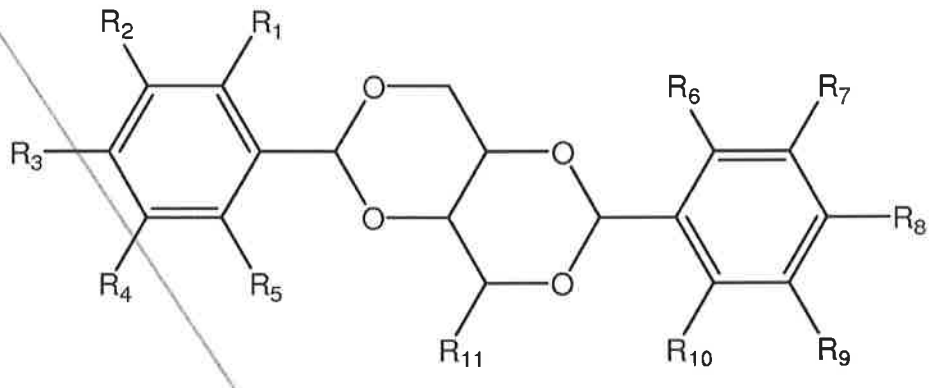
9. The method of claim 1, wherein the coloring agent is a pigment.

10. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$;

(c) providing a coloring agent; and

(d) mixing the thermoplastic polymer, the clarifying agent, and the coloring agent to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer, the clarifying agent, and the coloring agent are each separately provided; wherein the amount of clarifying agent present in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring agent in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting a $\Delta a^*$ value and a $\Delta b^*$ value satisfying each of the following inequalities

$$\Delta b^* \leq 0 - (2.8571 \times \Delta a^*)$$
$$\Delta b^* \geq -1.5231 + (5.8461 \times \Delta a^*)$$
$$\Delta b^* \geq -2.6000 - (1.0909 \times \Delta a^*)$$
$$\Delta b^* \leq 0 + (1.2727 \times \Delta a^*)$$

wherein $\Delta b^*$ is not zero; wherein the $\Delta a^*$ value and the $\Delta b^*$ value are calculated by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from a control thermoplastic polymer composition, measuring an a* value and a b*

value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition, and subtracting the a* and b* values for the plaque made from the control thermoplastic polymer composition from the a* and b* values for the plaque made from the thermoplastic polymer composition; and wherein the control thermoplastic polymer composition contains the thermoplastic polymer and the clarifying agent but does not contain the coloring agent.

11. The method of claim 10, wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

12. The method of claim 10, wherein the thermoplastic polymer is a polyolefin.

13. The method of claim 12, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

14. The method of claim 10, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

15. The method of claim 14, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

16. The method of claim 15, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

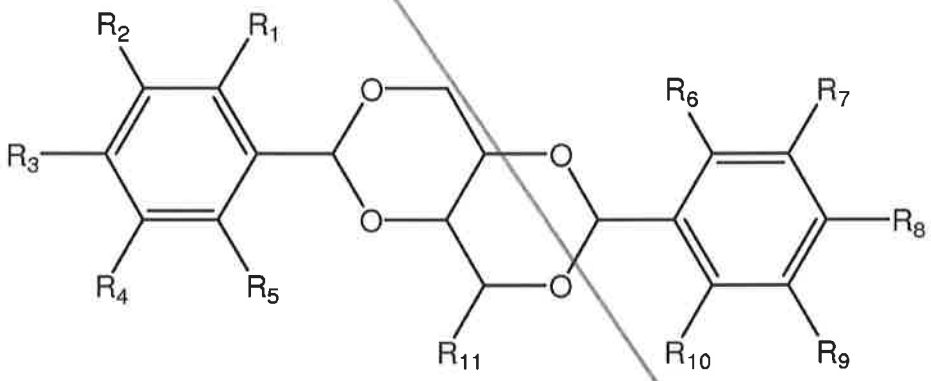
17. The method of claim 10, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

18. The method of claim 10, wherein the coloring agent is a pigment.

19. An additive composition consisting essentially of:

(a) a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(b) a coloring agent,

wherein the coloring agent is present in the additive composition in an amount such that a thermoplastic polymer composition exhibits a $\Delta a^*$ value and a $\Delta b^*$ value satisfying each of the following inequalities

$$\Delta b^* \leq 0 - (2.8571 \times \Delta a^*)$$

$$\Delta b^* \geq -1.5231 + (5.8461 \times \Delta a^*)$$

$$\Delta b^* \geq -2.6000 - (1.0909 \times \Delta a^*)$$

$$\Delta b^* \leq 0 + (1.2727 \times \Delta a^*)$$

wherein $\Delta b^*$ is not zero; wherein the thermoplastic polymer composition comprises a thermoplastic polymer and the additive composition in an amount sufficient to provide about 100 ppm to about 5,000 ppm of the clarifying agent in the thermoplastic polymer composition, based on the total weight of the thermoplastic polymer composition; and wherein the $\Delta a^*$ value and the $\Delta b^*$ value are calculated by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from a control thermoplastic polymer composition, measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition, and subtracting the a* and b* values for the plaque made from the control thermoplastic polymer composition from the a* and b* values for the plaque made from the thermoplastic polymer composition; and wherein the control thermoplastic polymer composition contains the thermoplastic polymer and the clarifying agent but does not contain the coloring agent.

20. The additive composition of claim 19, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

21. The additive composition of claim 20, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is —$CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

22. The additive composition of claim 21, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$.

23. The additive composition of claim 19, wherein the coloring agent is a pigment.

24. The additive composition of claim 19, wherein the coloring agent is present in the additive composition in an amount of about 0.02% to about 10%, by weight, based on the total weight of clarifying agent and coloring agent present in the additive composition.

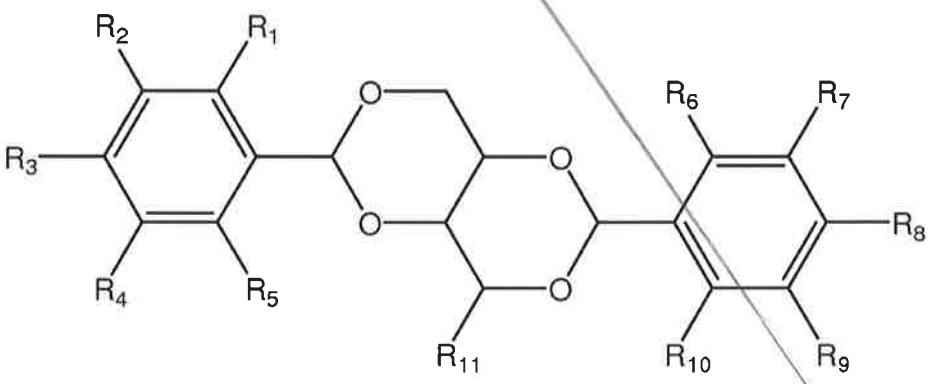
25. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing an additive composition comprising:

(i) at least one clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(ii) a coloring agent; and

(c) mixing the thermoplastic polymer and the additive composition to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer and the additive composition are separately provided; wherein the amount of clarifying agent in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring agent present in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting an a* value and a b* value satisfying each of the following inequalities

$$b^* \leq 3.4 - (1.4196 \times a^*)$$
$$b^* \geq 3.1 + (9 \times a^*)$$
$$b^* \geq 1 - a^*$$
$$b^* \leq 3.6174 + (0.7449 \times a^*)$$

wherein the a* value and the b* value are determined by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition.

26. The method of claim 25, wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

27. The method of claim 25, wherein the thermoplastic polymer is a polyolefin.

28. The method of claim 27, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

29. The method of claim 25, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

30. The method of claim 29, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

31. The method of claim 30, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

32. The method of claim 25, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

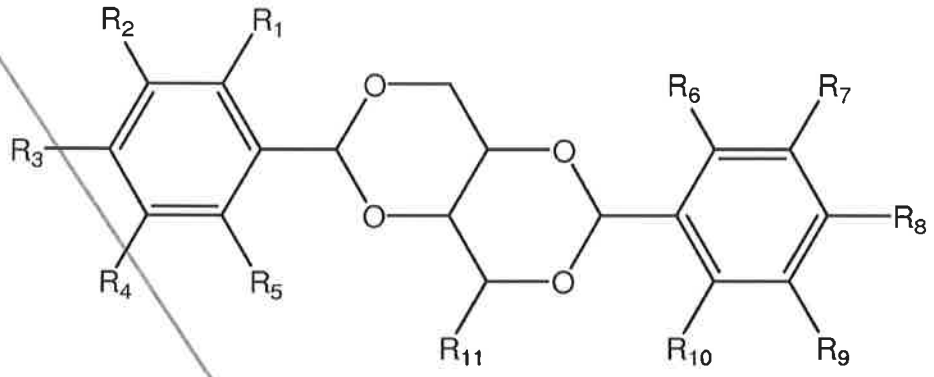
33. The method of claim 25, wherein the coloring agent is a pigment.

34. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$;

(c) providing a coloring agent; and

(d) mixing the thermoplastic polymer, the clarifying agent, and the coloring agent to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer, the clarifying agent, and the coloring agent are each separately provided; wherein the amount of clarifying agent present in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring agent in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting an a* value and a b* value satisfying each of the following inequalities

$$b^* \leq 3.4 - (1.4196 \times a^*)$$

$$b^* \geq 3.1 + (9 \times a^*)$$

$$b^* \geq 1 - a^*$$

$$b^* \leq 3.6174 + (0.7449 \times a^*)$$

wherein the a* value and the b* value are determined by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition.

35. The method of claim 34, wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

36. The method of claim 34, wherein the thermoplastic polymer is a polyolefin.

37. The method of claim 36, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

38. The method of claim 34, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

39. The method of claim 38, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

40. The method of claim 39, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

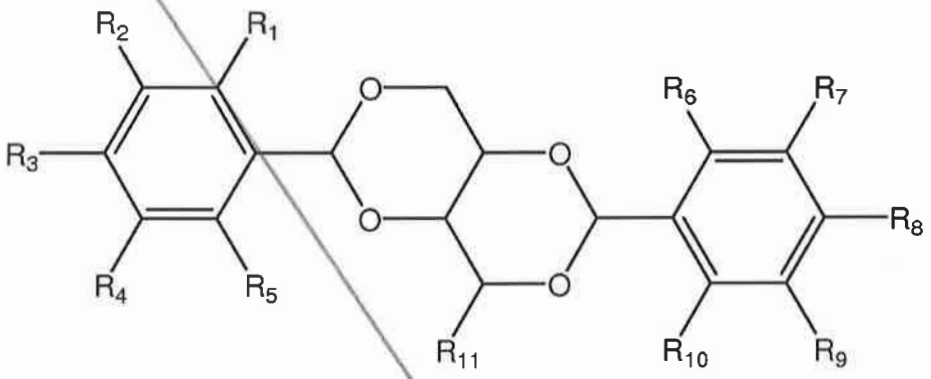
41. The method of claim 34, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

42. The method of claim 34, wherein the coloring agent is a pigment.

43. An additive composition consisting essentially of:

(a) a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(b) a coloring agent,

wherein the coloring agent is present in the additive composition in an amount such that a thermoplastic polymer composition exhibits a a* value and a b* value satisfying each of the following inequalities

$$b^* \leq 3.4 - (1.4196 \times a^*)$$

$$b^* \geq 3.1 + (9 \times a^*)$$

$$b^* \geq 1 - a^*$$

$$b^* \leq 3.6174 + (0.7449 \times a^*)$$

wherein the thermoplastic polymer composition comprises a thermoplastic polymer and the additive composition in an amount sufficient to provide about 100 ppm to about 5,000 ppm of the clarifying agent in the thermoplastic polymer composition,

based on the total weight of the thermoplastic polymer composition; and wherein the a* value and the b* value are determined by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition.

44. The additive composition of claim 43, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

45. The additive composition of claim 44, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

46. The additive composition of claim 45, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

47. The additive composition of claim 43, wherein the coloring agent is a pigment.

48. The additive composition of claim 43, wherein the coloring agent is present in the additive composition in an amount of about 0.02% to about 10%, by weight, based on the total weight of clarifying agent and coloring agent present in the additive composition.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

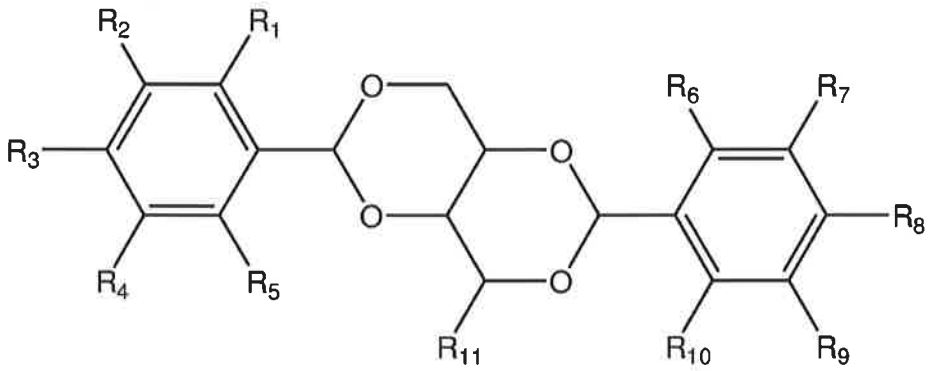
1. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing an additive composition comprising:

(i) at least one clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(ii) a coloring agent; and

(c) mixing the thermoplastic polymer and the additive composition to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer and the additive composition are separately provided; wherein the amount of clarifying agent in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring

agent present in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting a Δa* value and a Δb* value satisfying each of the following inequalities

$$\Delta b^* \leq 0 - (2.8571 \times \Delta a^*)$$
$$\Delta b^* \geq -1.5231 + (5.8461 \times \Delta a^*)$$
$$\Delta b^* \geq -2.6000 - (1.0909 \times \Delta a^*)$$
$$\Delta b^* \leq 0 + (1.2727 \times \Delta a^*)$$

wherein Δb* is not zero; wherein the Δa* value and the Δb* value are calculated by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from a control thermoplastic polymer composition, measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition, and subtracting the a* and b* values for the plaque made from the control thermoplastic polymer composition from the a* and b* values for the plaque made from the thermoplastic polymer composition; wherein the control thermoplastic polymer composition contains the thermoplastic polymer and the clarifying agent but does not contain the coloring agent; and wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

2. The method of claim 1, wherein the thermoplastic polymer is a polyolefin.

3. The method of claim 2, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

4. The method of any one of claims 1 to 3, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

5. The method of claim 4, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is —$CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

6. The method of claim 5, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$.

7. The method of any one of claims 1 to 6, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

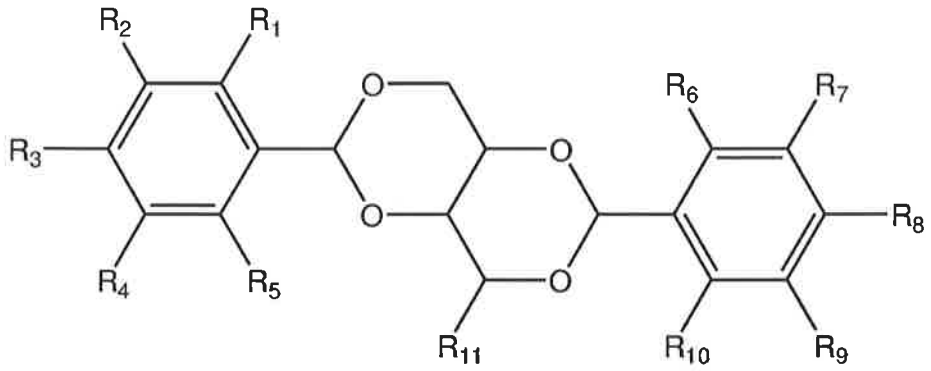
8. The method of any one of claims 1 to 7, wherein the coloring agent is a pigment.

9. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$;

(c) providing a coloring agent; and

(d) mixing the thermoplastic polymer, the clarifying agent, and the coloring agent to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer, the clarifying agent, and the coloring agent are each separately provided; wherein the amount of clarifying agent present in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring agent in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting a Δa* value and a Δb* value satisfying each of the following inequalities

$$\Delta b^* \leq 0 - (2.8571 \times \Delta a^*)$$
$$\Delta b^* \geq -1.5231 + (5.8461 \times \Delta a^*)$$
$$\Delta b^* \geq -2.6000 - (1.0909 \times \Delta a^*)$$
$$\Delta b^* \leq 0 + (1.2727 \times \Delta a^*)$$

wherein Δb* is not zero; wherein the Δa* value and the Δb* value are calculated by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from a control thermoplastic polymer composition, measuring an a*

value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition, and subtracting the a* and b* values for the plaque made from the control thermoplastic polymer composition from the a* and b* values for the plaque made from the thermoplastic polymer composition; wherein the control thermoplastic polymer composition contains the thermoplastic polymer and the clarifying agent but does not contain the coloring agent; and wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

10. The method of claim 9, wherein the thermoplastic polymer is a polyolefin.

11. The method of claim 10, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

12. The method of any one of claims 9 to 11, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

13. The method of claim 12, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

14. The method of claim 13, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

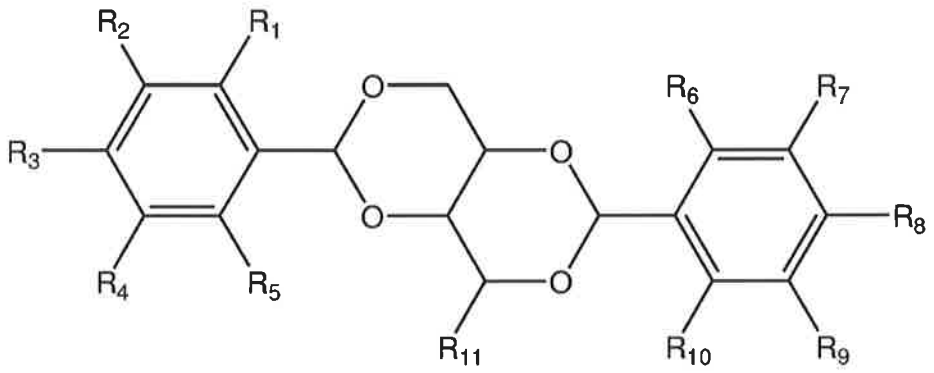
15. The method of any one of claims 9 to 14, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

16. The method of any one of claims 9 to 15, wherein the coloring agent is a pigment.

17. An additive composition comprising:

(a) a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(b) a coloring agent,

wherein the additive composition contains about 90wt% or less of a thermoplastic polymer based on the total weight of the additive composition,

wherein the coloring agent is present in the additive composition in an amount such that a thermoplastic polymer composition exhibits a $\Delta a^*$ value and a $\Delta b^*$ value satisfying each of the following inequalities

$$\Delta b^* \leq 0 - (2.8571 \times \Delta a^*)$$
$$\Delta b^* \geq -1.5231 + (5.8461 \times \Delta a^*)$$
$$\Delta b^* \geq -2.6000 - (1.0909 \times \Delta a^*)$$
$$\Delta b^* \leq 0 + (1.2727 \times \Delta a^*)$$

wherein Δb* is not zero; wherein the thermoplastic polymer composition comprises a thermoplastic polymer and the additive composition in an amount sufficient to provide about 100 ppm to about 5,000 ppm of the clarifying agent in the thermoplastic polymer composition, based on the total weight of the thermoplastic polymer composition; and wherein the Δa* value and the Δb* value are calculated by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from a control thermoplastic polymer composition, measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition, and subtracting the a* and b* values for the plaque made from the control thermoplastic polymer composition from the a* and b* values for the plaque made from the thermoplastic polymer composition; wherein the control thermoplastic polymer composition contains the thermoplastic polymer and the clarifying agent but does not contain the coloring agent; and wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

18. The additive composition of claim 17, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

19. The additive composition of claim 18, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is —$CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is —$CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

20. The additive composition of claim 19, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

21. The additive composition of any one of claims 17 to 20, wherein the coloring agent is a pigment.

22. The additive composition of any one of claims 17 to 21, wherein the coloring agent is present in the additive composition in an amount of about 0.02% to about 10%, by weight, based on the total weight of clarifying agent and coloring agent present in the additive composition.

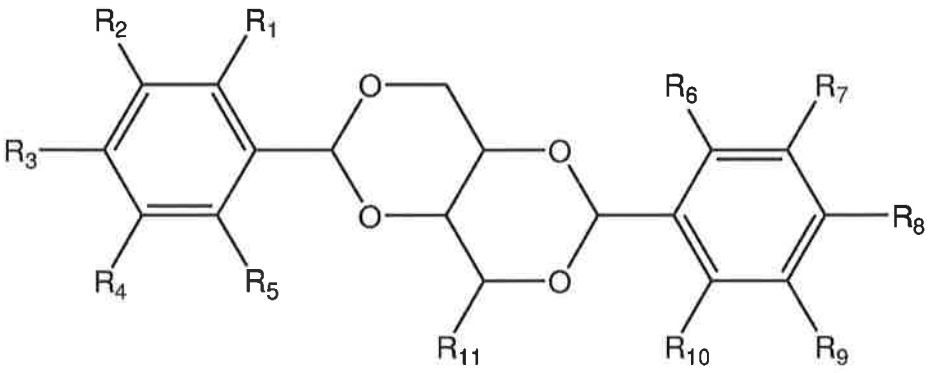
23. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing an additive composition comprising:

(i) at least one clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups,

alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(ii) a coloring agent; and

(c) mixing the thermoplastic polymer and the additive composition to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer and the additive composition are separately provided; wherein the amount of clarifying agent in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring agent present in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting an a* value and a b* value satisfying each of the following inequalities

$$b^* \leq 3.4 - (1.4196 \times a^*)$$
$$b^* \geq 3.1 + (9 \times a^*)$$
$$b^* \geq 1 - a^*$$
$$b^* \leq 3.6174 + (0.7449 \times a^*)$$

wherein the a* value and the b* value are determined by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition; and wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

24. The method of claim 23, wherein the thermoplastic polymer is a polyolefin.

25. The method of claim 24, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

26. The method of any one of claims 23 to 25, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

27. The method of claim 26, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

28. The method of claim 27, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

29. The method of any one of claims 23 to 28, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

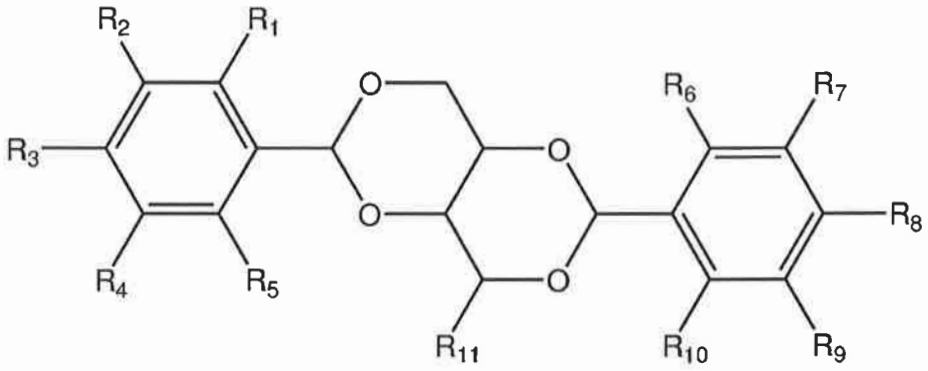
30. The method of any one of claims 23 to 29, wherein the coloring agent is a pigment.

31. A method for producing a thermoplastic polymer composition, the method comprising the steps of:

(a) providing a thermoplastic polymer;

(b) providing a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$;

(c) providing a coloring agent; and

(d) mixing the thermoplastic polymer, the clarifying agent, and the coloring agent to produce a thermoplastic polymer composition,

wherein the thermoplastic polymer, the clarifying agent, and the coloring agent are each separately provided; wherein the amount of clarifying agent present in the thermoplastic polymer composition is from about 100 ppm to about 5,000 ppm based on the total weight of the thermoplastic polymer composition; wherein the amount of coloring agent in the thermoplastic polymer composition is sufficient to produce a thermoplastic polymer composition exhibiting an a* value and a b* value satisfying each of the following inequalities

$$b^* \leq 3.4 - (1.4196 \times a^*)$$
$$b^* \geq 3.1 + (9 \times a^*)$$
$$b^* \geq 1 - a^*$$
$$b^* \leq 3.6174 + (0.7449 \times a^*)$$

wherein the a* value and the b* value are determined by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic

polymer composition; and wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

32. The method of claim 31, wherein the thermoplastic polymer is a polyolefin.

33. The method of claim 32, wherein the thermoplastic polymer is selected from the group consisting of polypropylene homopolymers, polypropylene random copolymers, and mixtures thereof.

34. The method of any one of claims 31 to 33, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

35. The method of claim 34, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

36. The method of claim 35, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

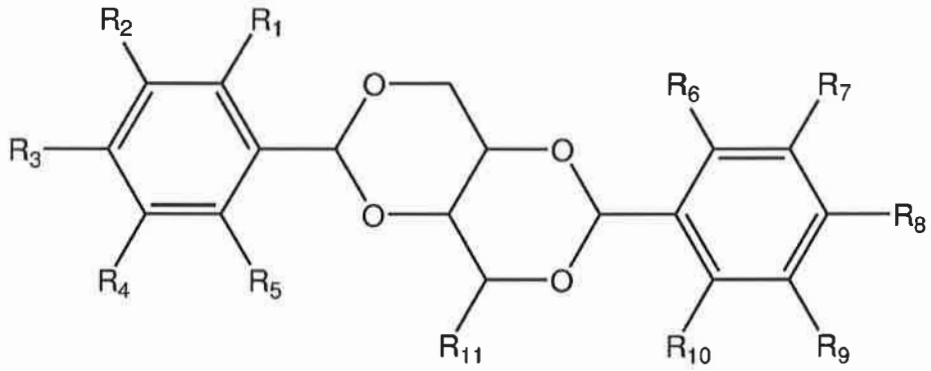
37. The method of any one of claims 31 to 36, wherein the clarifying agent is present in an amount of about 1,000 ppm to about 2,500 ppm.

38. The method of any one of claims 31 to 37, wherein the coloring agent is a pigment.

39. An additive composition comprising:

(a) a clarifying agent selected from the group consisting of trisamides, aluminum 2,2'-methylenebis-(4,6-di-*tert*-butylphenyl) phosphate, lithium 2,2'-methylenebis(4,6-di-*tert*-butylphenyl) phosphate, monocarboxylate compounds, and acetal compounds conforming to the structure of Formula (I)

(I)




wherein $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each independently selected from the group consisting of hydrogen, alkyl groups, alkoxy groups, alkenyl groups, aryl groups, and halogens; and wherein $R_{11}$ is a hydroxyalkyl group selected from the group consisting of $-CH_2OH$ and $-CHOHCH_2OH$; and

(b) a coloring agent,

wherein the additive composition contains about 90wt% or less of a thermoplastic polymer based on the total weight of the additive composition,

wherein the coloring agent is present in the additive composition in an amount such that a thermoplastic polymer composition exhibits a a* value and a b* value satisfying each of the following inequalities

$$b^* \leq 3.4 - (1.4196 \times a^*)$$

$$b^* \geq 3.1 + (9 \times a^*)$$

$$b^* \geq 1 - a^*$$

$$b^* \leq 3.6174 + (0.7449 \times a^*)$$

wherein the thermoplastic polymer composition comprises a thermoplastic polymer and the additive composition in an amount sufficient to provide about 100 ppm to about 5,000 ppm of the clarifying agent in the thermoplastic polymer composition, based on the total weight of the thermoplastic polymer composition; and wherein the a* value and the b* value are determined by measuring an a* value and a b* value exhibited by a 1.27 mm (50 mil) plaque made from the thermoplastic polymer composition; and wherein the L* value of a 1.27 mm (50 mil) plaque made using the thermoplastic polymer composition is about 88 or greater.

40. The additive composition of claim 39, wherein the clarifying agent is an acetal compound conforming to the structure of Formula (I).

41. The additive composition of claim 40, wherein the clarifying agent is selected from the group consisting of (a) a compound of Formula (I) in which $R_1$, $R_2$, $R_3$, $R_4$, $R_5$, $R_6$, $R_7$, $R_8$, $R_9$, and $R_{10}$ are each hydrogen and $R_{11}$ is $-CHOHCH_2OH$, (b) a compound of Formula (I) in which $R_1$, $R_2$, $R_4$, $R_5$, $R_6$, $R_7$, $R_9$, and $R_{10}$ are each hydrogen, $R_3$ and $R_8$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, (c) a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$, and (d) mixtures of at least two of (a), (b), and (c).

42. The additive composition of claim 41, wherein the clarifying agent is a compound of Formula (I) in which $R_1$, $R_4$, $R_5$, $R_6$, $R_7$, and $R_{10}$ are each hydrogen, $R_2$, $R_3$, $R_8$, and $R_9$ are each a methyl group, and $R_{11}$ is $-CHOHCH_2OH$.

43. The additive composition of any one of claims 39 to 42, wherein the coloring agent is a pigment.

44. The additive composition of any one of claims 39 to 43, wherein the coloring agent is present in the additive composition in an amount of about 0.02% to about 10%, by weight, based on the total weight of clarifying agent and coloring agent present in the additive composition.

45. A thermoplastic polymer composition produced by the method of any one of claims 1 to 16 and 23 to 38.