[0005] Upon heating coated articles with solar control coatings, an undesirable color shift can occur due to the changes in the optical properties of the layers of the solar control coating. It would be desirable to produce a solar control coating in which the absorption of the coating and/or the color of the coated article could be maintained before heating and after heating.

SUMMARY

[0005a] In an aspect, the present disclosure refers to a coated article comprising: a substrate comprising a first surface and second surface opposite the first surface; and a functional coating applied over the first surface or the second surface, the functional coating comprising: a blocking layer over at least a portion of the substrate, wherein the blocking layer comprises a first film, a second film, and third film; wherein the first film of the blocking layer is a blocking film; wherein blocking film comprises silicon oxide, silicon aluminum oxide, silicon oxynitride, silicon aluminum oxynitride, or a combination thereof; a metallic layer over at least a portion of the blocking layer; and a top layer over at least a portion of the metallic layer; wherein the coated article is temperable.

[0005b] In another aspect, the present disclosure refers to a method of making a coated article comprising: providing a coated article comprising a first surface and second surface opposite the first surface, wherein the coated article comprises a blocking layer over at least a portion of the first surface or the second surface; a metallic layer over at least a portion of the blocking layer; and a top layer over at least a portion of the metallic layer; and tempering the coated article, wherein the coated article has an optical color shift, as measured by ΔEcmc, of no more than 4.5 after tempering.

[0005c] In another aspect, the present disclosure refers to a method of reducing red haze of a coated article, the method comprising: providing a coated article

comprising a first surface and second surface opposite the first surface comprising a blocking layer over at least a portion of the first surface or the second surface, wherein the blocking layer comprises a first film, a second film, and third film; wherein the first film of the blocking layer is a blocking film; wherein blocking film comprises silicon oxide, silicon aluminum oxide, silicon oxynitride, silicon aluminum oxynitride, or a combination thereof; a metallic layer over at least a portion of the blocking layer; and a top layer over at least a portion of the metallic layer, and tempering the coated article, wherein the coated article has reduced red haze after tempering.

[0006] An example relates to a coated article comprising a substrate. The substrate comprises a first surface and a second surface opposite the first surface. A functional coating is applied over the first surface or the second surface. A blocking layer is positioned over at least a portion of the substrate. A metallic layer is positioned over at least a portion of the blocking layer. A top layer is positioned over at least a portion of the metallic layer.

[0007] An example relates to a coated article comprising a substrate comprising a first surface and second surface opposite the first surface. A functional coating is applied over the first surface or the second surface. A blocking layer is positioned over at least a portion of the substrate, wherein the blocking layer comprises a first film, a second film, and third film, wherein the first film of the blocking layer is a blocking film; wherein the blocking film comprises silicon oxide, silicon aluminum oxide, silicon oxynitride, silicon aluminum oxynitride, or a combination thereof. A metallic layer is positioned over at least a portion of the blocking layer. A top layer over is positioned over at least a portion of the metallic layer. The coated article is temperable.

[0008] An example relates to a method of making a coated article comprising a substrate. A substrate comprising a first surface and a second surface opposite the first surface is provided. A blocking layer is formed over at least a portion of the first surface or the second surface. A metallic layer is formed over at least a portion of the blocking layer. A top layer is formed over at least a portion of the metallic layer. The coated article has an optical color shift, as measured by ΔEcmc, of no more than 4.5 after tempering.

[0009] An example relates to a method of making a coated article. A coated article comprising a first surface and second surface opposite the first surface is provided. The coated article comprises a blocking layer over at least a portion of the first surface

or the second surface, a metallic layer over at least a portion of the blocking layer, and a top layer over at least a portion of the metallic layer. The coated article is tempered.

The coated article has an optical color shift, as measured by ΔEcmc, of no more than 4.5 after tempering.

[0010] An example relates to an insulated glass unit comprising a first ply and a second ply. The first ply comprises a No. 1 surface and a No. 2 surface opposing the No. 1 surface. The second ply comprises a No. 3 surface and a No. 4 surface. The second ply is spaced from the first ply and the first ply and second ply are connected together. A functional coating is positioned over at least a portion of the No. 3 surface or the No. 4 surface. A blocking layer is positioned over at least a portion of the No. 3 surface or the No. 4 surface. A metallic layer is positioned over at least a portion of the blocking layer. A top layer is positioned over at least a portion of the metallic layer.

[0011] An example relates to a method of reducing dendrite formation in a metallic layer of a coated article. A substrate comprising a first surface and second surface opposite the first surface is provided. A blocking layer is formed over at least a portion of the first surface or the second surface. A metallic layer is formed over at least a portion of the blocking layer. A top layer is formed over at least a portion of the metallic layer, thereby forming the coated article. The coated article is tempered. The coated article has reduced dendrite formation in the metallic layer after tempering.

[0012] An example relates to a method of reducing dendrite formation in a metallic layer of a coated article. A coated article comprising a first surface and second surface opposite the first surface is provided. The coated article comprises a blocking layer over at least a portion of the first surface or the second surface, a metallic layer over at least a portion of the blocking layer, and a top layer over at least a portion of the metallic layer. The coated article is tempered. The coated article has reduced dendrite formation in the metallic layer after tempering.

[0013] An example relates to a method of reducing red haze of a coated article. A substrate comprising a first surface and second surface opposite the first surface is provided. A blocking layer is formed over at least a portion of the first surface or the second surface. A metallic layer is formed over at least a portion of the blocking layer. A top layer is formed over at least a portion of the metallic layer, thereby forming the coated article. The coated article is tempered. The coated article has reduced red haze after tempering.

[0014] An example relates to a method of reducing red haze of a coated article. A coated article comprising a first surface and second surface opposite the first surface

THE INVENTION CLAIMED IS

1. A coated article comprising:

a substrate comprising a first surface and second surface opposite the first surface; and

a functional coating applied over the first surface or the second surface, the functional coating comprising:

a blocking layer over at least a portion of the substrate, wherein the blocking layer comprises a first film, a second film, and third film; wherein the first film of the blocking layer is a blocking film; wherein blocking film comprises silicon oxide, silicon aluminum oxide, silicon oxynitride, silicon aluminum oxynitride, or a combination thereof;

a metallic layer over at least a portion of the blocking layer; and

a top layer over at least a portion of the metallic layer;

wherein the coated article is temperable.

2. The coated article of claim 1, wherein the blocking film has an oxygen to nitrogen ratio of 0% to 50% oxygen to 100% to 50% nitrogen.

3. The coated article of claim 1, wherein the blocking film comprises from 1 wt.% to 25 wt. % aluminum and from 99 wt.% to 75 wt.% silicon.

4. The coated article of claim 1, wherein the optical index of refraction of the blocking film is at least 1.4 and not more than 2.3.

5. The coated article of claim 1, wherein the blocking film comprises a total thickness of 50 Å to 350 Å.

6. The coated article of claim 1, wherein the second film comprises zinc stannate over at least a portion of the blocking film

7. The coated article of claim 1, wherein the third film comprises zinc oxide over at least a portion of the second film.

8. The coated article of claim 1, wherein the metallic layer comprises silver, gold, palladium, copper, alloys thereof, mixtures thereof, or combinations thereof.

9. The coated article of claim 1, further comprising a first primer layer formed over the metallic layer,

wherein the primer layer is selected from a group consisting of titanium, silicon, silicon dioxide, silicon nitride, silicon oxynitride, nickel, zirconium, zinc, aluminum, cobalt, chromium, aluminum, an alloy thereof or a mixture thereof.

10. The coated article of claim 1, further comprising an outermost protective coating comprising a protective layer, wherein the protective layer comprises at least one of Si_3N_4, SiAlN, SiAlON, TiAlO, titania, alumina, silica, zirconia, or combinations thereof.

11. The coated article of claim 1, wherein the functional coating applied over the surface further comprises:

a first middle layer over at least a portion of the metallic layer;

a second metallic layer over at least a portion of the middle layer; and

an optional second primer layer over at least a portion of the second metallic layer,

wherein the top layer is over at least a portion of the second metallic layer or the optional second primer layer.

12. The coated article of claim 1, wherein the functional coating applied over the surface further comprises:

a first middle layer over at least a portion of the metallic layer;

a second metallic layer over at least a portion of the first middle layer;

a second middle layer over at least a portion of the second metallic layer;

a third metallic layer over at least a portion of the second middle layer; and

an optional third primer layer over at least a portion of the third metallic layer,

wherein the top layer is over at least a portion of the third metallic layer or the optional third primer layer.

13. The coated article of claim 1, wherein the coating applied over the surface further comprises:

a first middle layer over at least a portion of the metallic layer;

a second metallic layer over at least a portion of the first middle layer;

a second middle layer over at least a portion of the second metallic layer;

a third metallic layer over at least a portion of the second middle layer;

a third middle layer over at least a portion of the third metallic layer;

a fourth metallic layer over at least a portion of the third middle layer; and

an optional fourth primer layer over at least a portion of the fourth metallic layer,

wherein the top layer is over at least a portion of the fourth metallic layer or the optional fourth primer layer.

14. A method of making a coated article comprising:

providing a coated article comprising a first surface and second surface opposite the first surface, wherein the coated article comprises a blocking layer over at least a portion of the first surface or the second surface; a metallic layer over at least a portion of the blocking layer; and a top layer over at least a portion of the metallic layer; and

tempering the coated article,

wherein the coated article has an optical color shift, as measured by ΔEcmc, of no more than 4.5 after tempering.

15. A method of reducing red haze of a coated article, the method comprising:

providing a coated article comprising a first surface and second surface opposite the first surface comprising a blocking layer over at least a portion of the first surface or the second surface, wherein the blocking layer comprises a first film, a

second film, and third film; wherein the first film of the blocking layer is a blocking film; wherein blocking film comprises silicon oxide, silicon aluminum oxide, silicon oxynitride, silicon aluminum oxynitride, or a combination thereof; a metallic layer over at least a portion of the blocking layer; and a top layer over at least a portion of the metallic layer, and

tempering the coated article,

wherein the coated article has reduced red haze after tempering.