CLAIMS

What is claimed is:

1. A synthetic paper including one or more layers of a resin film formed from a composition comprising:

a high density polyethylene resin present in an amount of 40 percent to 60 percent by weight of the synthetic paper;

a particulate filler having a mean particle size of 10 μm to 30 μm; and

a cyclic olefin copolymer produced by copolymerization of ethylene with dicyclopentadiene,

wherein the synthetic paper has a dead fold angle of 20º to 30º and an Elmendorf tear strength of 100mN to 1000mN in a transverse direction.

2. The synthetic paper of claim 1, wherein the particulate filler is present in the composition in an amount of 10% to 40% by weight.

3. The synthetic paper of claim 1, wherein the particulate filler comprises calcium carbonate.

4. The synthetic paper of claim 1, wherein the synthetic paper comprises at least two resin layers.

5. The synthetic paper of claim 1, wherein the synthetic paper comprises at least three resin layers.

6. The synthetic paper of claim 1, having a thickness of 0.5 mils to 4 mils.

7. A synthetic paper including one or more layers of a resin film formed from a composition comprising:

a high density polyethylene resin present in an amount of 40 percent to 60 percent by weight of the synthetic paper;

a particulate filler having a mean particle size of 10 μm to 30 μm; and

a cyclic olefin copolymer produced by copolymerization of ethylene with a cyclopentadiene derivative,

wherein the synthetic paper has an Elmendorf tear strength of 100 mN to 1000 mN in a transverse direction and a dead fold angle of 20° to 30°.

8. The synthetic paper of claim 7, wherein the synthetic paper has a dead fold angle of 20º to 30º.

9. The synthetic paper of claim 7, wherein the synthetic paper has an Elmendorf tear strength of 50 mN to 750 mN in a machine direction.

10. The synthetic paper of claim 7, wherein the particulate filler is present in the composition in an amount of 10 percent to 40 percent by weight.

11. The synthetic paper of claim 7, wherein the particulate filler comprises calcium carbonate.

12. The synthetic paper of claim 7, comprising at least two layers.

13. The synthetic paper of claim 12, wherein the at least two layers comprises a first layer and a second layer, wherein the polyolefin resin in the first layer is different from the polyolefin in the second layer.

14. The synthetic paper of claim 7, wherein the cyclic olefin copolymer is present in an amount of 2 percent to 10 percent by weight of the composition.

15. A synthetic paper including one or more layers of a resin film formed from a composition comprising:

high density polyethylene resin present in an amount of 40 percent to 60 percent by weight of the synthetic paper;

a particulate filler having a mean particle size of 10μm to 30μm; and

a cyclic olefin copolymer cyclic olefin co-polymer produced by copolymerization of ethylene with a cyclic olefin monomer selected from a group consisting of cyclopentadiene, dicyclopentadiene, norbornene, dihydrodiclycopentadiene, phenyl norbornene, tetracyclododecene and combination thereof,

wherein the synthetic paper has an Elmendorf tear strength of 100mN to 1000mN in a transverse direction and a dead fold angle of 20° to 30°.

16. The synthetic paper of claim 15, wherein the synthetic paper has an Elmendorf tear strength of 50mN to 750mN in a machine direction.

17. The synthetic paper of claim 1, wherein the synthetic paper has an Elmendorf tear strength of 50mN to 750mN in a machine direction.