CLAIMS

1. A roofing shingle comprising:

a substrate comprising at least one of a fiberglass mat, a polyester mat, or a combination thereof; and

a coating on the substrate,

wherein the coating comprising:

5% to 70% by weight of a thermoplastic polymer, based on a total weight of the coating; and

10% to 70% by weight of a filler, based on the total weight of the coating,

wherein the filler comprises at least one of an organic filler, an inorganic mineral filler, or combinations thereof;

30% to 80% by weight of at least one of an oil, a wax, or any combination thereof, based on the total weight of the coating;

wherein the coating is free of asphalt;

wherein the coating has a viscosity of 500 to 30,000 centipoise at 375°F to 400°F; and

wherein a thickness of the coating on the substrate is 20 mils to 200 mils.

2. The roofing shingle according to claim 1, further comprising granules.

3. The roofing shingle according to claim 1, wherein the roofing shingle exhibits an increased solar reflectance as compared to an asphaltic roofing shingle.

4. The roofing shingle according to claim 1, wherein the thermoplastic polymer includes at least one of an amorphous polyolefin, an amorphous polyalpha olefin, a polyolefin elastomer, or any combination thereof.

5. The roofing shingle according to claim 1, wherein the thermoplastic polymer comprises at least one of a polypropylene, a polyethylene, a copolymer of propylene and ethylene, low density polyethylene (LDPE), linear low density polyethylene (LLDPE), high density polyethylene (HDPE), thermoplastic polyurethane (TPU), or any combination thereof.

6. The roofing shingle according to claim 1, wherein the thermoplastic polymer has a Melt Flow Index, in accordance with ISO 1133, of 0.5 g/min to 40 g/min at 190 ℃/2.16 kg.

7. The roofing shingle according to claim 1, wherein the filler is at least one of calcium carbonate, barium sulfate, calcium sulfate, talc, limestone, perlite, silica, fumed silica, precipitated silica, quartz, aluminum trihydrate, magnesium hydroxide, colemanite, titanium dioxide, snow white, fly ash, graphene nanoparticles, carbon black, recycled rubber tires, recycled shingles, recycled thermoplastic resins, basalt, roofing granules, clay, or combinations thereof.

8. The roofing shingle according to claim 1, wherein the coating further comprises 5% to 80% by weight of at least one of post-consumer asphalt shingles (PCRAS), post-manufacture shingle waste, recycled asphaltic membranes, polytransoctenamer rubber (TOR), ground tire rubber (GTR), acrylonitrile rubber (NBR), acrylonitrile butadiene styrene rubber (ABS), wood plastic, or any combination thereof, based on the total weight of the coating.

9. The roofing shingle according to claim 1, wherein the coating further comprises at least one of a dye, a pigment, a fire retardant, a UV stabilizer, or a combination thereof.

10. The roofing shingle according to claim 1, wherein the thermoplastic polymer comprises at least one of a copolymer of ethylene and octene, a copolymer of ethylene and hexene, a copolymer of ethylene and butene, isotactic polypropylene (IPP), atactic

polypropylene (APP), polyurea, styrene-ethylene/butylene-styrene (SEBS) copolymer, styrene-ethylene/propylene-styrene (SEP S) copolymer, styrene-isoprene-styrene block (SIS) copolymer, styrene-butadiene-styrene (SBS) copolymer, polyisobutylene, polybutadiene, oxidized polyethylene, or any combination thereof.

11. The roofing shingle according to claim 1, wherein the coating further comprises polytransoctenamer rubber (TOR).

12. The roofing shingle according to claim 1, wherein the coating further comprises 1 % to 10% by weight of polytransoctenamer rubber (TOR), based on the total weight of the coating.

13. The roofing shingle according to claim 1, wherein the coating comprises 30% to 99% by weight of an oxidized hydrocarbon oil, based on the total weight of the coating.

14. The roofing shingle according to claim 1, wherein the thermoplastic polymer comprises at least one of a vinyl polymer, a polyvinyl ester, or any combination thereof.

15. The roofing shingle according to claim 1, wherein the thermoplastic polymer comprises at least one of ethylene vinyl acetate (EV A), polyvinyl butyral (PVB), recycled polyvinyl butyral (rPVB), polyvinyl acetate (PVAC), poly(vinyl butyrate), poly(vinyl propionate), poly(vinyl formate), copolymers of PVAC, or any combination thereof.

16. The roofing shingle according to claim 1, wherein the viscosity of the coating is 3,000 cP to 30,000 cP at 375 °F to 400 °F as measured according to ASTM D 4402.