CLAIMS

1. A composition comprising a polymer and a wax wherein the polymer has a melt index of from about 0.5 g/10 min to about 4 g/10 min, a density of equal to or greater than about 0.945 g/cc which when formed into a film displays a moisture vapor transmission rate of less than about 0.55 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249.
2. The composition of claim 1 wherein the wax comprises olefin waxes, alpha olefin waxes, oxidized olefin waxes, Fischer-Tropsch waxes, paraffins, montan waxes, or combinations thereof.
3. The composition of claim 2 wherein the olefin wax comprises equal to or greater than 36 mol.% olefins.
4. The composition of claim 2 wherein the olefin wax comprises less than about 65 mol.% paraffin.
5. The composition of claim 2 wherein the olefin wax has an average molecular weight of at least 210 g/mol.
6. The composition of claim 1 wherein the wax comprises one or more of the following:
   a) greater than 90 wt% olefins having from 20 to 24 carbon atoms and greater than 75 mol.% alpha olefins having from 20 to 24 carbon atoms;
   b) greater than 70 wt% olefins having from 24 to 28 carbon atoms and greater than 45 mol.% alpha olefins having from 24 to 28 carbon atoms;
   c) greater than 90 wt% olefins having from 26 to 28 carbon atoms and greater than 75 mol.% alpha olefins having from 26 to 28 carbon atoms;
   d) greater than 80 wt% olefins having at least 30 carbon atoms and greater than 45 mol.% alpha olefins having at least 30 carbon atoms; or
   e) greater than 85 wt% olefins having at least 30 carbon atoms and greater than 75 mol.% alpha olefins at least 30 carbon atoms.
7. The composition of claim 2 wherein the oxidized olefin wax has an acid number greater than 1 mg KOH per g oxidized olefin wax and a kinematic viscosity at 100°C less than 70 cSt.
8. The composition of claim 2 wherein the oxidized olefin wax has a needle penetration value at 25°C at least 5 percent less than a needle penetration value at 25°C of the olefin wax and a kinematic viscosity at 100°C of up to about 500% greater than the kinematic viscosity of the olefin wax.

9. The composition of claim 2 wherein the oxidized olefin wax has a drop melt point greater than the drop melt point of the olefin wax.
10. The composition of claim 1 wherein the polymer is present in an amount of from about 93 wt.% to about 99.5 wt.% and the wax is present in an amount of from about 0.5 wt.% to about 7 wt.%.
11. The composition of claim 1 wherein the polymer has a weight average molecular weight of from about 80 kg/mol to about 200 kg/mol.
12. The composition of claim 1 wherein the polymer has a molecular weight distribution of from about 2 to about 10.
13. The composition of claim 1 wherein the polymer when formed into a film has a haze of less than about 40%.
14. The composition of claim 1 wherein the polymer comprises polyethylene.
15. A film formed from the composition of claim 1.
16. A film formed from the composition of claim 14.
17. The film of claim 15 having a moisture vapor transmission rate of from about 0.25 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249 to about 0.5 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249.
18. A food packaging container comprising the film of claim 15.
19. A composition comprising a metallocene-catalyzed unimodal polyethylene homopolymer and an oxidized olefin wax wherein the oxidized olefin wax comprises one of more of the following:

    a) greater than 90 wt% olefins having from 20 to 24 carbon atoms and greater than 75 mol.% alpha olefins having from 20 to 24 carbon atoms;

    b) greater than 70 wt% olefins having from 24 to 28 carbon atoms and greater than 45 mol.% alpha olefins having from 24 to 28 carbon atoms;

    c) greater than 90 wt% olefins having from 26 to 28 carbon atoms and greater than 75 mol.% alpha olefins having from 26 to 28 carbon atoms;

    d) greater than 80 wt% olefins having at least 30 carbon atoms and greater than 45 mol.% alpha olefins having at least 30 carbon atoms; or

    e) greater than 85 wt% olefins having at least 30 carbon atoms and greater than 75 mol.% alpha olefins at least 30 carbon atoms.

20. A film formed from the composition of claim 19 having a moisture vapor transmission rate of from about 0.25 g-mil/100 in^2 to about 0.45 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249.

CLAIMS

1. A composition comprising a polymer and a wax, wherein the wax comprises olefin waxes comprising greater than 50 weight percent of olefins having the same number of carbon atoms, alpha olefin waxes, oxidized olefin waxes, Fischer-Tropsch waxes, paraffins, montan waxes, or combinations thereof; wherein the polymer has a melt index of from about 0.5 g/10 min to about 4 g/10 min, a density of equal to or greater than about 0.945 g/cc, and a moisture vapor transmission rate of less than about 0.55 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249 for a monolayer film at a thickness of from about 1.0 mils to about 1.6 mils.
2. The composition of claim 1 wherein the olefin wax comprises equal to or greater than 36 mol. % olefins.
3. The composition of claim 1 wherein the olefin wax comprises less than about 65 mol. % paraffin.
4. The composition of claim 1 wherein the olefin wax has an average molecular weight of at least 210 g/mol.
5. The composition of claim 1 wherein the wax comprises one or more of the following:
   a) greater than 90 wt % olefins having from 20 to 24 carbon atoms and greater than 75 mol. % alpha olefins having from 20 to 24 carbon atoms;
   b) greater than 70 wt % olefins having from 24 to 28 carbon atoms and greater than 45 mol. % alpha olefins having from 24 to 28 carbon atoms;
   c) greater than 90 wt % olefins having from 26 to 28 carbon atoms and greater than 75 mol. % alpha olefins having from 26 to 28 carbon atoms;
   d) greater than 80 wt % olefins having at least 30 carbon atoms and greater than 45 mol. % alpha olefins having at least 30 carbon atoms; or
   e) greater than 85 wt % olefins having at least 30 carbon atoms and greater than 75 mol. % alpha olefins having at least 30 carbon atoms.
6. The composition of claim 1 wherein the oxidized olefin wax has an acid number greater than 1 mg KOH per g oxidized olefin wax and a kinematic viscosity at 100° C. less than 70 cSt.
7. The composition of claim 1 wherein the oxidized olefin wax has a needle penetration value at 25° C. at least 5 percent less than a needle penetration value at 25° C. of the olefin wax prior to oxidation and a kinematic viscosity at 100° C. of up to about 500% greater than the kinematic viscosity of the olefin wax prior to oxidation.

8. The composition of claim 1 wherein the oxidized olefin wax has a drop melt point greater than the drop melt point of the olefin wax prior to oxidation.
9. The composition of claim 1 wherein the polymer is present in an amount of from about 93 wt. % to about 99.5 wt. % and the wax is present in an amount of from about 0.5 wt. % to about 7 wt. %.
10. The composition of claim 1 wherein the polymer has a weight average molecular weight of from about 80 kg/mol to about 200 kg/mol.
11. The composition of claim 1 wherein the polymer has a molecular weight distribution of from about 2 to about 10.
12. The composition of claim 1 wherein the polymer when formed into a film has a haze of less than about 40%.
13. The composition of claim 1 wherein the polymer comprises polyethylene.
14. A monolayer film formed from the composition of claim 1.
15. A monolayer film formed from the composition of claim 13.
16. The film of claim 14 having a moisture vapor transmission rate of from about 0.25 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249 to about 0.5 g-mil/100 in^2 in 24 hours as determined in accordance with ASTM F 1249.
17. A food packaging container comprising the film of claim 14.
18. The composition of claim 1 wherein the olefin wax has an acid value ranging from 7 mg KOH/g to 14 mg KOH/g.
19. The composition of claim 1 wherein the olefin wax comprises greater than 60 mole percent of olefins having the same number of carbon atoms.