The present disclosure provides a formulation comprising (A) olefin block copolymer, (B) propylene-α-olefin interpolymer, and (C) halogen-free flame retardant. In addition, the present disclsoure provides a layer of and a multi-layer structure, the layer made from a composition comprising (A) olefin block copolymer, (B) propylene-α-olefin interpolymer, and (C) halogen-free flame retardant.

In one aspect, there is provided a formulation comprising:

i) an olefin block copolymer comprising an ethylene content of at least 50 mole percent ~~of the whole polymer~~, the olefin block copolymer having a polydispersity from 1.7 to 3.5, a density of from 0.850 g/cc to 0.925 g/cc, and a melt index from 0.1 g/10 min to 30 g/10 min (according to ASTM D-1238 at 190°C/2.16 kg);

ii) a propylene/α-olefin copolymer comprising between 60 and less than 100 weight percent units derived from propylene and between greater than 0 and 40 weight percent units derived from at least one of ethylene and a C4-10 α -olefin, the propylene/α-olefin copolymer having a density greater than 0.855 g/cc and less than 0.895 g/cc, and a melt flow rate from 0.1 to 500 g/10 min (according to ASTM D-1238 at 230°C/2.16 kg); and,

iii) a halogen-free flame-retardant, a polymer to flame retardant weight ratio being less than 0.35.

CLAIMS:

1. A formulation comprising:

   i) an olefin block copolymer comprising an ethylene content of at least 50 mole percent ~~of the whole polymer~~, the olefin block copolymer having a polydispersity from 1.7 to 3.5, a density of from 0.850 g/cc to 0.925 g/cc, and a melt index from 0.1 g/10 min to 30 g/10 min (according to ASTM D-1238 at 190°C/2.16 kg);

   ii) a propylene/α-olefin copolymer comprising between 60 and less than 100 weight percent units derived from propylene and between greater than 0 and 40 weight percent units derived from at least one of ethylene and a C4-10 α -olefin, the propylene/α-olefin copolymer having a density greater than 0.855 g/cc and less than 0.895 g/cc, and a melt flow rate from 0.1 to 500 g/10 min (according to ASTM D-1238 at 230°C/2.16 kg); and,

   iii) a halogen-free flame-retardant, a polymer to flame retardant weight ratio being less than 0.35.

2. A multi-layer structure comprising a layer comprising the formulation of Claim 1.

3. The formulation of Claim 1 having an organic/inorganic weight ratio of less than 0.35 and a polymer/flame retardant weight ratio of less than 0.35.

4. The formulation of Claim 1 wherein the halogen-free flame retardant is present in an amount of greater than 60 wt% based on total weight of formulation.

5. The formulation of Claim 1, wherein the halogen-free flame retardant includes magnesium hydroxide.

6. The formulation of Claim 1, wherein an organic to inorganic ratio of the formulation is less than 0.35.