The present inventors have surprisingly found that a polyolefin composition comprising a mixture of an ethylene based plastomer and a propylene based plastomer, together with a flame retardant, possesses flame retardant properties which meet with Industry standards. Ideally, the compositions also have good UV resistance and attractive mechanical properties. A polyolefin system which has good recyclability, even up to 100% recyclability, would be of particular value.

Summary ~~of Invention~~

Viewed from one aspect the ~~invention~~disclosure provides a flame retardant polyolefin composition comprising:

a) an ethylene based plastomer with a density measured according to ISO 1183-1:2012 in the range of 0.850 to 0.915 g/cm^3 and an MFR_2 determined according to ISO 1133 in the range 0.5 – 30 g/10 min;

b) a propylene based plastomer with a density measured according to ISO 1183-1:2012 in the range of 0.860 to 0.910 g/cm^3 and an MFR_2 determined according to ISO 1133 in the range 0.01 – 30 g/10 min; and

c) a flame retardant.

Viewed from another aspect, the ~~invention~~disclosure provides the use of a flame retardant polyolefin composition as herein defined for coating a substrate, preferably a fabric substrate.

Viewed from a further aspect, the ~~invention~~disclosure provides a process for coating a substrate with a flame retardant polyolefin composition as herein defined, said process comprising applying said composition to the surface of said substrate.

Viewed from another aspect, the ~~invention~~disclosure provides a substrate, preferably a fabric substrate, coated with a flame retardant polyolefin composition as herein defined.

Viewed from a further aspect, the ~~invention~~disclosure provides an article comprising at least one component formed from a coated substrate as hereinbefore defined.

Detailed Description of Invention

The compositions of the invention comprise an ethylene based plastomer and a propylene based plastomer, together with a flame retardant.

Claims

1. A flame retardant polyolefin composition comprising:

a) an ethylene based plastomer with a density measured according to ISO 1183-1:2012 in the range of 0.850 to 0.915 g/cm^3 and an MFR_2 determined according to ISO 1133 in the range 0.5 – 30 g/10 min;

b) a propylene based plastomer with a density measured according to ISO 1183-1:2012 in the range of 0.860 to 0.910 g/cm^3 and an MFR_2 determined according to ISO 1133 in the range 0.01 – 30 g/10 min; and

c) a flame retardant.

2. A flame retardant polyolefin composition according to claim 1, wherein the ethylene based plastomer is a copolymer of ethylene and at least one C3 - C10 alpha-olefin.

3. A flame retardant polyolefin composition according to claim 1 or 2, wherein the propylene based plastomer is a copolymer of propylene and ethylene or a C4 - C10 alpha-olefin.

4. A flame retardant polyolefin composition according to any of claims 1 to 3, comprising 20 to 90 wt% of the ethylene based plastomer, relative to the total weight of the composition as a whole.

5. A flame retardant polyolefin composition according to any of claims 1 to 4, comprising 5 to 45 wt% of the propylene based plastomer, relative to the total weight of the composition as a whole.

6. A flame retardant polyolefin composition according to any of claims 1 to 5, wherein the flame retardant is present in an amount of 1.5 to 30 wt%, preferably 2.0 to 30 wt%, more preferably 5.0 to 30 wt%, especially 10 to 30 wt%, relative to the total weight of the composition as a whole.

7. A flame retardant polyolefin composition according to any of claims 1 to 6, further comprising a high melt flow rate propylene based plastomer.

8. A flame retardant polyolefin composition according to any of claims 1 to 7, wherein the flame retardant comprises a mixture of an ammonium polyphosphate and a silane functionalised ethylene copolymer.

9. A flame retardant polyolefin composition according to claim 8, wherein the silane functionalised ethylene copolymer is a copolymer of ethylene with a methylacrylate comonomer and a vinyl trimethoxysilane comonomer.

10. Use of a flame retardant polyolefin composition as defined in any of claims 1 to 9 for coating a substrate, preferably a fabric substrate.

11. A process for coating a substrate with a flame retardant polyolefin composition as defined in any of claims 1 to 9, said process comprising applying said composition to the surface of said substrate.

12. A substrate, preferably a fabric substrate, coated with a flame retardant polyolefin composition as defined in any of claims 1 to 9.

13. A substrate as claimed in claim 12, wherein the fabric substrate is a woven or non-woven fabric, preferably a knitted fabric.

14. An article comprising at least one component formed from the coated substrate as defined in claim 12 or 13.

15. An article as claimed in claim 14 which is selected from the group consisting of office furniture, vehicle interiors, seat cushions, back rest cushions, pillows, upholstered furniture, bed ~~matresses~~mattresses, wall coverings, shoes (tongue, vamp, heel counter, quarter), sports bags, inlay of ~~sky~~ ski boots, sports equipment (e.g. boxing gloves, boxing balls), carpets, rubber boats, PVC swimming pools, life

vests, handbags, purses, table coverings, table mats, stationary (e.g. books and wood inlay), saddlebags, tool bags.