

Claims

1. A flame retardant material comprising:
 - (a) a substrate;
 - 5 (b) a coating on the substrate, wherein the coating is optionally corona-treated, the coating comprising a flame retardant polyolefin composition (X) comprising:
 - (i) an ethylene based plastomer with a density in the range of 0.857 to 0.915 g/cm³ and an MFR₂ (190°C; 2.16 kg) in the range 0.5 – 30 g/10 min;
 - 10 (ii) a propylene based plastomer with a density in the range of 0.850 to 0.910 g/cm³ and an MFR₂ (230 °C/2.16 kg) in the range 0.01 – 30 g/10 min; and
 - (iii) a flame retardant (FR);
 - 15 (c) a primer layer on top of the coating; and
 - (d) a lacquer topcoat on top of the primer layer;
2. A flame retardant material according to claim 1, wherein the flame retardant polyolefin composition (X) comprises:
 - 20 a flame retardant (FR);
 - A) 5 to 35 wt.%, based on the overall weight of the flame retardant polyolefin composition, of a recycled polyolefin fabric substrate; wherein said fabric substrate is coated with a polymer composition (p1) comprising the following components:
 - 25 a1) an ethylene based plastomer with a density in the range of 0.857 to 0.915 g/cm³ and a MFR₂ (190°C, 2.16 kg) in the range of 0.5 to 30 g/10 min; and
 - a2) a propylene based plastomer in the range of 0.850 to 0.910 g/cm³ and a MFR₂ (230°C, 2.16 kg) in the range of 0.01 to 30 g/10 min;
 - 30 B) 65 to 95 wt.% based on the overall weight of the flame retardant polyolefin composition of a homopolypropylene or a recycled polymer

blend comprising b1) polypropylene and b2) polyethylene, wherein the weight ratio of b1) to b2) is from 3:7 to 12:1; and optionally

C) one or more additives;

with the proviso that the amounts of the flame retardant (FR) and

5 components A) and B), and C) if present, add up to 100 wt.%;

or wherein the flame retardant polyolefin composition (X) comprises the

following components:

a flame retardant (FR);

A1) 5 to 35 wt.%, based on the overall weight of the flame retardant

10 polyolefin composition, of a recycled polyolefin fabric substrate; wherein said fabric substrate is coated with a polymer composition (p2) comprising the following components:

a11) an ethylene based plastomer with a density in the range of 0.857 to 0.915 g/cm³ and a MFR₂ (190°C, 2.16 kg) in the range of 0.5 to 30 g/10 min; and

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a12) a propylene based plastomer in the range of 0.850 to 0.910 g/cm³ and a MFR₂ (230°C, 2.16 kg) in the range of 0.01 to 30 g/10 min;

B1) 65 to 95 wt.% based on the overall weight of the flame retardant polyolefin composition of a virgin polyolefin composition (p3) comprising the following components:

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b11) an ethylene based plastomer with a density in the range of 0.857 to 0.915 g/cm³ and a MFR₂ (190°C, 2.16 kg) in the range of 0.5 to 30 g/10 min; and

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b12) a propylene based plastomer with a density in the range of 0.850 to 0.910 g/cm³ and a MFR₂ (230°C, 2.16 kg) in the range of 0.01 to 30 g/10 min; and optionally

C1) one or more additives;

with the proviso that the amounts of the flame retardant (FR) and

components A1) and B1), and C1) if present, add up to 100 wt.%.

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3. A flame retardant material according to claim 1, comprising 20 to 90 wt% of the ethylene based plastomer (i), relative to the total weight of the polyolefin composition (X) as a whole, and/or comprising 5 to 45 wt% of the propylene based plastomer (ii), relative to the total weight of the polyolefin composition (X) as a whole.
4. A flame retardant material according to claim 1, wherein the polyolefin composition (X) further comprises a high melt flow rate propylene based plastomer.
5. A flame retardant material according to any of claims 1 to 4, wherein the ethylene based plastomer (i), a1), a11) and/or b11) is a copolymer of ethylene and at least one C₃ - C₁₀ alpha-olefin, and/or wherein the propylene based plastomer (ii), a2), a12), and/or b12) is a copolymer of propylene and ethylene or a C₄ - C₁₀ alpha-olefin.
6. A flame retardant material 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 polyolefin composition (X) as a whole.
7. A flame retardant material according to any of claims 1 to 6, wherein the flame retardant comprises an ammonium polyphosphate, optionally in combination with a silane functionalised ethylene copolymer, for example a copolymer of ethylene with a methylacrylate comonomer and a vinyl trimethoxysilane comonomer.
8. A flame retardant material according to any preceding claim, wherein the primer is an acrylic-modified polyethylene.
9. A flame retardant material according to any preceding claim, wherein the lacquer topcoat comprises a polyurethane or a fluoropolymer.

10. A flame retardant material according to any preceding claim, wherein the substrate is a fabric substrate, preferably a woven, non-woven or knitted fabric.
- 5 11. A flame retardant material according to any preceding claim wherein the substrate is a polypropylene fabric, preferably a polypropylene knitted fabric.
- 10 12. A flame retardant material according to any preceding claims, wherein the material does not show any significant damage after 5,000 cycles in an abrasion or flex test.
- 15 13. A process for producing a flame retardant material comprising
(a) a coated substrate, the coating comprising a flame retardant polyolefin composition (X) comprising:
(i) an ethylene based plastomer with a density in the range of 0.857 to 0.915 g/cm³ and an MFR₂ (190°C; 2.16 kg) in the range 0.5 – 30 g/10 min;
(ii) a propylene based plastomer with a density in the range of 0.850 to 0.910 g/cm³ and an MFR₂ (230°C; 2.16 kg) in the range 0.01 – 30 g/10 min; and
20 (iii) a flame retardant;
(b) a primer layer on top of the coating; and
(c) a lacquer topcoat on top of the primer layer;
25 said process comprising:
(A) providing a coated substrate, and optionally embossing the coated substrate;
(B) applying a primer layer to the coated substrate of step (A);
(C) applying a lacquer topcoat on top of the primer layer; and
30 (D) optionally embossing the resulting flame retardant material.

14. A process according to claim 13, wherein the substrate coated with the flame retardant polyolefin composition (X) is prepared by applying a coating of the polyolefin composition (X) to the substrate, preferably by extrusion.
- 5 15. A process according to claim 13 or claim 14, further comprising corona treatment of the coated substrate before application of the primer layer.
16. A process according to any of claims 13 to 15, wherein the flame retardant material is as defined in any of claims 1-11.
- 10 17. A flame retardant material obtainable by the process of any of claims 13 to 16.
- 15 18. An article comprising at least one component formed from the coated substrate as defined in any of claims 1 to 12 or 17, preferably an article which is selected from the group consisting of office furniture, vehicle interiors, seat cushions, back rest cushions, pillows, upholstered furniture, bed mattresses, wall coverings, shoes (tongue, vamp, heel counter, quarter), sports bags, inlay of 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, and tool bags.
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