[008] Processing aids in small quantities in thermoplastic polymer compositions in general and in halogenated polymer compositions in particularly can improve the processing characteristics through an acceleration of the fusion process of said thermoplastic polymer compositions in general and homogenization in halogen containing polymer compositions in particularly.

[009] With a filler added in large quantities to the composition, the processing aid used for the non-filled composition does not possess the same performance as in a highly filled composition, especially in view of fusion efficiency of the composition.

[010] The objective of the present disclosure is to propose a polymer composition which acts as processing aid for highly filled halogen containing polymer compositions.

[011] An objective of the present disclosure is also to have a polymer composition that can be used to optimize the melt behaviour especially the speed of fusion of highly filled halogen containing polymer compositions.

[012] An additional objective of the present disclosure is the reduction of the price of a polymer composition which acts as processing aid for the highly filled halogen containing polymer compositions by addition of low cost components without influencing the fusion efficiency or decrease too much the fusion efficiency.

[013] Still another objective of the present disclosure is a method for manufacturing a polymer composition which acts as processing aid for highly filled halogen containing polymer compositions.

[014] Still an additional objective is having a process for preparing polymer composition that can be used to help the transformation and to increase the melt behaviours of highly filled halogen containing polymer compositions.

[020] None of the prior art documents discloses a highly filled polymer composition comprising a halogen containing thermoplastic polymer and a (meth)acrylic copolymer with a filler where a part of the filler is added to the composition with the (meth)acrylic copolymer and a part of the filler is added to the composition with the halogen containing thermoplastic polymer.

[Brief description]

[021] Surprisingly it has been found that a composition comprising

a) a (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b)

b) a filler (F) or a mixture of two fillers (F1) and (F2)

c) a halogen containing thermoplastic polymer

characterized that the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer, gives a composition with an acceptable fusion time.

[021a] In an aspect, there is provided a composition comprising:

a) a (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b)

b) a filler (F) or a mixture of two fillers (F1) and (F2)

c) a halogen containing thermoplastic polymer

characterized that the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer.

[022] Surprisingly it has also been found that a process for preparing a composition comprising

a) a (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b)

b) a filler (F) or a mixture of two fillers (F1) and (F2)

c) a halogen containing thermoplastic polymer

said process comprises the step of

blending a compositions P1 with a halogen containing polymer and a filler (F) or (F2) characterized that

the composition P1 comprises an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler (F) or (F1) and

wherein the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F1) and (F2) together is more than 40phr in view of

the halogen containing thermoplastic polymer, gives a composition with a acceptable fusion time.

[022a] In an another aspect, there is provided a process for preparing a composition as defined above, said process comprises the step of

blending a compositions P1 with a halogen containing polymer and a filler (F) or (F2) characterized that the composition P1 comprises an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler (F) or (F1) and

wherein the glass transition temperature Tg of the (meth)acrylic copolymer is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer.

[023] Surprisingly it has also been found that a process for preparing a composition comprising

a) a (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b)

b) a filler (F) or a mixture of two fillers (F1) and (F2)

c) a halogen containing thermoplastic polymer

said process comprises the step of

blending two compositions P1 and P2 characterized that

the composition P1 comprises an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler F1 and

the composition P2 a halogen containing polymer and a filler F2

wherein the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F1) and (F2) together is more than 40phr in view of the halogen containing thermoplastic polymer, gives a composition with a acceptable fusion time.

[023a] In another aspect, there is provided a process for preparing a composition as defined above, said process comprises the step of blending two compositions P1 and P2 characterized that
the composition P1 comprises an (meth)acrylic copolymer (A1) or mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler F or F1 and
the composition P2 a halogen containing polymer and a filler F or F2 characterized that the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer.

[024] Surprisingly it has also been found that a composition P1 comprising an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler (F) or (F1) can be used to fuse in an acceptable time a composition comprising a halogen containing polymer and a filler (F) or (F2) wherein the glass transition temperature Tg of the (meth)acrylic copolymer is more important than 95°C and that the quantity of the filler (F1) and (F2) together is more than 40phr in view of the halogen containing thermoplastic polymer.

[025] Surprisingly it has also been found that a composition P1 comprising an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler (F) or (F1) can be used to fuse in an acceptable time a composition P2

comprising halogen containing polymer and a filler (F) or (F2) wherein the glass transition temperature Tg of the (meth)acrylic copolymer is more important than 95°C and that the quantity of the filler (F1) and (F2) together is more than 40phr in view of the halogen containing thermoplastic polymer.

[025a] In another aspect, there is provided the Use of a composition P1 comprising an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler F or F1 to decrease the fusion time of a composition comprising a halogen containing polymer and a filler (F) or (F2), characterized that the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer.

[025b] In another aspect, there is provided Use of a composition P1 comprising an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler F1 to decrease the fusion time of composition P2 comprising halogen containing polymer and a filler F2, characterized that the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer.

[025c] In another aspect, there is provided an article comprising a composition as defined above or a composition prepared by a process as defined above.

[Detailed description of the invention]

[026] According to a first aspect, the present invention relates to a composition comprising

a) a (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b)

b) a filler (F) or a mixture of two fillers (F1) and (F2)

c) a halogen containing thermoplastic polymer

characterized that the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is more than 40phr relative to the halogen containing thermoplastic polymer.

[027] In a second aspect the present invention relates to a preparing a composition comprising

a) a (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b)

b) a filler (F) or a mixture of two fillers (F1) and (F2)

c) a halogen containing thermoplastic polymer

said process comprises the step of

blending a compositions P1 with a halogen containing polymer and a filler (F) or (F2) characterized that

the composition P1 comprises an (meth)acrylic copolymer (A1) or a mixture of two (meth)acrylic copolymers (A1a) and (A1b) and a filler (F) or (F1) and

wherein the glass transition temperature Tg of the (meth)acrylic copolymer (A1) or the mixture of two (meth)acrylic copolymers (A1a) and (A1b) is more important than 95°C and that the quantity of the filler (F) or the mixture of two fillers (F1) and (F2) is