

What is claimed is:

1. A one-pack polymer modifier for polyvinyl chloride and polyvinyl chloride alloys comprised of:
 - 5 a) at least one process aid, including at least one functionalized process aid functionalized with at least one reactive functional group selected from the group consisting of epoxy functional groups, hydroxyl functional groups, β -keto ester functional groups, β -keto amide functional groups and carboxylic acid functional groups; and
 - 10 b) at least one impact modifier;wherein the one-pack polymer modifier is in the form of a plurality of individual particles and at least a portion of the individual particles contain both the at least one process aid and the at least one impact modifier.
- 15 2. The one-pack polymer modifier according to Claim 1, wherein the at least one functionalized process aid is functionalized with about 0.5 wt. % to about 35 wt.% of the at least one functional group based on the total weight of the process aid(s).
- 20 3. The one-pack polymer modifier according to Claim 1, wherein the at least one functionalized process aid is functionalized with at least 1 wt.% of the at least one reactive functional group based on the total weight of the process aid(s).
- 25 4. The one-pack polymer modifier according to Claim 1, wherein the at least one reactive functional group is derived from one or more monomers selected from the group consisting of hydroxyl-substituted alkyl esters of (meth)acrylic acid; vinyl esters of linear or branched carboxylic acids; unsaturated C_3 - C_6 monocarboxylic acids; unsaturated C_4 - C_6 dicarboxylic acids; epoxy group-containing monomers; β -keto esters of (meth)acrylic acid; β -keto amides of (meth)acrylic acid, and mixtures thereof.
- 30 5. The one-pack polymer modifier according to Claim 1, wherein the at least one functionalized process aid comprises a co-polymer of at least one alkyl (meth)acrylate and at least one functionalized monomer selected from the group consisting of glycidyl (meth)acrylate and (meth)acrylic acid.

6. The one-pack polymer modifier according to Claim 1, wherein the at least one functionalized process aid has a weight average molecular weight (M_w) that is about 50,000 g/mol or higher.

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7. The one-pack polymer modifier according to Claim 1, wherein the at least one functionalized process aid is derived from one or more (meth)acrylic-containing monomers and, optionally, one or more co-monomers selected from the group consisting of vinyl-containing monomers, styrene and styrene derivatives, olefins, dienes, and mixtures thereof.

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8. The one-pack polymer modifier according to Claim 1, wherein at least one of the following conditions exists: a) at least one of the one or more functionalized process aids is crosslinked; or b) at least one of the functionalized process aids is capable of crosslinking with itself or a thermoplastic polymer.

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9. The one-pack polymer modifier according to Claim 1, wherein the at least one impact modifier is selected from block copolymers, core-shell particulate polymers or mixtures thereof.

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10. The one-pack polymer modifier according to Claim 1, wherein the at least one impact modifier is selected from core-shell particulate polymers having a rubbery core with a glass transition temperature less than 50 degrees C and a grafted, compatible, outer polymeric shell.

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11. The one-pack polymer modifier according to Claim 10, wherein the outer polymeric shell is comprised of polymethylmethacrylate.

12. The one-pack polymer modifier according to Claim 1, wherein the at least one impact modifier is a core-shell particulate polymer having a particle size of from 70 nm to 5 microns.

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13. The one-pack polymer modifier according to Claim 1, comprising from 1 to 50 wt. % in total of the at least one process aid and from 99 to 50 wt. % in total of the at least one impact modifier, based on the total weight of process aid and impact modifier.

14. The one-pack polymer modifier according to Claim 1, further comprising at least one mineral filler.

5 15. The one-pack polymer modifier according to Claim 14, wherein the at least one process aid, the at least one impact modifier and the at least one mineral filler are in intimate contact.

10 16. The one-pack polymer modifier according to Claim 14, wherein the at least one mineral filler is selected from the group consisting of ground natural calcium carbonate (GCC), precipitated calcium carbonate (PCC), nanosized PCC (NPCC), fumed silica, precipitated silica, untreated clay, untreated Montmorillonite (nano-clay), zeolite, perlite and mixtures thereof.

15 17. The one-pack polymer modifier according to Claim 14, comprising from 1 to 50 wt. % in total of the at least one process aid, from 99 to 50 wt. % in total of the at least one impact modifier, and from 0.01 to 15 wt. % in total of the at least one mineral filler, based on the total weight of process aid, impact modifier and mineral filler.

20 18. The one-pack polymer modifier according to Claim 1, wherein the one-pack polymer modifier is formed by co-powderization of aqueous solutions, emulsions, suspensions or slurries of the at least one process aid and the at least one impact modifier.

25 19. A method for making an article of manufacture selected from an automotive product, a building material, a household or kitchen item, a medical or office supply product, apparel, or packaging for personal care or other consumer products, comprising forming the article of manufacture from polyvinyl chloride or polyvinyl chloride alloys and a one-pack polymer modifier according to Claim 1.

30 20. A method of reducing surface gloss and increasing impact strength of a thermoplastic component, the method comprising preparing a thermoplastic compound by admixing at least the one-pack polymer modifier according to Claim 1 and polyvinyl chloride or polyvinyl chloride alloys and forming a thermoplastic component.

21. A thermoplastic compound comprising polyvinyl chloride or polyvinyl chloride alloys and the one-pack polymer modifier of claim 1.

5 22. The thermoplastic compound according to Claim 21, further comprising one or more additives selected from the group consisting of surfactants, dispersing agents, fillers, heat stabilizers, internal and external lubricants, other process aids, melt strength additives, flow aids, process aids not part of the one-pack polymer modifier, impact modifiers not part of the one-pack polymer modifier and pigments.

10 23. An article of manufacture selected from an automotive product, a building material, a household or kitchen item, a medical or office supply product, apparel, or packaging for personal care or other consumer products, wherein the article of manufacture is comprised of the thermoplastic compound according to Claim 21.