fire resistance. As a result of the high degree of variability and wide applicability of their use, engineering plastics have been the subject of much research as development.

[004] Despite large investments in engineering plastics that have been made to-date, there is a great need for the development of engineering plastics having superior properties.

SUMMARY

[005] In some embodiments, the present disclosure provides a thermoplastic pelletizable polymer composition comprising

[006] (a) a polymer selected from the group consisting of a engineering plastic and an engineering plastic alloy; and

[007] (b) an olefin-maleic anhydride copolymer; wherein the polymer and the olefin-maleic anhydride copolymer are compounded.

[008] In some embodiments, the present disclosure provides a thermoplastic pelletizable engineering plastic alloy composition comprising:

[009] (a) an alloy of two or more engineering plastics, and

[010] (b) an olefin-maleic anhydride copolymer,

[011] wherein the thermoplastic pelletizable engineering plastic alloy composition has increased tensile strength, improved stretch performance, increased impact strength, increased flex modulus, increased heat deflection temperature, or a combination thereof compared to the unmodified alloy.

[012] In some embodiments, the present disclosure provides a thermoplastic pelletizable engineering plastic alloy composition comprising:

[013] (a) an alloy of two or more engineering plastics, and

[014] (b) an olefin-maleic anhydride copolymer.

[015] In some embodiments, the present disclosure provides a thermoplastic pelletizable compatibilized polymer alloy composition comprising:

[016] (a) two or more different engineering plastics, where at least two of the engineering plastics are non-compatible; and

[017] (b) an olefin-maleic anhydride copolymer, wherein the olefin-maleic anhydride copolymer (OMAP) enables the compatibilization of the engineering plastics.

[017a] In one aspect, there is provided a thermoplastic pelletizable compatibilized polymer alloy composition comprising:

(a) two or more different engineering plastics, where at least two of the engineering plastics are non-compatible; and

(b) an olefin-maleic anhydride copolymer, wherein the olefin-maleic anhydride copolymer (OMAP) enables the compatibilization of the engineering plastics, wherein the non-compatible engineering plastics are thermoplastic polyurethane (TPU) and polybutylene terephthalate (PBT), or polyamide and polybutylene terephthalate (PBT).

[018] In some embodiments, the present disclosure provides a compounded polyester produced by a process comprising the step of compounding a polymer mixture at a processing temperature, where the polymer mixture comprises polyester and an olefin-maleic anhydride copolymer.

[019] In some embodiments, the disclosure provides a method for preparing a compounded polyester comprising the step of compounding a polymer mixture at a processing temperature, where the polymer mixture comprises a polyester, an olefin-maleic anhydride copolymer, and optionally a stabilizing agent.

[020] Additional embodiments, features, and advantages of the disclosure will be apparent from the following detailed description and through practice of the disclosure. The polymers of the present disclosure can be described as embodiments in any of the following enumerated clauses. It will be understood that any of the embodiments described herein can be used in connection with any other embodiments described herein to the extent that the embodiments do not contradict one another.

[021] 1. A thermoplastic pelletizable polymer composition comprising:

[022] (a) a polymer selected from the group consisting of an engineering plastic and an engineering plastic alloy; and

[023] (b) an olefin-maleic anhydride copolymer; wherein the polymer and the olefin-maleic anhydride copolymer are compounded.

[024] 2. The thermoplastic pelletizable polymer composition of clause 1, wherein the polymer is an engineering plastic.

[025] 3. The thermoplastic pelletizable polymer composition of clause 1 or 2, wherein the polymer is selected from the group consisting of polyoxymethylene (POM), polycarbonate (PC), thermoplastic polyurethane (TPU) and acrylonitrile-butadiene-styrene terpolymers (ABS).

[026] 4. The thermoplastic pelletizable polymer composition of clause 1 or 2, wherein the engineering plastic is a polyester.

[027] 5. The thermoplastic pelletizable polymer composition of clause 1, 2 or 4, wherein the polymer is selected from the group consisting of a polylactic acid (PLA), a polyglycolic acid (PGA), a polycaprolactone (PCL), a polyethylene adipate (PEA), a polyhydroxyalkanoate (PHA), a polyhydroxybutyrate (PHB), a poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV), a polyethylene terephthalate (PET), a polybutylene terephthalate (PBT), a polytrimethylene terephthalate (PTT), a polyethylene naphthalate (PEN), an aromatic liquid crystal polyester (LCP) polyester, a copolyester of polyethylene terephthalate, a copolyester of polyethylene naphthalate, a copolyester of polyethylene isophthalate and a copolyester of polybutylene terephthalate.

[028] 6. The thermoplastic pelletizable polymer composition of clause 1, 2, 4 or 5, wherein the polymer is selected from the group consisting of a polyhydroxyalkanoate, a polylactic acid, a polyethylene terephthalate and a polybutylene terephthalate.

WHAT IS CLAIMED IS:

1. A thermoplastic pelletizable compatibilized polymer alloy composition comprising:

(a) two or more engineering plastics, wherein at least two of the engineering plastics are non-compatible engineering plastics; and

(b) an olefin-maleic anhydride copolymer,

wherein the olefin-maleic anhydride copolymer enables compatibilization of the non-compatible engineering plastics, wherein the non-compatible engineering plastics are thermoplastic polyurethane (TPU) and polybutylene terephthalate (PBT), or polyamide and polybutylene terephthalate (PBT).

2. The thermoplastic pelletizable compatibilized polymer alloy composition of claim 1, wherein non-compatible engineering plastics are thermoplastic polyurethane (TPU) and polybutylene terephthalate (PBT).

3. The thermoplastic pelletizable compatibilized polymer alloy composition of claim 1, wherein the non-compatible engineering plastics are a polyamide and polybutylene terephthalate (PBT).

4. The thermoplastic pelletizable compatibilized polymer alloy composition of any one of claims 1 to 3, wherein the olefin-maleic anhydride copolymer is an ethylene-maleic anhydride polymer.

5. The thermoplastic pelletizable compatibilized polymer alloy composition of any one of claims 1 to 4, wherein one or more of the engineering plastic is recycled.

6. The thermoplastic pelletizable compatibilized polymer alloy composition of claim 4, wherein the ethylene-maleic anhydride polymer is a 1:1 alternating copolymer.