**CLAIMS**

1. A thioacetate isobutylene-based polymer composition comprising

(a) a thioalkylated functionalized polymer; and

(b) one of or a combination of any of the following:

(i) a sulfur donor;

(ii) a blend of sulfur and a sulfur donor; and

(iii) an accelerator cure system~~.~~

wherein the functionalized polymer is thioacetate functionalized poly(isobutylene-co-para-methylstyrene).

~~2. The thioacetate isobutylene-based polymer composition of claim 1, wherein the functionalized polymer is thioacetate functionalized poly(isobutylene-co-para-methylstyrene).~~

~~3. The thioacetate isobutylene-based polymer composition of any preceding claim, further comprising at least one filler.~~

~~4.~~2. The thioacetate isobutylene-based polymer composition of any preceding claim, wherein the sulfur donor is selected from the group consisting of tetramethyl thiuram disulfide ("TMTD"), 4,4'-dithiodimorpholine, dipentamethylene thiuram tetrasulfide ("DPTT"), and thiocarbamyl sulfonamide.

~~5.~~3. The thioacetate isobutylene-based polymer composition of any preceding claim, wherein the accelerator cure system comprises one or more of thiazoles, amines, guanidines, sulfenamides, thiurams, dithiocarbamates, and/or zanthates.

~~6.~~4. The thioacetate isobutylene-based polymer composition of claim ~~5~~ 3, wherein the accelerator cure system is N-cyclohexyl-2-benzothiazole sulfenamide ("CBS") or diphenylguanidine ("DPG").

~~7. The thioacetate isobutylene-based polymer composition of claim 3, wherein the filler is selected from the group consisting of carbon black, white filler, and combinations thereof.~~

~~8. The thioacetate isobutylene-based polymer of any preceding claim, wherein the composition is useful as a thermoset in pharmaceutical and tire applications.~~

~~9.~~5. A thermoset composition comprising:

(a) a thioalkylated functionalized polymer; and

(b) one of or a combination of any of the following:

(i) a sulfur donor;

(ii) a blend of sulfur and a sulfur donor; and

(iii) an accelerator cure system;

wherein the functionalized polymer is thioacetate functionalized poly(isobutylene-co-para-methylstyrene) and the composition is substantially free of zinc.

~~10. The thermoset composition of claim 9, wherein the functionalized polymer is thioacetate functionalized poly(isobutylene-co-para-methylstyrene).~~

~~11. The thermoset composition of claims 9-10, further comprising at least one filler.~~

~~12. The thermoset composition of claim 11, wherein the filler is selected from the group of carbon black, white filler, and combinations thereof.~~

~~13.~~6. The thermoset composition of ~~claims 9-12~~ claim 5, wherein the accelerator cure system is N-cyclohexyl-2-benzothiazole sulfenamide ("CBS") or diphenylguanidine ("DPG").

~~14.~~7. The thermoset composition of claims ~~9-13~~ 5-6, wherein the sulfur donor is selected from the group consisting of tetramethyl thiuram disulfide ("TMTD"), 4,4'-dithiodimorpholine, dipentamethylene thiuram tetrasulfide ("DPTT"), and thiocarbamyl sulfonamide.

~~15.~~8. A rubber composition comprising the thermoset composition of ~~any preceding~~ claim 5, further comprising a hydrocarbon resin.

~~16. The rubber composition of claim 15 further comprising a hydrocarbon resin.~~

~~17. The rubber composition of claim 16, wherein the hydrocarbon resin is hydrogenated.~~

~~18. The rubber composition of claims 15-17, wherein the hydrocarbon resin comprises cyclopentadiene, dicyclopentadiene, methylcyclopentadiene, and combinations thereof.~~

~~19. An article comprising the rubber composition of claims 15-18.~~