CLAIMS

1. An isobutylene-based polymer composition comprising:

(a) an isobutylene-based functionalized polymer; and

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

(i) a sulfur donor which is selected from the group consisting of tetramethyl thiuram disulfide ("TMTD"), 4,4'-dithiodimorpholine, dipentamethylene thiuram tetrasulfide ("DPTT"), and thiocarbamyl sulfonamide;

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

(iii) an accelerator cure system,

wherein the isobutylene-based functionalized polymer is a modified poly(isobutylene-co-para-methylstyrene) amine-ionomer, wherein the amine ionomer comprises a 1°, 2°, or 3° amine nucleophile with one or more pendant vinyl groups, or

wherein the isobutylene-based functionalized polymer is a modified poly(isobutylene-co-para-methylstyrene)-phosphine ionomer, wherein the phosphine ionomer comprises diphenylphosphinostyrene, allyldiphenylphosphine, diallylphenylphosphine, diphenylvinylphosphine, triallyphosphosphine, or combinations thereof, and

wherein the composition has less than 0.01 wt % zinc based on the total weight of the composition.

2. The isobutylene-based polymer composition of claim 1, wherein the amount of the amine ionomer present in the functionalized polymer is about 0.5 wt % to about 50 wt % based on the total weight of the functionalized polymer.

3. The isobutylene-based polymer composition of claim 1, wherein the amount of the phosphine ionomer present in the functionalized polymer is about 0.5 wt % to about 50 wt % based on the total weight of the functionalized polymer.

4. The 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.

5. A thermoset composition comprising:

(a) an isobutylene-based functionalized polymer; and

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

(i) a sulfur donor which is selected from the group consisting of tetramethyl thiuram disulfide ("TMTD"), 4,4'-dithiodimorpholine, dipentamethylene thiuram tetrasulfide ("DPTT"), and thiocarbamyl sulfonamide;

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

(iii) an accelerator cure system;

wherein the isobutylene-based functionalized polymer is a modified poly(isobutylene-co-para-methylstyrene) amine-ionomer, wherein the amine ionomer comprises a 1°, 2°, or 3° amine nucleophile with one or more pendant vinyl groups, or

wherein the isobutylene-based functionalized polymer is a modified poly(isobutylene-co-para-methylstyrene)-phosphine ionomer, wherein the phosphine ionomer comprises diphenylphosphinostyrene, allyldiphenylphosphine, diallylphenylphosphine, diphenylvinylphosphine, triallyphosphosphine, or combinations thereof, and

wherein the composition is substantially free of zinc.