## CLAIMS

1. An ionomer comprising a reaction product of a reaction between:

a) halogenated isoolefin copolymer comprising repeating units derived from at least one isoolefin monomer and repeating units derived from one or more multiolefin monomers; and

b) nucleophiles comprising at least one first nucleophile having no pendant vinyl group, and at least one second nucleophile comprising at least one pendant vinyl group;

wherein a weight ratio of the first nucleophile to the second nucleophile is 4:1 to 100:1.

2. The ionomer of claim 1, wherein a total amount of the two nucleophiles in the reaction is less than 5 phr.

3. The ionomer of claim 1, wherein one or more of the repeating units derived from the multiolefin monomers comprise an allylic halogen moiety.

4. The ionomer of claim 1, further comprising repeating units derived from a co-monomer.

5. The ionomer of claim 4, wherein the co-monomer is a $C_1$-$C_4$ or halogen substituted styrene.

6. The ionomer of claim 1, wherein:

the isoolefin monomer comprises a $C_4$ to $C_a$ isomonoolefin monomer; and

the one or more multiolefin monomers are selected from $C_4$-$C_{16}$ conjugated diolefins.

7. The ionomer of claim 1, wherein:

the isoolefin monomer comprises isobutylene; and

the conjugated diolefin is isoprene.

8. The ionomer of claim 1, wherein:

the ratio of the first nucleophile to the second nucleophile is 4:1 to 50:1;

the total amount of the first and second nucleophiles in the reaction is about 1 to about 4 phr;

the halogenated isoolefin copolymer comprises halobutyl rubber;

the first nucleophile is selected from the group consisting of trimethylphosphine, triethylphosphine, triisopropylphosphine, tri-n-butylphosphine, triphenylphosphine, and mixtures thereof; and

the second nucleophile is selected from the group consisting of diphenylphosphinostyrene, allyldiphenylphosphine, diallylphenylphosphine, diphenylvinylphosphine, triallylphosphine, and mixtures thereof.

9. The ionomer of claim 1, wherein:

the first nucleophile is triethylphosphine; and

the second nucleophile is diphenylphosphinostyrene.

10. A process for preparing an ionomer, the process comprising:

contacting a halogenated isoolefin copolymer and nucleophiles to produce a reaction mixture, wherein;

the halogenated isoolefin copolymer comprises repeating units derived from at least one isoolefin monomer and repeating units derived from one or more multiolefin monomers,

the nucleophiles comprise at least one first nucleophile having no pendant vinyl group and at least one second nucleophile comprising at least one pendant vinyl group, and

a weight ratio of the first nucleophile to the second nucleophile is 4:1 to 100:1; and

reacting halogen moieties of the halogenated copolymer with the nucleophiles to form the ionomer.

11. The process according to claim 10, wherein the total amount of the first and second nucleophiles in the reaction mixture is less than 5 phr.

12. The process according to claim 10, wherein the process comprises contacting the copolymer with the first nucleophiles for a first reaction between the copolymer and the first nucleophiles, followed by contacting the copolymer with the second nucleophiles for a second reaction with the second nucleophiles.

13. The process according to claim 12, wherein the first and second reactions between

the copolymer and first and second nucleophiles are carried out at different conditions.

14. The process according to claim 12, wherein:

the first reaction between the copolymer and the first nucleophile is carried out at a temperature of about 130° C., for 10 minutes; and

the second reaction between the copolymer and the second nucleophile is carried out at a temperature of about 90° C., for 35 minutes.

15. The process according to claim 10, wherein the halogenated isoolefin copolymer further comprises repeating units derived from a $C_1$-$C_4$ or halogen substituted styrene.

16. The process according to claim 10, wherein:

the halogenated isoolefin copolymer comprises halobutyl rubber;

the first nucleophile is selected from the group consisting of trimethylphosphine, triethylphosphine, triisopropylphosphine, tri-n-butylphosphine, triphenylphosphine, and mixtures thereof, and

the second nucleophile Is selected from the group consisting of diphenylphosphinostyrene (DPPS), allyldiphenylphosphine, diallylphenylphosphine, diphenylvinylphosphine, triallylphosphine, and mixtures thereof.

17. The process according to claim 10, further comprising curing the ionomer by healing at a curing temperature.

18. The process according to claim 17, wherein the curing temperature is about 80° C. to about 250° C. and the curing comprises adding a peroxide curing agent.

19. The process according to claim 18, wherein the process further comprises admixing a peroxide curing co-agent with the peroxide curing agent and the ionomer.

20. The process according to claim 19, wherein:

the peroxide curing agent is added in an amount of from 0.2 to 7 phr;

the peroxide curing agent is selected from the group consisting of dicumyl peroxide, di-tert-butyl peroxide, benzoyl peroxide, 2,2'-bis (tert-butylperoxy) diisopropylbenzene, benzoyl peroxide, 2,5-dimethyl-2,5-di(tert-butylperoxy)-hexyne-3, 2,5-dimethyl-2,5-

d(benzolyperoxy)hexane, (2,5-bis(tert-butylperoxy)-2,5-dimethyl hexane, and mixtures thereof; and

the co-agent is selected from the group consisting of triallyl isocyanurate (TAIC), N,N'-m-phenylene dimaleimide, triallyl cyanurate (TAC), liquid polybutadiene, and mixtures thereof.