Claims

1. An ionomer comprising a reaction product of the reaction between a halogenated isoolefin copolymer and at least one phosphorus based nucleophile comprising at least one pendant vinyl group.

2. The ionomer of claim 1, wherein a halogenated isoolefin copolymer comprises repeating units derived from at least one isoolefin monomer, and repeating units derived from one or more multiolefin monomers, one or more alkyl substituted aromatic vinyl monomers or a mixture thereof.

3. The ionomer of claim 2, wherein said halogenated copolymer comprises at least one allylic halogen moiety, or at least one halo alkyl moiety or both.

4. The ionomer of claim 2, wherein said halogenated copolymer comprises repeating units derived from said at least one isoolefin and repeating units derived from said one or more alkyl substituted aromatic vinyl monomers.

5. The ionomer of claim 2, wherein said halogenated copolymer comprises repeating units derived from said at least one isoolefin, repeating units derived from said one or more multiolefin monomers, and repeating units derived from said one or more alkyl substituted aromatic vinyl monomers.

6. The ionomer of any one of claims 1 to 5, wherein the isoolefin monomer comprises a C_4 to C_8 isomonoolefin monomer.

7. The ionomer of claim 6, wherein the isomonoolefin monomer comprises isobutylene.

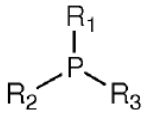
8. The ionomer of claim 1, wherein said halogenated copolymer comprises halobutyl rubber.

9. The ionomer of claim 1, wherein said halogenated copolymer comprises a copolymer of isobutylene and p-methyl styrene, wherein one or more repeating units derived from said p-methyl styrene have a benzylic halogen group.

10. The ionomer of claim 1, wherein said halogenated copolymer comprises a terpolymer of isobutylene, isoprene and p-methyl styrene, wherein one or more repeating units derived from said isoprene have an allylic halogen moiety and/or one or more repeating units derived from said p-methyl styrene have a benzylic halogen group.

11. The ionomer of any one of claims 1 to 10, wherein said halogenated copolymer is a star branched polymer.

12. The ionomer of any one of claims 1 to 11, wherein the phosphorus based nucleophile has the formula:



wherein:

T_1, R_2 and R_3 are independently:

a linear or branched C_1 -C_{18} alkyl group optionally comprising one or more hetero atoms, one or more carbonyl groups or combinations thereof; C6 to C10 aryl; C3-C6 heteroaryl; C3-C6 cycloalkyl; C3-C6 heterocycloalkyl; or combinations thereof;

wherein at least one of R_1, R_2 and R_3 contains a pendant vinyl group.

13. A process for preparing an ionomer comprising the steps of:
providing a halogenated isoolefin copolymer;
providing at least one phosphorus based nucleophile comprising at least one pendant vinyl group; and
reacting the halogen moiety of said halogenated copolymer with the nucleophile to form the ionomer.

14. A process for preparing a cured polymer comprising the steps of:
providing a halogenated isoolefin copolymer;
providing at least one phosphorus based nucleophile comprising at least one pendant vinyl group;

reacting the halogen moiety of said halogenated copolymer with the nucleophile to form an ionomer; and

curing the ionomer by heating at a suitable curing temperature.

15. The process of claim 14, wherein the curing step further comprises adding a peroxide curing agent.