

selected and present in sufficient amounts to react with each other by vulcanization within said polymeric thermoplastic matrix to form a silicone semi-interpenetrating polymer network, said vulcanization of said silicone and said polymer being initiated during thermoplastic melt-processing of said composition.

2. A composition according to claim 1 wherein said silicone ranges from between about 1 weight percent and about 60 weight percent based on the total weight of the composition.

3. A composition according to claim 1 wherein said thermoplastic matrix is selected from the group consisting of polyamides, thermoplastic polyurethanes, bisphenol A polycarbonates, styrene-ethylene-butylene-styrene block copolymers, polyacetals, polyolefins, styrene-butadiene copolymers, polyolefin elastomers, and polyamide-polyether elastomer base resins.

4. A composition according to claim 1 wherein said unsaturated group comprises a vinyl group.

5. A composition according to claim 4 forming a predominantly chain-extended structure wherein said vinyl-containing polymer contains from about two to about four vinyl groups and wherein said hydride-containing silicone contains 1 to 2 times the equivalent of said vinyl-containing polymer with the ratio of said hydride groups to said vinyl groups being between about 1.2:1 and about 6:1.

6. A composition according to claim 4 wherein the vinyl-containing polymer has two vinyl groups in terminal positions.

7. A composition according to claim 4 forming a predominantly cross-linked structure wherein said vinyl-containing polymer contains from about two to about thirty vinyl groups and said hydride-containing silicone contains from two to ten times the equivalent of said vinyl-containing polymer with the ratio of the hydride groups to the vinyl groups being between about 1.2:1 and about 6:1.

8. A composition according to claim 1 wherein said silicone further comprises constituents selected from the group consisting of methyl groups, phenyl groups, longer chain alkyl groups or cyanopropyl groups.

9. A melt-processable composition according to claim 1 wherein said thermoplastic melt-processing of said composition within said matrix comprises melt-mixing.

10. A composition according to claim 4 wherein the vinyl group is on a vinyl polymer selected from the group consisting of styrene, butadiene and/or urethane polymers and copolymers.

11. A composition according to claim 10 wherein the vinyl group is on a butadiene copolymer or polymer containing a significant proportion of poly 1,2-butadiene units.

12. A composition according to claim 4 wherein the vinyl group is on a triethoxysilyl modified poly 1,2-butadiene.

13. A method for producing a silicone semi-interpenetrating polymer network comprising vulcanizing a silicone component by the reaction of a polymeric silicone containing hydride groups and a non-silicone polymer containing at least one unsaturated group within a polymeric thermoplastic matrix at least partially during thermoplastic melt-processing of said silicone component and said matrix.

14. A method according to claim 13 wherein said reaction is conducted in the presence of a catalyst.

15. A method according to claim 13 wherein said unsaturated group is a vinyl group.

16. A method according to claim 14 wherein said catalyst comprises a platinum complex.

17. A method according to claim 13 wherein said thermoplastic matrix is selected from the group consisting of polyamides, thermoplastic polyurethanes, bisphenol A polycarbonates, styrene-ethylene-butylene-styrene block copolymers, styrene butadiene copolymers, polyolefins, polyacetals, polyolefin elastomers, and polyamide-polyether elastomer base resins.

18. A method according to claim 13 wherein a predominantly chain-extended structure is formed by combining a hydride-containing silicone and a vinyl-containing polymer with the vinyl-containing polymer having from about two to about four vinyl groups and the hydride-containing silicone containing 1 to 2 times the equivalent of the vinyl functionality with the ratio of the hydride groups to the vinyl groups being about 1.2:1 to 6:1, adding a catalyst and melt-processing the resultant mixture.

19. A method according to claim 18 wherein said melt-processing comprises extrusion.

20. A method according to claim 18 wherein said melt-processing is followed by pelletizing.

21. A method according to claim 13 further comprising conducting the reaction in the presence of fumed silica.

22. A method according to claim 16 further comprising conducting the reaction in the presence of vinyl siloxane.

23. A method according to claim 15 wherein a predominantly cross-linked structure is formed by separately extruding the vinyl-containing polymer and hydride-containing silicone into separate portions of said thermoplastic matrix, mixing the portions, adding a catalyst and melting the portions together so as to react the vinyl-containing polymer and hydride-containing silicone.

24. A method according to claim 15 wherein a predominantly cross-linked structure is formed by extruding together the vinyl-containing polymer and hydride-containing silicone into said thermoplastic matrix in the presence of a platinum catalyst and a fugitive inhibitor and melt-processing the resultant mixture.

25. A method according to claim 23 wherein the vinyl-containing polymer contains from about two to about thirty vinyl groups and the hydride-containing silicone contains from two to ten times the equivalent of the vinyl functionality with the ratio of the hydride groups to the vinyl groups being about 1.2:1 to 6:1.

26. A method according to claim 15 wherein the vinyl group is on a vinyl polymer selected from the group consisting of styrene, butadiene and/or urethane polymers and copolymers.

27. A method according to claim 26 wherein the vinyl group is on a butadiene copolymer or polymer containing a significant proportion of poly 1,2-butadiene units.

28. A method according to claim 15 wherein the vinyl group is on a triethoxysilyl modified poly 1,2-butadiene.

29. A method according to claim 13 wherein said thermoplastic melt-processing of said silicone component and said matrix comprises thermoplastic melt-mixing of said silicone component with said matrix.

* * * * *