

and 40 mole percent vinylmethylsiloxane units, based on total number of diorganosiloxane units in the polymer backbone, 14.6 lbs. trimethylsiloxy-endblocked polymethylhydrogensiloxane having 1.55 wt % silicon-bonded hydrogen content and 1.46 lbs. of a complex of chloroplatinic acid and sym-divinyltetramethyldisiloxane diluted with a siloxane polymer to provide 0.7 wt % platinum content was heated for one hour at 120° C. under vacuum (150 mm Hg). The temperature was raised to 130° C. for an additional 4½ hours at which time 40 lbs. of trimethylsiloxy-endblocked polymethylhydrogensiloxane and 0.22 lbs. of chloroplatinic acid/sym-divinyltetramethyldisiloxane complex was added to the reaction vessel. The reaction was continued for 30 minutes at 130° C. and 150 mm Hg. The temperature was reduced to 76° C. and the product was removed from the reaction vessel. The product was easily crumbed into fine particles. The vinyl-containing polyorganosiloxane product had 18.5 mole percent cross-linked vinyl, 21.5 mole percent unreacted vinyl and 60 mole percent dimethyl siloxane units in the polymer chain.

The results of this example demonstrate that good crumb rubber can be prepared at cross-linked vinyl content approaching 20 mole percent.

Of course, it is understood that the above is merely a preferred embodiment of the invention and that various changes and alterations can be made without departing from the spirit and broader aspects thereof.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows.

1. A silicone crumb rubber comprising a vinyl-containing polydiorganosiloxane backbone containing at least about 20 mole percent of unreacted vinyl-containing diorganosiloxane groups in the polymer chain, based on total number of diorganosiloxane groups in the polymer chain, to prevent depolymerization of the polymer backbone, and from about 1.5 to about 20 mole percent cross-linked vinyl-containing siloxane groups in the polymer chain, based on total number of diorganosiloxane groups in the polymer chain, to create a solid crumb material.

2. The silicone crumb rubber of claim 1 in which said vinyl-containing polydiorganosiloxane backbone comprises from about 20 to about 55 mole percent unreacted vinyl-containing diorganosiloxane groups.

3. The silicone crumb rubber of claim 1 in which said vinyl-containing polydiorganosiloxane backbone polymer of the crumb comprises from about 35 mole percent unreacted vinyl-containing diorganosiloxane groups, based on total number of diorganosiloxane groups in said chain.

4. A silicone crumb comprising the cured product obtained by cross-linking:

(A) a vinyl-containing polyorganosiloxane comprising diorganosiloxane units and triorganosiloxy end block units, wherein the organic radicals of said diorganosiloxane units are monovalent hydrocarbon radicals or monovalent halogenated hydrocarbon radicals and wherein at least 21.5 mole percent of said diorganosiloxane units comprise organovinylsiloxane units; with

(B) a silicone-bonded hydrogen-containing polysiloxane, the valence of the silicon atoms not satisfied by divalent oxygen atoms or silicon-bonded hydrogen atoms being satisfied by monovalent hydrocarbon

radicals or monovalent halogenated hydrocarbon radicals; and using
(C) a hydrosilation-specific catalyst for the hydrosilation reaction of (A) and (B);

said cured product having only from about 1.5 to about 20 mole percent of diorganosiloxane units comprising cross-linked vinyl-containing organovinylsiloxane units, leaving the balance of the vinyl groups of the diorganosiloxane units unreacted.

5. A silicone crumb in accordance with claim 4 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 30 to 60 mole percent.

6. A silicone crumb in accordance with claim 5 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 35 to 45 mole percent.

7. A silicone crumb in accordance with claim 5 in which said vinyl-containing polyorganosiloxane has a molecular weight in the range from 20,000 to 60,000.

8. A silicone crumb in accordance with claim 7 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 30 to 60 mole percent.

9. A silicone crumb in accordance with claim 7 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 35 to 45 mole percent.

10. A silicone crumb in accordance with claim 5 in which said vinyl-containing polyorganosiloxane has a molecular weight in the range from 25,000 to 50,000.

11. A silicone crumb in accordance with claim 10 herein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 30 to 60 mole percent.

12. A silicone crumb in accordance with claim 10 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 35 to 45 mole percent.

13. A silicone crumb in accordance with claim 5 in which said vinyl-containing polyorganosiloxane has a molecular weight in the range from 30,000 to 40,000.

14. A silicone crumb in accordance with claim 13 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 30 to 60 mole percent.

15. The silicone crumb in accordance with claim 14 in which the diorganosiloxane units of said vinyl-containing polyorganosiloxane comprise methylvinylsiloxane units.

16. The crumb of claim 15 in which the silicon-bonded hydrogen-containing polysiloxane comprise a polymethylhydrogensiloxane.

17. The crumb rubber of claim 16 in which there are from about 30 to about 35 silicon-bonded hydrogen atoms per molecule of said silicon-bonded hydrogen-containing polysiloxane.

18. The silicone crumb of claim 17 in which the triorganosiloxy endblock units of said vinyl-containing polyorganosiloxane comprise trimethylsiloxy endblock units, and in which the polymethylhydrogensiloxane is trimethylsiloxy endblocked.

19. A silicone crumb in accordance with claim 13 wherein the vinylorganosiloxane content of said vinyl-containing polyorganosiloxane is in the range from 35 to 45 mole percent.