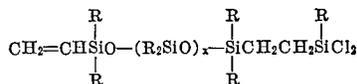


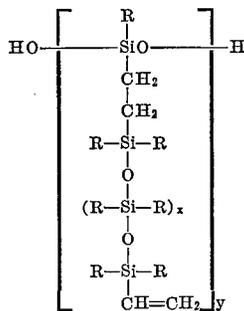
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The silicone polymers of the present invention can be prepared by adding a hydrolyzable siloxane polymer of the general formula



wherein R and x are described above, to a solution of a water soluble basic material and water. The basic material is such that the pH of the solution is maintained between 7 and 11 during the hydrolysis and during the subsequent conditioning and aging steps as described below. The basic aqueous solution is vigorously agitated during the addition of the hydrolyzable silicone polymer. The presence of organic solvents in the reaction mixture enhance cyclization of the reactants, therefore, no organic solvents should be present during this reaction step. The temperature of the hydrolysis step is not critical and can vary over a wide range such as from 0° C. to the reflux temperature of the reaction mixture. Higher temperatures provide higher molecular weight polymers. Conditioning as disclosed herein refers to the process in which the hydrolyzed molecules are condensed into short chain polymers usually of less than 6 units.

After the hydrolysis and conditioning steps the hydrolyzate can be aged by allowing it to remain at a pH between 7 and 11 over a period of time. The hydrolysis, conditioning and aging steps are usually conducted at higher temperatures, such as reflux temperature, especially when high molecular weights are desired. Reactions conducted at increasingly higher pH values also will enhance the growth of longer chain polymers in respective reactions. When the low molecular weight polymers are desired the aging step can be eliminated. The length of time the polymer is refluxed determines the value of y. The longer the material is refluxed, the higher the value of y. The product at this point is a silanol endblocked polymer of the general formula



The above method for the preparation of the silanol endblocked polymers of this invention is more fully described in application Serial No. 341,095, filed January 29, 1964, by Eric D. Brown, which is hereby fully incorporated by reference.

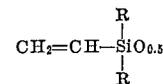
Any basic material is operable which will produce an aqueous solution with a pH between 7 and 11, such as ammonium carbonate, sodium bicarbonate, sodium bo-

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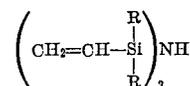
rate, ammonium bicarbonate and ammonium hydroxide.

Before the hydroxyl-endblocked polymer is endblocked with a triorganosilyl group, the reaction mixture must be completely neutralized. The reaction mixture can be neutralized by any conventional means, such as dilute HCl. The reaction mixture is washed with water after neutralization. The presence of basic materials, such as alkali metal ion will inhibit the endblocking reaction.

The hydroxyl-endblocked polymer can be endblocked with

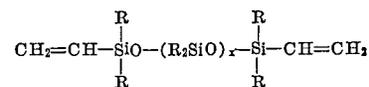


by refluxing the polymer in an organic solvent solution such as diethyl ether or cyclohexane with

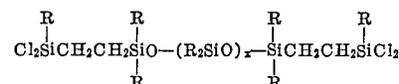


and a catalyst such as CF₃COOH, ammonium chloride, hydrogen chloride, sulfuric acid, ammonium sulfate, ammonium acetate, and acetic acid. The amount of catalyst required is from about 0.05 weight percent to about 2 weight percent based on the total weight of the solution. Preferably, 0.1 to 0.5 weight percent is used. A catalyst need not be used as the reaction will proceed without a catalyst. Endblocking with the (R₃Si)₂NH type compound is essential as this endblocking method will not cause siloxane bond rearrangement and is a quantitative reaction. Catalyst which can be used to enhance the reaction rate can be any acid or acid salt which will not produce rearrangement. After the endblocking is complete as indicated by the stoppage of ammonia gas evolution, the polymer is separated from the aqueous solution and is washed with a dilute acid solution to neutralize any remaining basic material or with water alone to remove the water soluble by-products or both. Although the endblocking reaction need not be refluxed, it is preferred as the rate of reaction is faster. The polymer can also be filtered and if a solvent was used, vacuum and heat can be used to remove the solvent.

The hydrolyzable silicone polymers used to make the solventless silicone polymers are new. These hydrolyzable silicone polymers are prepared by adding RHSiCl₂ dropwise to a mixture of



and H₂PtCl₆. The silicon-containing reactants must be in a 1 to 1 molar ratio. Any excess of the chlorosilane RHSiCl₂ over the required amount will give the following hydrolyzable silicone polymer



The vinyl-endblocked silicone polymers are known to the art and can be prepared by a method described in U.S. Patent No. 2,961,425. After the RHSiCl₂ has been added