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61/255,518 28 October 2009 (28.10.2009) US(71) Applicant (for all designated States except US): **DOW CORNING CORPORATION** [US/US]; 2200 West Salzburg Road, Midland, MI 48686-0994 (US).

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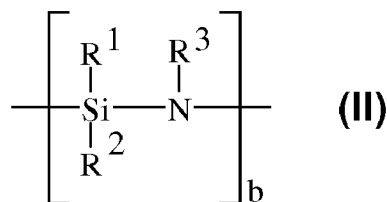
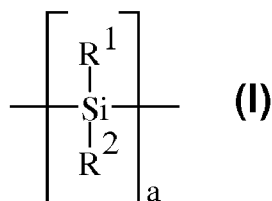
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(54) Title: POLYSILANE - POLYSILAZANE COPOLYMERS AND METHODS FOR THEIR PREPARATION AND USE



(57) **Abstract:** A polysilane - polysilazane copolymer contains a polysilane unit of formula (I), and a polysilazane unit of formula (II), where each R^1 and each R^2 are each independently selected from H, Si, and N atoms, R^3 is selected from H, Si, or C atoms, $a \geq 1$, $b \geq 1$, and a quantity $(a + b) \geq 2$. The polysilane - polysilazane copolymer may be formulated in a composition with a solvent. The polysilane - polysilazane copolymer may be used in PMD and STI applications for trench filling, where the trenches have widths of 100 nm or less and aspect ratios of at least (6). The polysilane - polysilazane copolymer can be prepared by amination of a perchloro polysilane having (2) or more silicon atoms per molecule with a primary amine.