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(54) Title: SILSESQUOXANE RESINS

(57) Abstract: This invention pertains to silsesquioxane resins useful in antireflective coatings wherein the silsesquioxane resin has the formula $(\text{PhSiO}_{(3-x)/2}(\text{OR}')_x)_m(\text{HSiO}_{(3-x)/2}(\text{OR}')_x)_n(\text{MeSiO}_{(3-x)/2}(\text{OR}')_x)_o(\text{RSiO}_{(3-x)/2}(\text{OR}')_x)_p$ where Ph is a phenyl group Me is a methyl group, R is selected from a reactive organic functional group or curable group, R' is hydride or a hydrocarbon group, x has a value of 0,1 or 2; m has a value of 0.01 to 0.97, n has a value of 0.01 to 0.97, o has a value of 0.01 to 0.97, p has a value of 0.01 to 0.97, and $m + n + o + p = 1$. The resins are cured when baked at elevated temperatures. Alternatively, the compositions may comprise a free radical initiator or other additives such as thermal or photo acids and bases to improve the cure profile of the resin. In addition, the presence of a hydride group in the silsesquioxane resin is essential for the desired strip-ability as a 193nm ARC material.

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