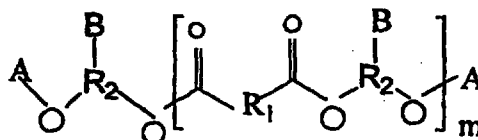




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(54) Title: THERMOSETTING POLYESTER ANTI-REFLECTIVE COATINGS FOR MULTILAYER PHOTORESIST PROCESSES

where $1 \leq m \leq 100$;where R_1 is a divalent organic radical;where R_2 is a divalent or trivalent organic radical;where when R_2 is divalent, $B = -H$, and when R_2 is trivalent, B is $-OH$ or $-O-A$; andwhere A is $-H$ or $-CO-R_3$ and R_3 is an aromatic organic radical

which provides optical absorptivity at or near one or more of the following wavelengths of light: 193 nm,

248 nm, 365 nm, and 436 nm.

(57) Abstract

Thermosetting, bottom-applied polymeric anti-reflective coatings exhibiting high optical density, rapid plasma etch rates, high solubility in preferred coating solvents, excellent feature coverage, and improved stability in solution are disclosed. The principal component of these new anti-reflective coatings is a polyester resin produced by the reaction of one or more difunctional aliphatic carboxylic acids with a stoichiometric excess of a di- and/or a trifunctional aliphatic primary alcohol, wherein at least one of the dicarboxylic acids may contain a reactive methylene ($-CH_2-$) group. The resulting polyester resin reaction product is further modified by attaching light-absorbing groups to some or all of the reactive methylene groups (if present) and/or hydroxy groups present on the resin. The dye-attached polyester resin is combined with an aminoplast crosslinking agent and acid catalyst in a suitable solvent system to form the final anti-reflective coating.