has a weight average molecular weight of from 2,000 to ~~1,0~~600,000, and that has a branching degree of 48% or more; and

a layer including copper

are disposed in this order.

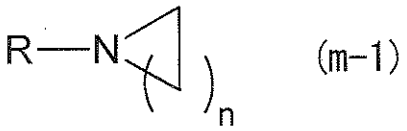
In the semiconductor device according to <12>, it is preferable that a copper barrier layer is further disposed between the polymer layer and the layer including copper. In addition, in the semiconductor device according to <12>, the interlayer dielectric layer is preferably a porous interlayer dielectric layer (that is, an interlayer dielectric layer having a porous structure).

[0010] <13> A polymer that comprises two or more cationic functional groups including at least one of a tertiary nitrogen atom or a quaternary nitrogen atom, that has a weight average molecular weight of from 2,000 to 1,000,000, and that has a branching degree of 48% or more, wherein the polymer includes primary nitrogen atoms and secondary nitrogen atoms, and a proportion of the primary nitrogen atoms to all the nitrogen atoms in the polymer is 33% by mole or more.

<14> The polymer according to <13>, wherein the polymer is a polyethyleneimine or a derivative of a polyethyleneimine.

<15> A method of producing the polymer according to <13> or <14>, the method comprising a process of reacting a raw material polymer containing a secondary nitrogen atom with a compound represented by the following Formula (m-1):

[0011]



(m-1)

[0012] wherein, in Formula (m-1), R represents a protective group, and n represents an integer from 1 to 4.

ADVANTAGEOUS EFFECTS OF INVENTION

[0013] According to the invention, it is possible to provide a sealing composition for a semiconductor excellent in a sealing property with respect to an interlayer dielectric layer, a semiconductor device in which the sealing composition for a semiconductor is used and a method of producing the semiconductor device, and a polymer suitable for the sealing composition for a semiconductor and a method of producing the polymer.

BRIEF DESCRIPTION OF DRAWINGS

[0014] Fig. 1 is isothermal lines of toluene gas adsorption and desorption in Examples 1 and 2 and Comparative Examples 1 to 4.