

wherein

[0017] in the formula (Ia), AR represents an aromatic group, and X_1 represents a group having a carbon number of 5 or more and being capable, of decomposing under the action of an acid, and

[0018] in the formula (A1), m represents an integer of one of 1 and 2.

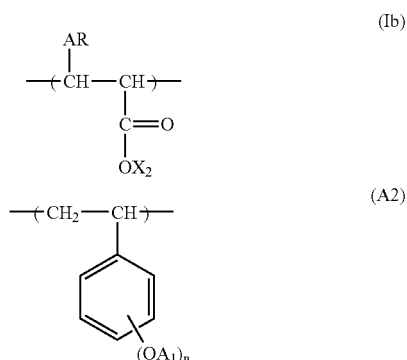
[0019] (2) The positive resist composition as described in the item (1), wherein X_1 has a tertiary carbon atom bonded to the oxygen atom in formula (Ia).

[0020] (3) The positive resist composition as described in the item (1), wherein X_1 has an alicyclic group.

[0021] (4) A positive resist composition comprising:

[0022] (A-2) a resin of which a solubility in an alkali developer increases under the action of an acid, the resin comprising a repeating unit represented by formula (Ib) and a repeating unit represented by formula (A2); and

[0023] (B) a compound capable of generating an acid upon irradiation with one of actinic rays and radiation:



wherein

[0024] in the formula (Ib), AR represents an aromatic group and X_2 represents one of a hydrogen atom and a hydrocarbon group, and

[0025] in the formula (A2), A_1 represents a group containing a group capable of decomposing under the action of the acid, and n represents an integer of one of 1 and 2.

[0026] (5) The positive resist composition as described in the item (4) above, wherein X_2 is a group capable of decomposing under the action of the acid.

[0027] (6) The positive resist composition as described in the item (5), wherein X_2 is a group having an alicyclic group and being capable of decomposing under the action of the acid.

[0028] (7) A pattern forming method comprising:

[0029] forming a resist film from a positive resist composition as described in the item (1); and

[0030] exposing and developing the resist film.

[0031] (8) The pattern forming method as described in the item (7), wherein the resist film is exposed with one of electron beam and extreme ultraviolet light.

[0032] (9) A pattern forming method comprising:

[0033] forming a resist film from a positive resist composition as described in the item (4); and

[0034] exposing and developing the resist film.

[0035] (10) The pattern forming method as described in the item (9), wherein the resist film is exposed with one of electron beam and extreme ultraviolet light.

[0036] According to the present invention, as regards the pattern formation by the irradiation of electron beam, KrF excimer laser light, EUV light or the like, a positive resist composition excellent in the sensitivity and resolving power and further excellent in the pattern profile, defocus latitude depended on line pitch, and dissolution contrast, and a pattern forming method using the composition can be provided.

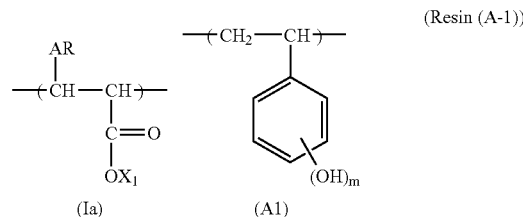
DETAILED DESCRIPTION OF THE INVENTION

[0037] The compounds for use in the present invention are described in detail below.

[0038] Incidentally, in the present invention, when a group (atomic group) is denoted without specifying whether substituted or unsubstituted, the group includes both a group having no substituent and a group having a substituent. For example, an "alkyl group" includes not only an alkyl group having no substituent (unsubstituted alkyl group) but also an alkyl group having a substituent (substituted alkyl group).

[1] Resins (A-1) and (A-2) which are insoluble or sparingly soluble in an alkali developer and of which solubility in an alkali developer increases under the action of an acid

[0039] The resin of which solubility in an alkali developer increases under the action of an acid, contained in the positive resist composition of the present invention, is at least either a resin (A-1) comprising a repeating unit represented by formula (Ia) and a repeating unit represented by formula (A1), or a resin (A-2) comprising a repeating unit represented by formula (Ib) and a repeating unit represented by formula (A2).



[0040] In formula (Ia), AR represents an aromatic group, preferably a phenyl group (a hydroxyphenyl group as a phenyl group having a substituent), a naphthyl group or an anthranyl group.