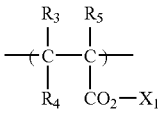
The resin (A) preferably contains a repeating unit represented by formula (III) in addition to the repeating units represented by formulae (I) and (II):



(III)

wherein

R_3 to R_5 each independently represents a hydrogen atom, a fluorine atom, a chlorine atom, a cyano group or an alkyl group, and

X_1 represents a hydrogen atom or an organic group.

The alkyl group of R_3 to R_5 is preferably an alkyl group having from 1 to 5 carbon atoms and examples thereof include a methyl group, an ethyl group and a propyl group.

The organic group of X_1 is preferably an organic group having from 1 to 40 carbon atoms and may be an acid-decomposable group or a non-acid-decomposable group.

In the case of a non-acid-decomposable group, examples of the organic group include the same organic groups for the non-acid-decomposable group of R_2 (since this is an organic group, a halogen atom is not included).

Also, examples thereof include an alkyl group, a cycloalkyl group, an alkenyl group, an aryl group, an alkyloxy group (excluding —O-tertiary alkyl group), an acyl group, a cycloalkyloxy group, an alkenyloxy group, an aryloxy group, an alkylcarbonyloxy group, an alkylamidomethyloxy group, an alkylamide group, an arylamidomethyl group and an arylamide group.

Of these non-acid-decomposable groups, preferred are an acyl group, an alkylcarbonyloxy group, an alkyloxy group, a cycloalkyloxy group, an aryloxy group, an alkylamideoxy group and an alkylamide group, and more preferred are an acyl group, an alkylcarbonyloxy group, an alkyloxy group, a cycloalkyloxy group and an aryloxy group.

In the non-acid-decomposable group, the alkyl group is preferably an alkyl group having from 1 to 4 carbon atoms, such as methyl group, ethyl group, propyl group, n-butyl group, sec-butyl group and tert-butyl group; the cycloalkyl group is preferably a cycloalkyl group having from 3 to 10 carbon atoms, such as cyclopropyl group, cyclobutyl group, cyclohexyl group and adamantyl group; the alkenyl group is preferably an alkenyl group having from 2 to 4 carbon atoms, such as vinyl group, propenyl group, allyl group and butenyl group; the aryl group is preferably an aryl group having from 6 to 14 carbon atoms, such as phenyl group, xylyl group, toluyl group, cumenyl group, naphthyl group and anthracenyl group; and the alkyloxy group is preferably an alkyloxy group having from 1 to 4 carbon atoms, such as methoxy group, ethoxy group, hydroxyethoxy group, propoxy group, hydroxypropoxy group, n-butoxy group, isobutoxy group and sec-butoxy group.

In the case of an acid-decomposable group, examples of the organic group of X include $—C(R_{11a})(R_{12a})(R_{13a})$, $—C(R_{14a})(R_{15a})(OR_{16a})$ and $—CO—OC(R_{11a})(R_{12a})(R_{13a})$.

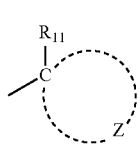
R_{11a} to R_{13a} each independently represents an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group or an aryl group. R_{14a} and R_{15a} each independently represents a hydrogen atom or an alkyl group. R_{16a} represents an alkyl group, a cycloalkyl group, an alkenyl group, an aralkyl group or an aryl group. Two of R_{11a}, R_{12a} and R_{13a}, or two of R_{14a}, R_{15a} and R_{16a} may combine to form a ring.

Also, a group having an acid-decomposable group may be introduced into X_1 by modification. X_1 having introduced thereinto an acid-decomposable group is, for example, represented by the following formula:

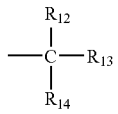
$$—[C(R_{17a})(R_{18a})]_p—CO—OC(R_{11a})(R_{12a})(R_{13a})$$

wherein R_{17a} and R_{18a} each independently represents a hydrogen atom or an alkyl group, and p represents an integer of 1 to 4.

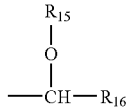
The organic group of X_1 is preferably an acid-decomposable group having at least one cyclic structure selected from an alicyclic structure, an aromatic cyclic structure and a crosslinked alicyclic structure, and the structure is preferably a structure containing an aromatic group (particularly a phenyl group) or a structure containing an alicyclic or crosslinked alicyclic structure represented by any one of the following formulae (pI) to (pVI):



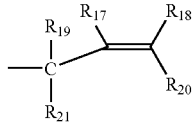
(pI)



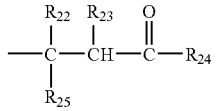
(pII)



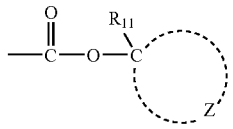
(pIII)



(pIV)



(pV)



(pVI)

wherein

R_{11} represents a methyl group, an ethyl group, an n-propyl group, an isopropyl group, an n-butyl group, an isobutyl group or a sec-butyl group,

Z represents an atomic group necessary for forming an alicyclic hydrocarbon group together with the carbon atom,

R_{12} to R_{16} each independently represents a linear or branched alkyl group having from 1 to 4 carbon atoms or an alicyclic hydrocarbon group, provided that at least one of R_{12} to R_{14} or either one of R_{15} and R_{16} represents an alicyclic hydrocarbon group,

R_{17} to R_{21} each independently represents a hydrogen atom, a linear or branched alkyl group having from 1 to 4 carbon