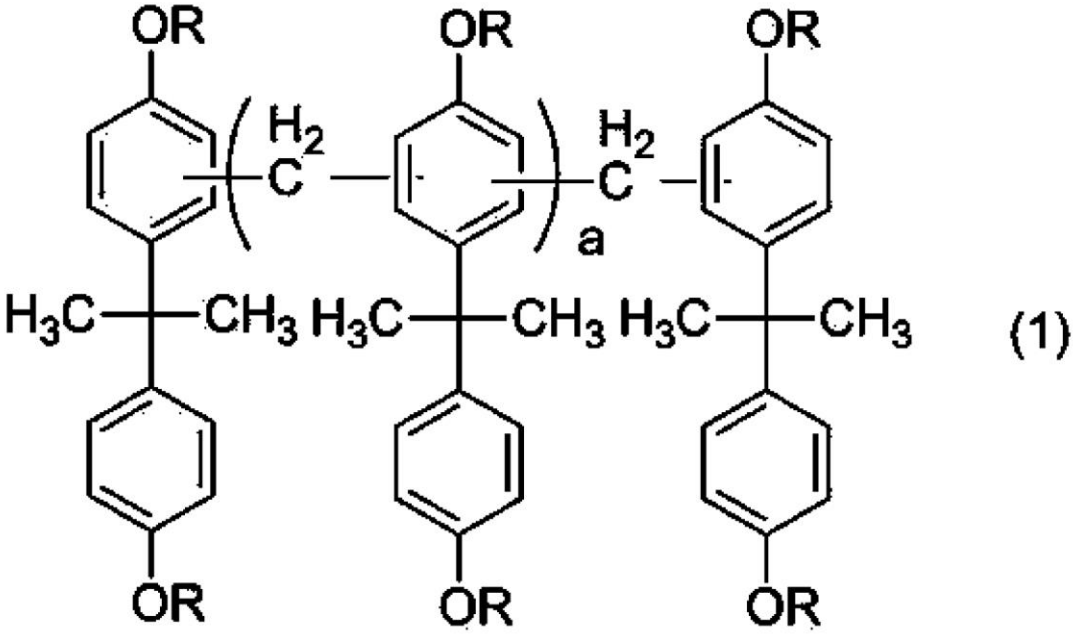
Claims

1. A negative photosensitive resin composition comprising (A) an epoxy resin, (B) a compound having a phenolic hydroxyl group, and (C) a cationic photopolymerization initiator, wherein

the epoxy resin (A) is

an epoxy resin (A-1) represented by the following formula (1)

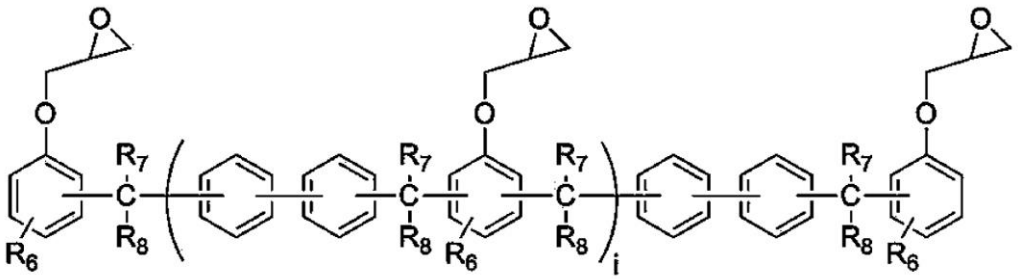


(1)

wherein Rs each independently represent a glycidyl group or a hydrogen atom, at least two of a plurality of Rs are glycidyl groups, and a represents an average value of the number of repeating units and is a real number in the range of 0 to 30, and

one or more epoxy resins selected from a group consisting of

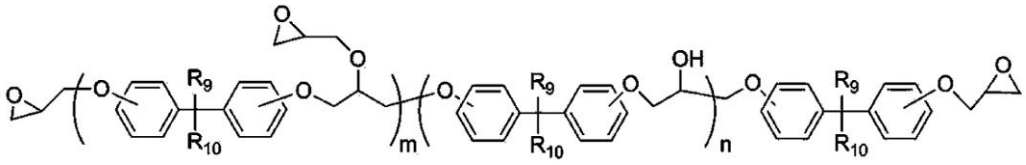
an epoxy resin (A-2) represented by the following formula (9)



(9)

wherein R_6, R_7, and R_8 each independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and i represents an average value and is a real number in the range of 1 to 30,

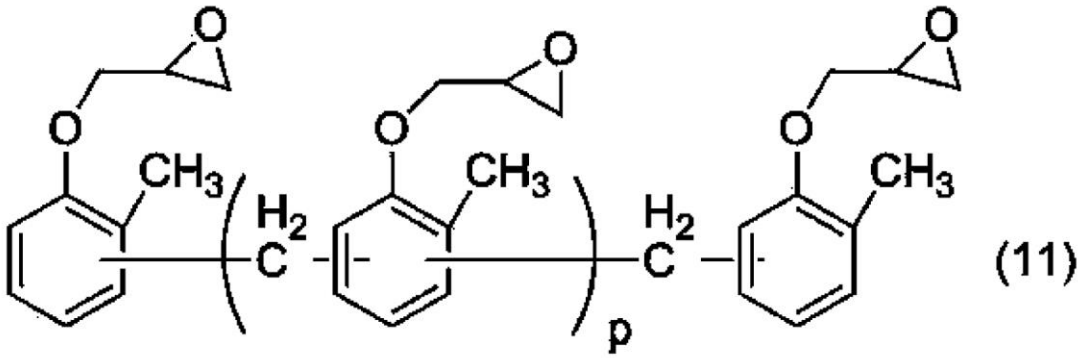
an epoxy resin (A-3) represented by the following formula (10)



(10)

wherein m and n represent average values and are real numbers in the range of 1 to 30, and R_9 and R_{10} each independently represent a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, or a trifluoromethyl group,

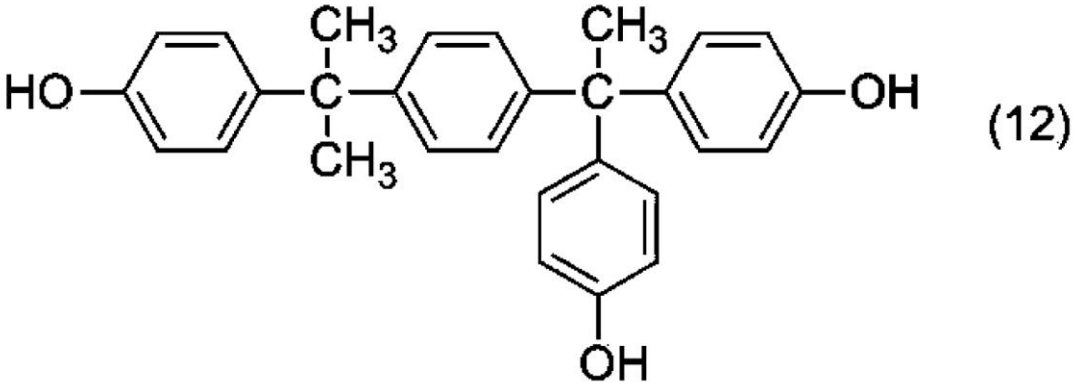
an epoxy resin (A-4) represented by the following formula (11)



(11)

wherein p represents an average value and is a real number in the range of 1 to 30,

an epoxy resin (A-5) which is a reaction product of a phenol derivative represented by the following formula (12)

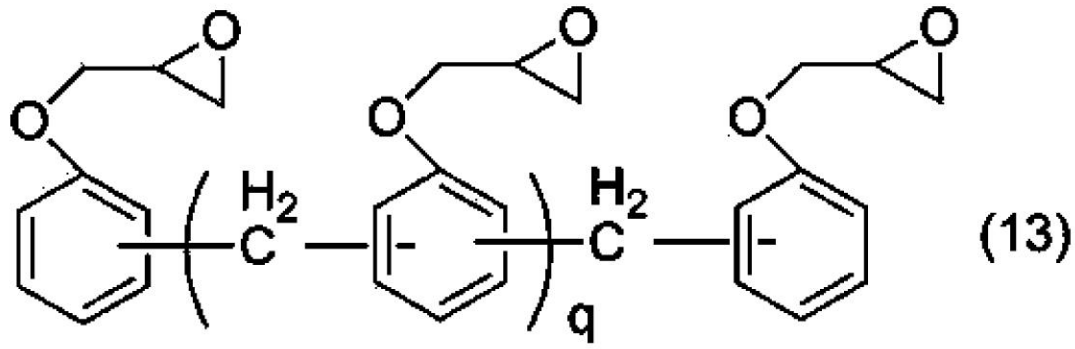


(12)

and an epihalohydrin,

an epoxy resin (A-6) obtained by reacting a polybasic acid anhydride with a reaction product of an epoxy compound having at least two epoxy groups in one molecule and a compound having at least one hydroxyl group and one carboxyl group in one molecule,

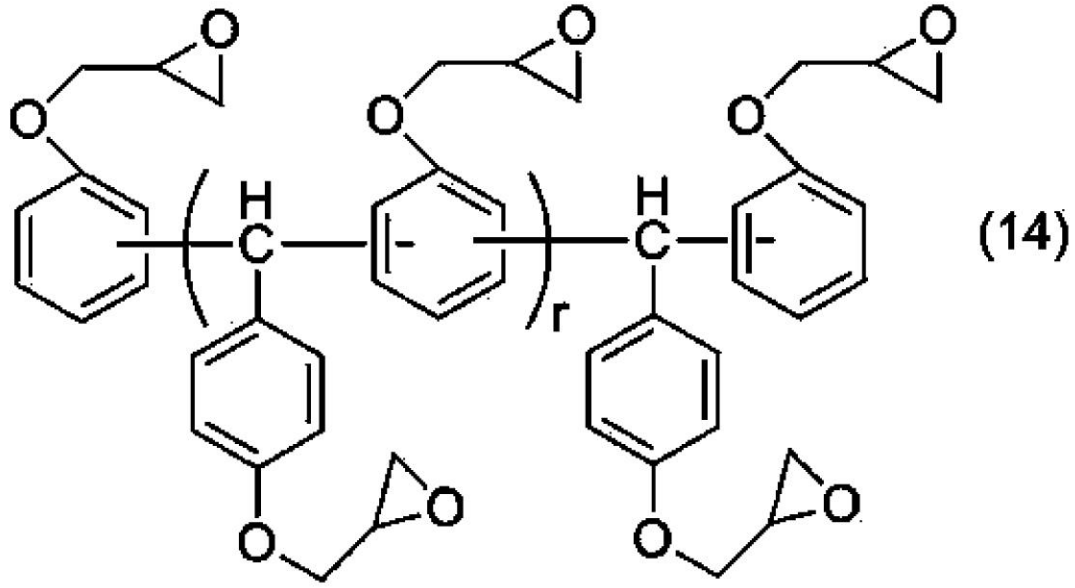
an epoxy resin (A-7) represented by the following formula (13)



(13)

wherein q represents an average value and is a real number in the range of 1 to 10,

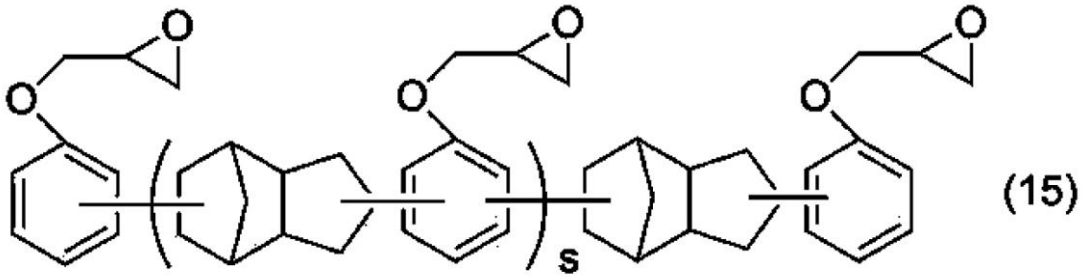
an epoxy resin (A-8) represented by the following formula (14)



(14)

wherein r represents an average value and is a real number in the range of 0.1 to 5, and

an epoxy resin (A-9) represented by the following formula (15)



(15)

wherein s represents an average value and is a real number in the range of 0.1 to 6,

the only epoxy resin contained in the negative photosensitive resin composition being the epoxy resin (A),

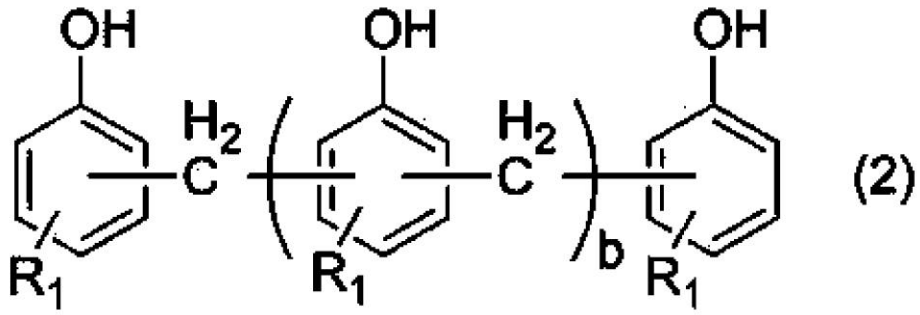
30% by mass or more of the epoxy resin (A) being the epoxy resin (A-1),

and

the compound (B) having a phenolic hydroxyl group contains one or more phenol

compounds selected from a group consisting of

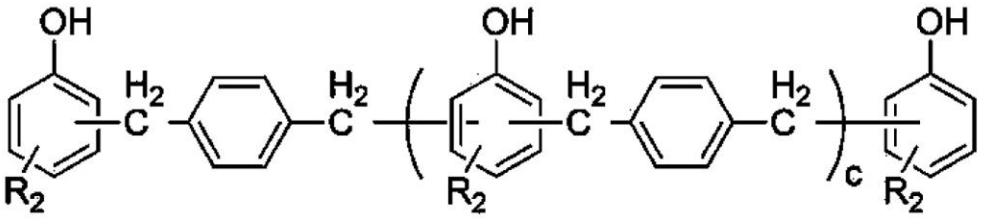
a compound (B-1) having a phenolic hydroxyl group represented by the following formula (2)



(2)

wherein b is an average value and represents a real number in the range of 1 to 10, and R_1s each independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,

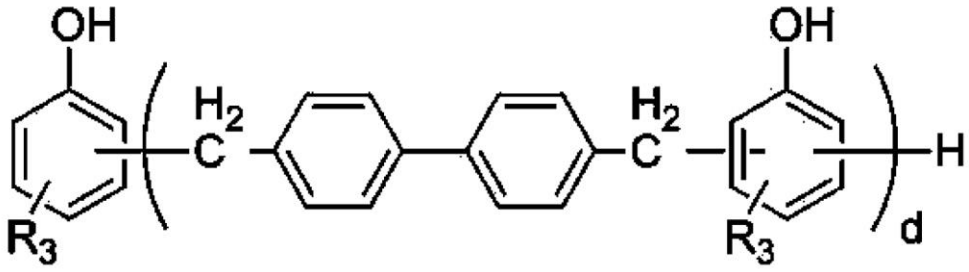
a compound (B-2) having a phenolic hydroxyl group represented by the following formula (3)



(3)

wherein c is an average value and represents a real number in the range of 1 to 10, and R_2s each independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,

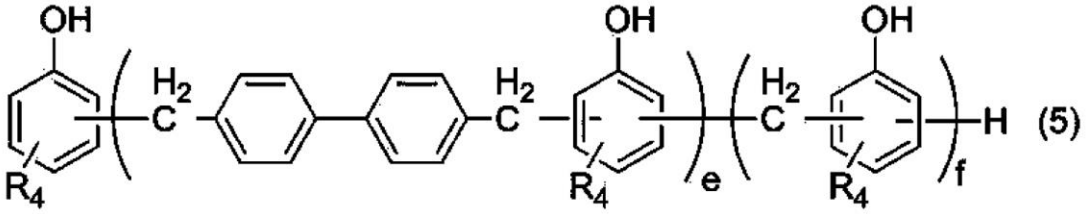
a compound (B-3) having a phenolic hydroxyl group represented by the following formula (4)



(4)

wherein d is an average value and represents a real number in the range of 1 to 10, and R_3s each independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,

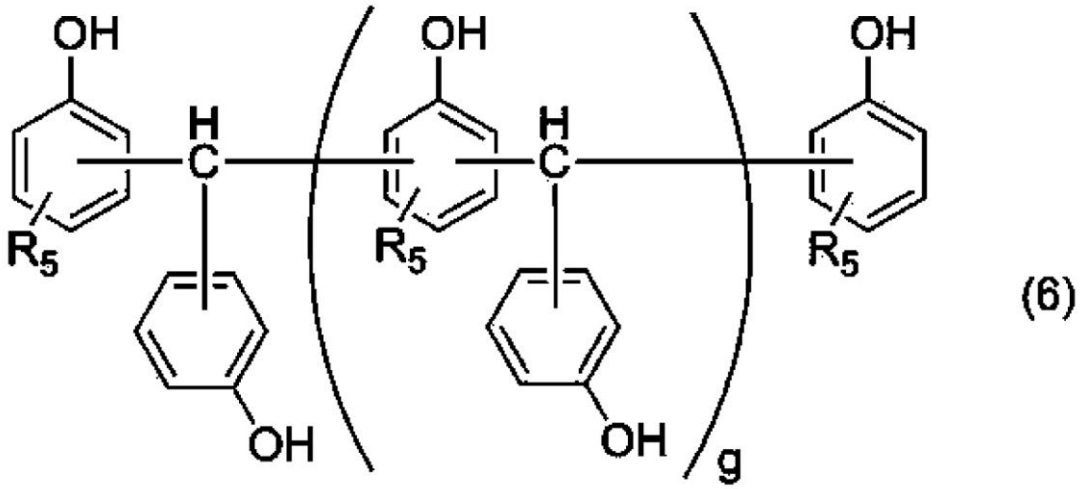
a compound (B-4) having a phenolic hydroxyl group represented by the following formula (5)



(5)

wherein e and f are average values and represent real numbers in the range of 1 to 10, and R_4s each independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms,

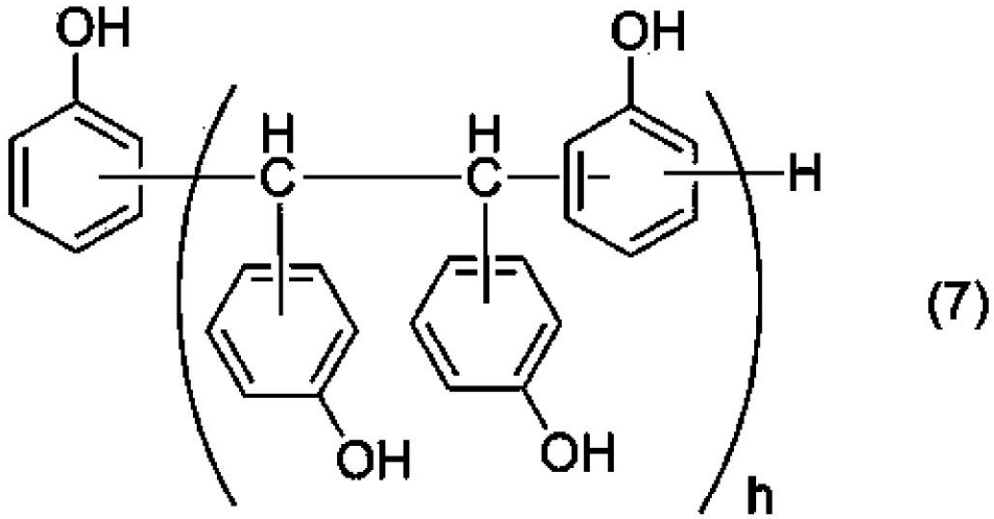
a compound (B-5) having a phenolic hydroxyl group represented by the following formula (6)



(6)

wherein g is an average value and represents a real number in the range of 1 to 10, and R_5s each independently represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, and

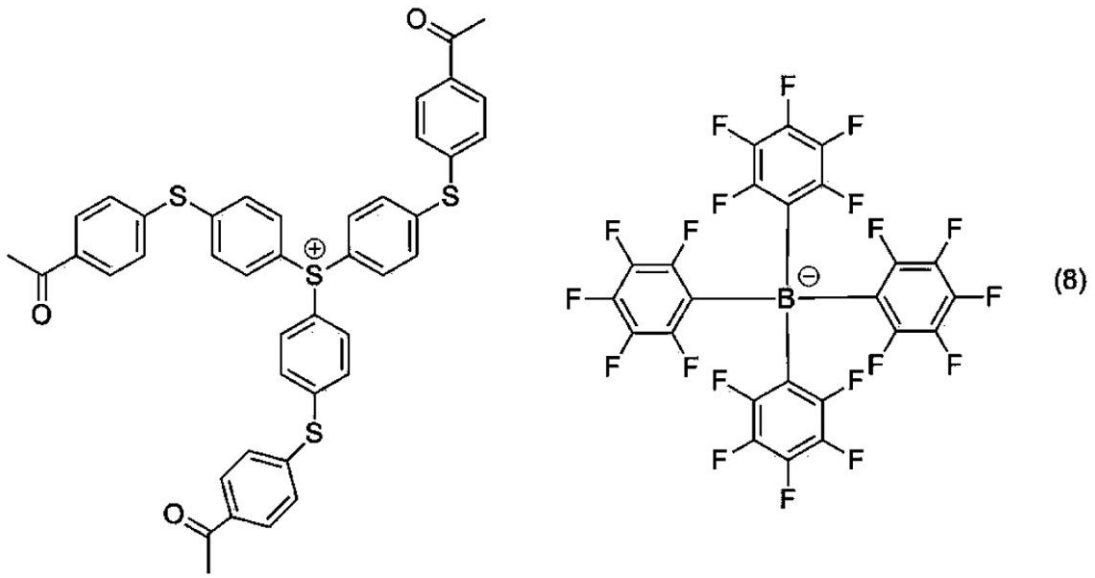
a compound (B-6) having a phenolic hydroxyl group represented by the following formula (7)



(7)

wherein h is an average value and represents a real number in the range of 1 to 10, and

the cationic photopolymerization initiator (C) contains a compound represented by the following formula (8),



(8)

2. A dry film resist comprising the negative photosensitive resin composition according to claim 1.

3 A cured product of the negative photosensitive resin composition according to claim 1.

4. A cured product of the dry film resist according to claim 2.

5. A wafer level package comprising the cured product according to claim 3 or 4.

6. An adhesive layer between a substrate and an adherend, wherein the adhesive layer comprises the cured product according to claim 3 or 4.