with a digital super-high ohmmeter (R8340: manufactured by Advantest Corporation), and compared with the value of specific resistance of those not containing a sealing agent. Evaluation was performed by the criteria below.

A: 1.0E + 11 or more of the value of specific resistance

B: 1.0E + 11 or more and less than 1.0E + 11 of the value of specific resistance

C: Less than 1.0E + 10 of the value of specific resistance

Meanwhile, "1.0E + 11" of the value of specific resistance represents "1.0×10^{11}". The same applies to the other descriptions.

[Table 1]

CLAIMS

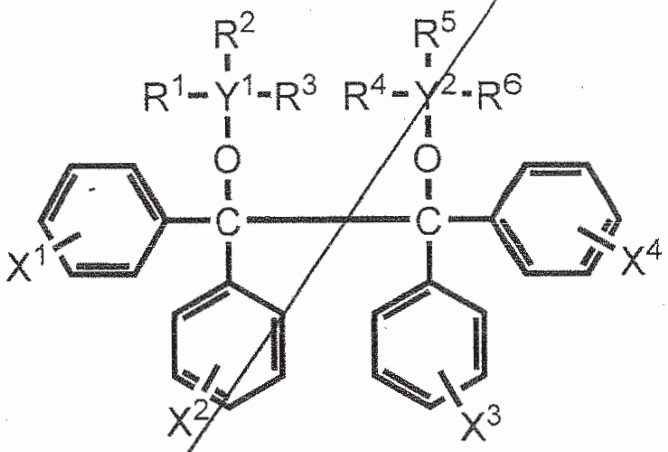
1. A liquid crystal sealant for a liquid crystal dropping process comprising:

(a) a thermal radical polymerization initiator not having an oxygen-oxygen bond (-O-O-) or a nitrogen-nitrogen bond (-N=N-) in the molecule thereof,

(b) a radical polymerization inhibitor, and

(c) a curable resin having a (meth)acryloyl group.

2. The liquid crystal sealant for the liquid crystal dropping process according to claim 1, wherein the component (a) is a compound represented by formula (1) below:

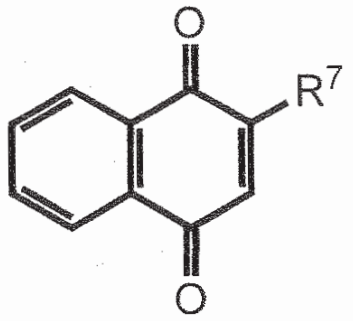


(1)

wherein, Y^1 and Y^2 each independently represent a hydrogen atom, a phenyl group, or a silicon atom, R^1 to R^6 each independently represent a hydrogen atom or a C1-C4 straight or branched alkyl group, and X^1 to X^4 each independently represent a hydrogen atom, a methyl group, an ethyl group, a methoxy group, an ethoxy group, a phenoxy group, or a halogen atom,

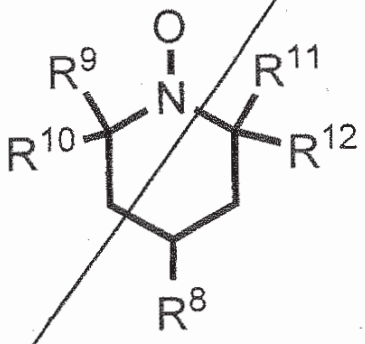
with the proviso that R^1 to R^3 or R^4 to R^6 that are bonded respectively to Y^1 or Y^2 are not present when Y^1 or Y^2 is a hydrogen atom.

3. The liquid crystal sealant for the dropping process according to claim 1 or 2, wherein the component (b) is one, or two or more of radical polymerization inhibitors selected from formulae (2) to (4) below:



(2)

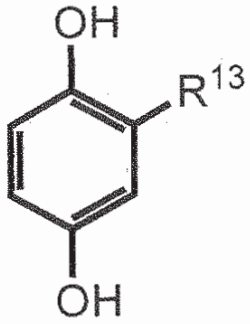
wherein, R^7 represents a hydrogen atom, a hydroxy group, a C1-C4 straight or branched alkoxy group, or a C1-C4 straight or branched alkyl group,



(3)

wherein, R^8 represents a hydrogen atom, a hydroxy group, a C1-C4 straight or branched alkoxy group, a phenoxy group, an acetoamide group, an amino group, a carboxy group, a cyano group, a benzoyloxy group, an isothiocyanate group, or an oxo

group, and R^9 to R^{12} each independently represent a C1-C4 straight or branched alkyl group,



(4)

wherein, R^{13} represents a hydrogen atom, or a C1-C4 straight or branched alkyl group.

4. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 3, further comprising (d) a curable resin that has an epoxy group and (e) a heat-curing agent.

5. The liquid crystal sealant for the liquid crystal dropping process according to claim 4, wherein the component (e) is an organic acid hydrazide.

6. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 5, further comprising (f) a silane coupling agent.

7. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 6, further comprising (g) an inorganic filler.

8. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 7, further comprising (h) a photopolymerization initiator.

9. The liquid crystal sealant for the liquid crystal dropping process according to claim 4 or 5, wherein the content of the component (b) is from 0.0001 to 1 parts by mass with respect to 100 parts by mass of the total amount of the component (c) and the component (d).

10. A method of manufacturing the liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 9, comprising a step of dissolving the component (b) in the component (c).

11. A method of manufacturing the liquid crystal sealant for the liquid crystal dropping process according to claim 4 or 5, comprising a step of dissolving the component (b) in the component (d).

12. A liquid crystal display cell sealed with a cured product obtained by curing the liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 9, or the liquid crystal sealant for the liquid crystal dropping process obtained by the manufacturing method according to claim 10 or 11.

with a digital super-high ohmmeter (R8340: manufactured by Advantest Corporation), and compared with the value of specific resistance of those not containing a sealing agent. Evaluation was performed by the criteria below.

A: 1.0E + 11 or more of the value of specific resistance

B: 1.0E + 10 or more and less than 1.0E + 11 of the value of specific resistance

C: Less than 1.0E + 10 of the value of specific resistance

Meanwhile, "1.0E + 11" of the value of specific resistance represents "1.0×10^{11}". The same applies to the other descriptions.

[Table 1]

CLAIMS

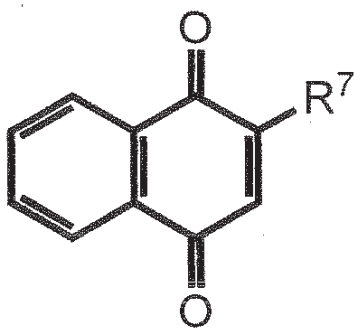
1. A liquid crystal sealant for a liquid crystal dropping process comprising:

(a) a thermal radical polymerization initiator not having an oxygen-oxygen bond (-O-O-) or a nitrogen-nitrogen bond (-N=N-) in the molecule thereof,

(b) a radical polymerization inhibitor, and

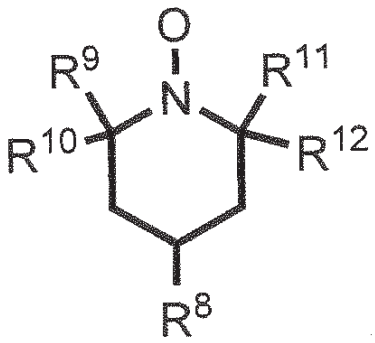
(c) a curable resin having a (meth)acryloyl group,

wherein the component (b) is one, or two or more of radical polymerization inhibitors selected from formulae (2) to (4) below:



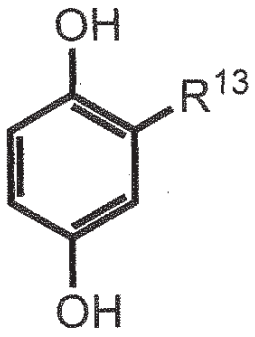
(2)

wherein, R^7 represents a hydrogen atom, a hydroxy group, a C1-C4 straight or branched alkoxy group, or a C1-C4 straight or branched alkyl group,



(3)

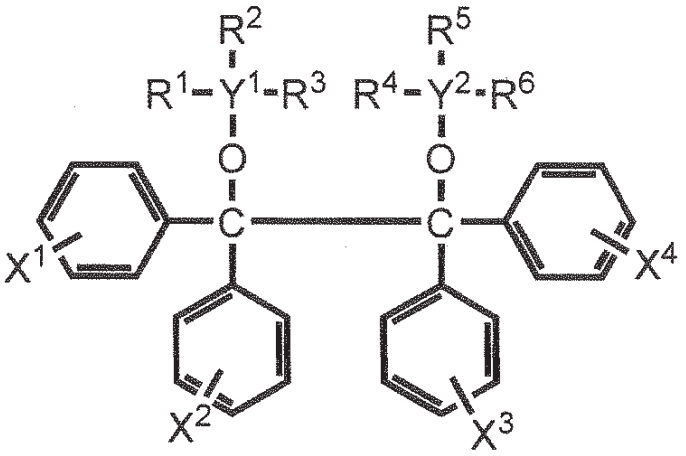
wherein, R^8 represents a hydrogen atom, a hydroxy group, a C1-C4 straight or branched alkoxy group, a phenoxy group, an acetoamide group, an amino group, a carboxy group, a cyano group, a benzoyloxy group, an isothiocyanate group, or an oxo group, and R^9 to R^{12} each independently represent a C1-C4 straight or branched alkyl group,



(4)

wherein, R^{13} represents a hydrogen atom, or a C1-C4 straight or branched alkyl group.

2. The liquid crystal sealant for the liquid crystal dropping process according to claim 1, wherein the component (a) is a compound represented by formula (1) below:



(1)

wherein, Y^1 and Y^2 each independently represent a hydrogen atom, a phenyl group, or a silicon atom, R^1 to R^6 each independently represent a hydrogen atom or a C1-C4 straight or branched alkyl group, and X^1 to X^4 each independently represent a hydrogen atom, a methyl group, an ethyl group, a methoxy group, an ethoxy group, a phenoxy group, or a halogen atom, with the proviso that R^1 to R^3 or R^4 to R^6 that are bonded respectively to Y^1 or Y^2 are not present when Y^1 or Y^2 is a hydrogen atom.

3. The liquid crystal sealant for the liquid crystal dropping process according to claim 1 or 2, further comprising (d) a curable resin that has an epoxy group and (e) a heat-curing agent.

4. The liquid crystal sealant for the liquid crystal dropping process according to claim 3, wherein the component (e) is an organic acid hydrazide.

5. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 4, further comprising (f) a silane coupling agent.

6. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 5, further comprising (g) an inorganic filler.

7. The liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 6, further comprising (h) a photopolymerization initiator.

8. The liquid crystal sealant for the liquid crystal dropping process according to claim 3 or 4, wherein the content of the component (b) is from 0.0001 to 1 parts by mass with respect to 100 parts by mass of the total amount of the component (c) and the component (d).

9. A method of manufacturing the liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 8, comprising a step of dissolving the component (b) in the component (c).

10. A method of manufacturing the liquid crystal sealant for the liquid crystal dropping process according to claim 3 or 4, comprising a step of dissolving the component (b) in the component (d).

11. A liquid crystal display cell sealed with a cured product obtained by curing the liquid crystal sealant for the liquid crystal dropping process according to any one of claims 1 to 8, or the liquid crystal sealant for the liquid crystal dropping process obtained by the manufacturing method according to claim 9 or 10.