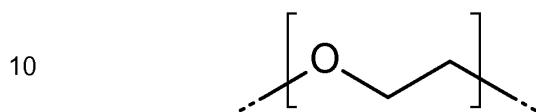


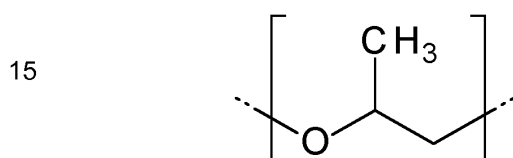
Patent Claims

1. A photoresist composition comprising
(A) a single or a plurality of polymer whose solubility changes under the
existence of acid,
5 (B) a single or a plurality of photo acid generator,
(C) a single or a plurality of compound comprising unit EO and unit PO, and
(D) a single or plurality of solvent,
wherein the unit EO is represented by following formula (1),



formula (1)

and the unit PO is represented by following formula (2).

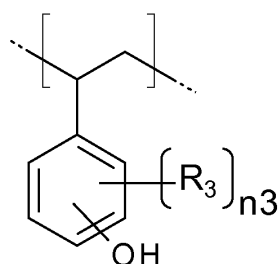


formula (2)

2. The photoresist composition according to claim 1, wherein (C) a single or a
20 plurality of compound is a plasticizer, and
preferably the (C) compound comprises a copolymer at least one selected
from the group consisting of random copolymer, block copolymer, alternating
copolymer, graft copolymer and combination of any of these.
- 25 3. The photoresist composition according to one or more of claims 1 and 2,
wherein the (C) compound comprises a copolymer comprising both unit EO
and unit PO, or the (C) compound is a plurality of compounds in which at
least one compound comprised unit EO and at least one compound
30 comprises unit PO.
4. The photoresist composition according to one or more of claims 1 to 3,
wherein the (A) polymer comprises unit 1 represented by below formula (3),
unit 2 represented by below formula (4), and/or unit 3 represented by below
formula (5),
and preferably the weight average molecular weight of the (A) polymer is

3,000 – 100,000:

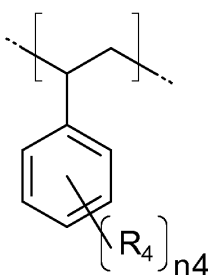
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formula (3)

R₃ is each independently C₁₋₁₀ alkyl or C₁₋₁₀ alkoxy, and n₃ is 0, 1, 2, 3 or 4;

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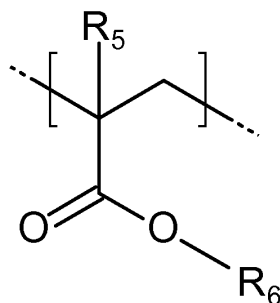


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formula (4)

R₄ is each independently C₁₋₁₀ alkyl or C₁₋₁₀ alkoxy in which -CH₂- can be replaced by -O-, and n₄ is 0, 1, 2, 3, 4 or 5;

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formula (5)

R₅ is hydrogen or C₁₋₁₀ alkyl, and R₆ is C₁₋₂₀ alkyl which optionally make hydrocarbon ring.

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5. The photoresist composition according to one or more of claims 1 to 4, wherein molecular ratio of [(unit EO) / (unit PO)] in the (C) compound(s) is 10/90 to 90/10.
6. The photoresist composition according to one or more of claims 1 to 5, wherein the weight average molecular weight (Mw) of the (C) compound(s)

is 1,000 – 50,000.

- 5 7. The photoresist composition according to one or more of claims 1 to 6, the (D) solvent comprises at least one selected from the group consisting of aliphatic hydrocarbon solvent, aromatic hydrocarbon solvent, monoalcohol solvent, polyol solvent, ketone solvent, ether solvent, ester solvent, nitrogen-containing solvent, and sulfur-containing solvent.
- 10 8. The photoresist composition according to one or more of claims 1 to 7, wherein the (B) photo acid generator comprises at least one selected from the group consisting of sulfonic acid derivative, diazomethane compound, onium salt, sulfone imide compound, disulfonic compound, nitrobenzyl compound, benzoin tosylate compound, iron arene complex compound, halogen-containing triazine compound, acetophenone derivative, and
- 15 cyano-containing oxime sulfonate.
- 20 9. The photoresist composition according to one or more of claims 1 to 8, wherein the mass ratio of the (A) polymer to the total mass of the photoresist composition is 5 - 50 mass %, preferably the mass ratio of the (B) photo acid generator to the mass of the (A) polymer is 0.10 - 8 mass %, and preferably the mass ratio of the (C) compound to the mass of the (A) polymer is 0.1-50 mass % (more preferably 3 - 50 mass %, further preferably 3 – 30 mass %, further more preferably 4 – 20 mass %, even
- 25 preferably 5 – 17 mass %, particularly preferably 8 – 17 mass %, further particularly preferably 12 – 17 mass %).
- 30 10. The photoresist composition according to one or more of claims 1 to 9, further comprising at least one additive selected from the group consisting of a quencher, a surfactant, dye, a contrast enhancer, acid, base, a radical generator, and an agent for enhancing adhesion to substrates.
11. A method for manufacturing a photoresist coating, comprising:
applying the photoresist composition according to one or more of claims 1 to 10 above a single or a plurality of Si containing layer; and

curing the applied photoresist composition to form the photoresist coating.

- 5 12. The method for manufacturing a photoresist coating according to claim 11, wherein the photoresist composition is applied above a plurality of Si containing layers,
the Si containing layers comprise plural species,
at least one species of Si containing layer is conductive, and
at least one species of Si containing layer is electrically insulative.
- 10 13. The method for manufacturing a photoresist coating according to one or more of claims 11 and 12, wherein the thickness of the photoresist coating is 0.5 – 200 μm .
- 15 14. A method for manufacturing an etched photoresist coating, comprising:
manufacturing the photoresist coating according to one or more of claims 11 to 13;
exposing the photoresist coating;
developing the photoresist coating; and
20 (step 1) etching the developed photoresist coating.
- 25 15. A method for manufacturing a single or plurality of etched Si containing layer, comprising:
manufacturing an etched photoresist coating according to claim 14; and
(step 2) etching the Si containing layer(s).
- 30 16. The method for manufacturing a single or plurality of etched Si containing layer according to claim 15, further comprising repeating (step 1) and (step 2) more than 1 time(s) wherein
preferably the etching of (step 1) is isotropic etching, and
preferably the etching of (step 2) is anisotropic etching.
17. A method for manufacturing devices comprising the method according to one or more of claims 11 to 16.

18. The method for manufacturing devices according to claim 17, further comprising forming wirings (preferably electrodes) in the devices.

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