CLAIMS

1. A resin composition for encapsulating a semiconductor containing an epoxy resin (A), a curing agent (B) and an inorganic filler (C), wherein

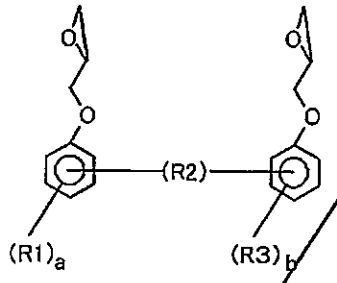
said epoxy resin (A) comprises an epoxy resin (A1) having a structure represented by the following general formula (1),

said curing agent (B) comprises a phenol resin (B1) represented by the following general formula (2),

the content of a c=1 component contained in the total amount of the phenol resin (B1) represented by the general formula (2) is not less than 40% in terms of area percentage, and

the content of a C≥4 component is not more than 20% in terms of area percentage, as measured by the area method of gel permeation chromatography,

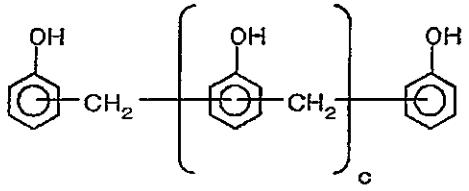
[Chemical Formula 1]



(1)

wherein, in the above general formula (1), each of R1 and R3 is a hydrocarbon group having 1 to 5 carbon atoms, which may be the same or different from each other; R2 represents any of a direct bond, a hydrocarbon group having 1 to 5 carbon atoms, -S- and -O-; and each of a and b is an integer of 0 to 4, which may be the same or different from each other,

[Chemical Formula 2]



(2)

wherein, in the above general formula (2), c is an integer of 0 to 20.

2. The resin composition for encapsulating a semiconductor according to claim 1, wherein, in said phenol resin (B1), the content of a c=0 component contained in the total amount of the phenol resin (B1) represented by said general formula (2) is not more than 16% in terms of area percentage, as measured by the area method of gel permeation chromatography.

3. The resin composition for encapsulating a semiconductor according to claim 1 or 2, wherein said epoxy resin (A1) is a crystalline epoxy resin obtained by subjecting a phenol compound selected from the group consisting of alkyl group-substituted or unsubstituted biphenol, bisphenol A, bisphenol F, bisphenol S, bisphenol A/D and oxybisphenol to diglycidyl etherification.

4. The resin composition for encapsulating a semiconductor according to any one of claims 1 to 3, wherein said epoxy resin (A1) has a melting point, and on condition that its melting point is T_{A1}, and the softening point of said phenol resin (B1) is T_{B1}, the absolute value $|T_{A1}-T_{B1}|$ of a temperature difference between T_{A1} and T_{B1} is not more than 35 degrees centigrade.

5. The resin composition for encapsulating a semiconductor according to any one of claims 1 to 4, wherein said resin composition for encapsulating a semiconductor in a tablet form is used for encapsulating a semiconductor element by the transfer molding method.

6. A semiconductor device obtained by encapsulating a semiconductor element with a cured product of the resin composition for encapsulating a semiconductor according to any one of claims 1 to 5.

CLAIMS

1. A resin composition for encapsulating a semiconductor containing an epoxy resin (A), a curing agent (B) and an inorganic filler (C), wherein:

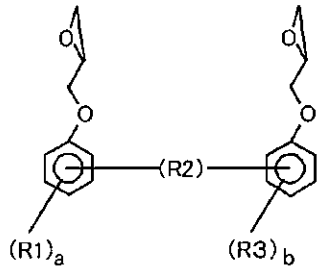
said epoxy resin (A) comprises an epoxy resin (A1) having a structure represented by the following general formula (1),

said curing agent (B) comprises a phenol resin (B1) represented by the following general formula (2),

the content of a c=1 component contained in the total amount of the phenol resin (B1) represented by the general formula (2) is not less than 40% in terms of area percentage,

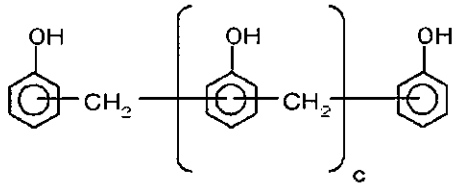
the content of a C≧4 component is not more than 20% in terms of area percentage, as measured by the area method of gel permeation chromatography, and

said epoxy resin (A1) has a melting point, and when melting point is T_{A1}, and the softening point of said phenol resin (B1) is T_{B1}, the absolute value $|T_{A1}-T_{B1}|$ of a temperature difference between T_{A1} and T_{B1} is not more than 35 degrees centigrade.



(1)

wherein, in the above general formula (1), each of R1 and R3 is a hydrocarbon group having 1 to 5 carbon atoms, which are the same or different from each other; R2 represents any of a direct bond, a hydrocarbon group having 1 to 5 carbon atoms, -S- and -O-; and each of a and b is an integer of 0 to 4, which are the same or different from each other,



(2)

wherein, in the above general formula (2), c is an integer of 0 to 20.

2. The resin composition for encapsulating a semiconductor according to claim 1, wherein, in said phenol resin (B1), the content of a c=0 component contained in the total amount of the phenol resin (B1) represented by said general formula (2) is not more than 16% in terms of area percentage, as measured by the area method of gel permeation chromatography.

3. The resin composition for encapsulating a semiconductor according to claim 1, wherein said epoxy resin (A1) is a crystalline epoxy resin obtained by subjecting a phenol compound selected from the group consisting of alkyl group-substituted or unsubstituted biphenol, bisphenol A, bisphenol F, bisphenol S, bisphenol A/D and oxybisphenol to diglycidyl etherification.

4. The resin composition for encapsulating a semiconductor according to claim 1, wherein said resin composition for encapsulating a semiconductor in a tablet form is used for encapsulating a semiconductor element by the transfer molding method.

5. A semiconductor device obtained by encapsulating a semiconductor element with a cured product of the resin composition for encapsulating a semiconductor according to claim 1.

6. The resin composition for encapsulating a semiconductor according to claim 1, wherein in general formula (1): each of R1 and R3 is a hydrocarbon group having 1 to 5 carbon atoms, which are the same or different from each other;

R2 represents any hydrocarbon group having 1 to 5 carbon atoms, and -O-; and each of a and b is an integer of 0 to 4, which are the same or different from each other.