Claims

1. A die attach paste composition comprising

(a) a organosilicone resin;

(b) a single crystal alumina filler, wherein said single crystal alumina filler has ellipsoidal shape, and particle size from 1 μm to 5.5 μm and surface area from 1 m^2/g to 3 m^2/g;

(c) a hardener; and

(d) an inhibitor.

2. A die attach paste composition according to claim 1, wherein said organosilicone resin is a mixture of organosilicone resin comprising vinyl functional groups and organosilicone resin comprising hydride functional groups.

3. A die attach paste composition according to claims 1 or 2, wherein said organosilicone resin has the ratio of vinyl functional groups to hydride functional groups from 1:0.2 to 1:10, more preferably from 1:0.5 to 1:5 and most preferably from 1:2 to 1:2.5.

4. A die attach paste composition according to any of claims 1 to 3, wherein said paste composition comprises organosilicone resin from 15% to 40% by weight of total paste composition, preferably from 17% to 37%, more preferably from 22% to 32%.

5. A die attach paste composition according to any of the claims 1 to 4, wherein said single crystal alumina filler has particle size from 2 μm to 5 μm.

6. A die attach paste composition according to any of claims 1 to 5, wherein said paste composition comprises single crystal alumina filler from 55% to 80% by weight of total paste composition, preferably from 60% to 80%, more preferably from 65% to 75%, even more preferably from 65% to 70%.

7. A die attach paste composition according to any of the claims 1 to 6, wherein said single crystal alumina filler has specific surface area of from 2 m^2/g to 2.5 m^2/g.

8. A die attach paste composition according to any of the claims 1 to 7, wherein said hardener is Pt containing hardener.

9. A die attach paste composition according to any of claims 1 to 8, wherein said paste composition comprises hardener from 0.05% to 1.05% by weight of organosilicone resin, preferably from 0.1% to 1.0%, more preferably from 0.2% to 0.5%.

10. A die attach paste composition according to any of claims 1 to 9, wherein said inhibitor is selected from the group consisting of 1-ethynyl-1-cyclohexanol, 3,5-dimethyl-1-hexyn-3-ol, 2-phenyl-3-butyn-2-ol, 1,3,5,7-tetramethyl-1,3,5,7-tetravinyl-cyclotetrasiloxane (MVC) and combination of 2-phenyl-3-butyn-2-ol, 1,3,5,7-tetramethyl-1,3,5,7-tetravinyl-cyclotetrasiloxane.

11. A die attach paste composition according to any of claims 1 to 10, wherein said paste composition comprises inhibitor from 0.01 % to 10 % by weight of total paste composition, preferably from 0.5 % to 5 % and more preferably from 1 % to 3 %.

12. A die attach paste composition according to any of the claims 1 to 11, wherein said paste composition further comprises additives selected from the group consisting of adhesion promoter, solvent, silylcoupling agent, anti-bleed agent and optical brightening agents.

13. Use of die attach paste according to any of the claims 1 to 12 to attach a die on to a substrate.