CLAIMS:

1. A laminated sheet comprising a low-dielectric resin and a base material, wherein:

(1) the dielectric loss tangent of the laminated sheet at 10 GHz is no greater than 0.007 (cavity resonance method),

(2) the metal foil peel strength of the laminated sheet with a metal foil that has a side with a surface smoothness of no greater than Rz 2.0 μm is 0.6 N/mm or greater,

(3) the coefficient of linear thermal expansion of the laminated sheet (≤Tg) is between 20 ppm/K and 60 ppm/K, and

(4) the peel strength between the low-dielectric resin and the base material is between 0.8 and 1.8 times the metal foil peel strength.

2. A laminated sheet according to claim 1, wherein the Tg of the laminated sheet is 180°C or higher.

3. A laminated sheet according to claim 1 or 2, wherein the thickness of the metal foil is less than 35 μm.

4. A laminated sheet according to any one of claims 1 to 3, wherein the metal foil peel strength of the laminated sheet with a metal foil that has a side with a surface smoothness of no greater than Rz 2.0 μm is 0.8 N/mm or greater.

5. A laminated sheet according to any one of claims 1 to 4, wherein the peel strength of the laminated sheet with the low-dielectric resin and the base material is 0.6 N/mm or greater.

6. A laminated sheet according to any one of claims 1 to 5, wherein the ratio between the peel strength of the laminated sheet with the low-dielectric resin and the base material, and the metal foil peel strength (base material-resin/metal foil ratio) is between 1.05 and 1.8.

7. A laminated sheet according to claim 6, wherein the ratio between the peel strength of the laminated sheet with the low-dielectric resin and the base material, and the metal foil peel strength (base material-resin/metal foil ratio) is between 1.3 and 1.8.

8. A laminated sheet according to any one of claims 1 to 7, wherein the low-dielectric resin comprises polyphenylene ether (PPE) at between 10 mass% and 70 mass% based on 100 mass% as the low-dielectric resin.

9. A laminated sheet according to claim 8, wherein the PPE has a number-average molecular weight of between 1,000 and 7,000, and the average number of phenolic hydroxyl groups per PPE molecule is between 0.1 and 0.8.

What is claimed is:

1. A PPE-containing prepreg comprising a base material and a curable resin composition containing polyphenylene ether (PPE) particles, wherein:

(1) PPE extracted from the prepreg using a toluene/methanol mixed solvent with a mass ratio of 95:5 includes insoluble PPE particles (A) in the mixed solvent,

(2) the content of PPE in the PPE particles (A) is 70 mass% or greater, and

(3) the number-average molecular weight of the PPE in the PPE particles (A) is between 8,000 and 40,000.

2. A PPE-containing prepreg according to claim 1, wherein at least 60% of all of the PPE particles (A) are between 0.3 μm and 200 μm, and at least 60% of all of the particles have sizes of between 1.0 μm and 100 μm.

3. A PPE-containing prepreg according to claim 1 or 2, wherein at least 60% of all of the primary particles (A') composing the PPE particles (A) have particle sizes of between 0.3 μm and 30 μm, and at least 60% of all of the particles have particle sizes of between 0.3 μm and 20 μm.

4. A PPE-containing prepreg according to claim 3, wherein the maximum particle size of the primary particles (A') composing the PPE particles (A) is no greater than 40 μm.

5. A PPE-containing prepreg according to any one of claims 1 to 4, wherein also:

(4) PPE extracted from the prepreg using a toluene/methanol mixed solvent with a mass ratio of 95:5 includes dissolved PPE (B) which is dissolved in the mixed solvent, in addition to the insoluble PPE particles (A) in the mixed solvent, and

(5) the mass ratio of the PPE particles (A) and the dissolved PPE (B) is 99:1 to 45:55.

6. A PPE-containing prepreg according to claim 5,

wherein the number-average molecular weight of the dissolved PPE (B) is between 5,000 and 40,000.

7. A PPE-containing prepreg according to claim 5, wherein the number-average molecular weight of the dissolved PPE (B) is between 1,000 and 7,000, and the average number of phenolic hydroxyl groups per molecule is less than 0.5.

8. A PPE-containing prepreg according to any one of claims 1 to 7, wherein the content of PPE in the curable resin composition is between 10 mass% and 70 mass% based on 100 mass% as the curable resin composition.

9. A PPE-containing prepreg according to any one of claims 1 to 8, further comprising a crosslinking curable component (C) and an initiator (D).

10. A PPE-containing prepreg according to claim 9, wherein the crosslinking curable component (C) is a monomer with two or more vinyl groups in the molecule.

11. A PPE-containing prepreg according to claim 10, wherein the crosslinking curable component (C) is triallyl isocyanurate (TAIC).

12. A PPE-containing prepreg according to any one of claims 1 to 11, further comprising an epoxy resin at a content of between 0.1 mass% and 10 mass%.

13. An electronic circuit board formed using a PPE-containing prepreg according to any one of claims 1 to 12, or its material.

14. A laminated sheet comprising a low-dielectric resin and a base material, wherein:

(1) the dielectric loss tangent of the laminated sheet at 10 GHz is no greater than 0.007 (cavity resonance method),

(2) the metal foil peel strength of the laminated sheet with a metal foil that has a side with a surface smoothness of no greater than Rz 2.0 μm is 0.6 N/mm or greater,

(3) the coefficient of linear thermal

expansion of the laminated sheet (≤Tg) is between 20 ppm/K and 60 ppm/K, and

(4) the peel strength between the low-dielectric resin and the base material is between 0.8 and 1.8 times the metal foil peel strength.

15. A laminated sheet according to claim 14, wherein the Tg of the laminated sheet is 180°C or higher.

16. A laminated sheet according to claim 14 or 15, wherein the thickness of the metal foil is less than 35 μm.

17. A laminated sheet according to any one of claims 14 to 16, wherein the metal foil peel strength of the laminated sheet with a metal foil that has a side with a surface smoothness of no greater than Rz 2.0 μm is 0.8 N/mm or greater.

18. A laminated sheet according to any one of claims 14 to 17, wherein the peel strength of the laminated sheet with the low-dielectric resin and the base material is 0.6 N/mm or greater.

19. A laminated sheet according to any one of claims 14 to 18, wherein the ratio between the peel strength of the laminated sheet with the low-dielectric resin and the base material, and the metal foil peel strength (base material-resin/metal foil ratio) is between 1.05 and 1.8.

20. A laminated sheet according to claim 19, wherein the ratio between the peel strength of the laminated sheet with the low-dielectric resin and the base material, and the metal foil peel strength (base material-resin/metal foil ratio) is between 1.3 and 1.8.

21. A laminated sheet according to any one of claims 14 to 20, wherein the low-dielectric resin comprises polyphenylene ether (PPE) at between 10 mass% and 70 mass% based on 100 mass% as the low-dielectric resin.

22. A laminated sheet according to any one of

claims 14 to 21, formed using a PPE-containing prepreg according to any one of claims 1 to 12.

23. A laminated sheet according to claim 21 or 22, wherein the PPE has a number-average molecular weight of between 1,000 and 7,000, and the average number of phenolic hydroxyl groups per PPE molecule is between 0.1 and 0.8.