

We claim:

1. A composition comprising:
 - (a) 40 to 60 wt.% of an alkylbenzene sulfonic acid; and
 - (b) 40 to 60 wt.% of an alkanolamide, an ethoxylated alkanolamide, an alkanolamine, or an ethoxylated amine;said wt.% amounts based on the combined amounts of (a) and (b);
wherein the composition is a non-aqueous solder flux.
2. The composition of claim 1 wherein the alkyl group of the alkylbenzene sulfonic acid is a linear or branched C₁-C₁₈ alkyl group.
3. The composition of claim 1 wherein the alkyl group of the alkylbenzene sulfonic acid is a linear or branched C₁₂-C₁₄ alkyl group.
4. The composition of claim 1 wherein the alkylbenzene sulfonic acid is dodecylbenzene sulfonic acid.
5. The composition of claim 1 wherein the composition comprises the alkylbenzene sulfonic acid and an ethoxylated amine.
6. The composition of claim 5 wherein the ethoxylated amine is a cocamine ethoxylate, a lauramine ethoxylate, or a tallowamine ethoxylate, each having an average of 2 to 5 EO units.
7. The composition of claim 5 wherein the alkylbenzene sulfonic acid is dodecylbenzene sulfonic acid and the ethoxylated amine is a tallowamine ethoxylate having an average of 2 to 5 EO units.
8. The composition of claim 1 comprising 45 to 55 wt.% of the alkylbenzene sulfonic acid and 45 to 55 wt.% of an ethoxylated amine.
9. The composition of claim 1 comprising 48 to 52 wt.% of the alkylbenzene sulfonic acid and 48 to 52 wt.% of an ethoxylated amine.
10. The composition of claim 1 wherein the alkanolamide is cocamide MEA, cocamide DEA, lauramide MEA, lauramide DEA, oleamide MEA, oleamide DEA, cocamide MIPA, lauramide MIPA, or oleamide MIPA.
11. The composition of claim 1 wherein the ethoxylated alkanolamide is a PEG cocamide or a PEG lauramide, either having an average of 4 to 8 EO units.
12. The composition of claim 1 wherein the alkanolamine is diethanolamine.

13. The composition of claim **1** wherein the composition is essentially free of fatty acid salts.

14. The composition of claim **1** wherein the composition has good wettability on metal coupons in a wetting balance test as described herein compared with that of a control flux as evidenced by a wetting force that is generated within 1 second from the start of the test, and is sustained for at least 10 seconds, of greater than 0.2 mN/mm.

15. The composition of claim **1**, that upon dilution with water, has a pH within the range of 1.0 to 6.0.

16. A mixture comprising solder and the composition of claim **1**.

17. A composition comprising:

(a) 40 to 60 wt.% of an acidic phosphate ester; and

(b) 40 to 60 wt.% of an alkanolamide, an ethoxylated alkanolamide, an alkanolamine, or an ethoxylated amine;

said wt.% amounts based on the combined amounts of (a) and (b);

wherein the composition is a non-aqueous solder flux.

18. The composition of claim **17** wherein the acidic phosphate ester is a phosphate ester of an ethoxylated isodecyl alcohol, an ethoxylated tridecyl alcohol, an ethoxylated tristerylphenol, or an ethoxylated nonylphenol.

19. The composition of claim **17** comprising the acidic phosphate ester and an alkanolamide, an ethoxylated alkanolamide, or an ethoxylated amine.

20. The composition of claim **19** wherein the ethoxylated amine is a cocamine ethoxylate, a lauramine ethoxylate, or a tallowamine ethoxylate, each having an average of 2 to 5 EO units.

21. The composition of claim **19** wherein the alkanolamide is cocamide MEA, cocamide DEA, lauramide MEA, lauramide DEA, oleamide MEA, oleamide DEA, cocamide MIPA, lauramide MIPA, or oleamide MIPA.

22. The composition of claim **19** wherein the ethoxylated alkanolamide is a PEG cocamide or a PEG lauramide, either having an average of 4 to 8 EO units.

23. The composition of claim **17** comprising the acidic phosphate ester and an alkanolamine.

24. The composition of claim **23** wherein the alkanolamine is diethanolamine.

25. The composition of claim **17** wherein the composition has good wettability on metal coupons in a wetting balance test as described herein compared with that of a control flux as evidenced by a wetting force that is generated within 1 second from the start of the test, and is sustained for at least 10 seconds, of greater than 0.2 mN/mm.

26. The composition of claim **17**, that upon dilution with water, has a pH within the range of 1.0 to 6.0.

27. A mixture comprising solder and the composition of claim **17**.

28. A composition consisting essentially of:

(a) 40 to 60 wt.% of an alkylbenzene sulfonic acid or an acidic phosphate ester;
and

(b) 40 to 60 wt.% of an alkanolamide, an ethoxylated alkanolamide, an alkanolamine, or an ethoxylated amine;

said wt.% amounts based on the combined amounts of (a) and (b);

wherein the composition is a non-aqueous solder flux.

29. The composition of claim **28** wherein the alkyl group of the alkylbenzene sulfonic acid is a linear or branched C₁-C₁₈ alkyl group.

30. The composition of claim **28** wherein the alkyl group of the alkylbenzene sulfonic acid is a linear or branched C₁₂-C₁₄ alkyl group.

31. The composition of claim **28** wherein the acidic phosphate ester is a phosphate ester of an ethoxylated isodecyl alcohol, an ethoxylated tridecyl alcohol, an ethoxylated tristerylphenol, or an ethoxylated nonylphenol.

32. The composition of claim **28** wherein the alkanolamide is cocamide MEA, cocamide DEA, lauramide MEA, lauramide DEA, oleamide MEA, oleamide DEA, cocamide MIPA, lauramide MIPA, or oleamide MIPA.

33. The composition of claim **28** wherein the ethoxylated alkanolamide is a PEG cocamide or a PEG lauramide, either having an average of 4 to 8 EO units.

34. The composition of claim **28** wherein the alkanolamine is diethanolamine.

35. The composition of claim **28** wherein the ethoxylated amine is a cocamine ethoxylate, a lauramine ethoxylate, or a tallowamine ethoxylate, each having an average of 2 to 5 EO units.

36. The composition of claim **28** consisting essentially of 45 to 55 wt.% of the alkylbenzene sulfonic acid or acidic phosphate ester and 45 to 55 wt.% of the alkanolamide, ethoxylated alkanolamide, alkanolamine, or ethoxylated amine.

37. The composition of claim **28** consisting essentially of 48 to 52 wt.% of the alkylbenzene sulfonic acid or acidic phosphate ester and 48 to 52 wt.% of the alkanolamide, ethoxylated alkanolamide, alkanolamine, or ethoxylated amine.

38. The composition of claim **28** wherein the alkylbenzene sulfonic acid has a linear C₁₂-C₁₄ alkyl group and the ethoxylated amine is a tallowamine ethoxylate having an average of 2 to 5 EO units.

39. The composition of claim **28** consisting essentially of the acidic phosphate ester and a tallowamine ethoxylate having an average of 2 to 5 EO units.

40. The composition of claim **28** consisting essentially of the acidic phosphate ester and an alkanolamine.

41. The composition of claim **28** wherein the composition has good wettability on metal coupons in a wetting balance test as described herein compared with that of a control flux as evidenced by a wetting force that is generated within 1 second from the start of the test, and is sustained for at least 10 seconds, of greater than 0.2 mN/mm.

42. The composition of claim **28**, that upon dilution with water, has a pH within the range of 1.0 to 6.0.

43. A mixture comprising solder and the composition of claim **28**.

44. A method of making a solder flux composition, the method comprising: (a) combining 40 to 60 wt.% of an alkylbenzene sulfonic acid or an acidic phosphate ester with 40 to 60 wt.% of an alkanolamide, an ethoxylated alkanolamide, an alkanolamine, or an ethoxylated amine, and (b) mixing until the composition is substantially homogeneous.

45. A method which comprises using the composition of any of claims **1**, **17**, or **28** as a component of a tacky solder flux.