Claims

1. An accelerator composition for the cure of epoxy resins with aromatic amines comprising

   (a) a metal complex with carboxylate ligands; and

   (b) a boron trifluoride amine complex or a boron trifluoride phenol complex,

   wherein the stoichiometric ratio of (a):(b) is in the range from 1:3 to 3:1.

2. The accelerator composition of claim 1, wherein the metal cation of the metal complex with carboxylate ligands is selected from zinc, tin and chromium.

3. The accelerator composition of claim 1 or claim 2, wherein the carboxylate ligands are selected from octoates, neodecanoates and naphthenates.

4. The accelerator composition according to any one of the preceding claims, wherein the amine of the boron trifluoride amine complex is selected from ethylamine, monoisopropylamine, N-methylcyclohexylamine, piperidine and 2,4-dimethylaniline.

5. The accelerator composition of any one of the preceding claims, wherein the phenol of the boron trifluoride phenol complex is selected from phenol, 2-methylphenol, 3-methylphenol and 4-methylphenol.

6. A curing composition for the cure of epoxy resin comprising

   (i) an aromatic amine as curing agent; and

   (ii) an accelerator composition according to any one of the preceding claims or, alternatively, a mixture of (1) a metal complex with carboxylate ligands and (2) neat

boron trifluoride or boron trifluoride etherate for in-situ formation of a boron trifluoride amine complex with the aromatic amine .

7. A curable epoxy composition comprising:

(i) an epoxy resin;

(ii) an aromatic amine as a curing agent; and

(iii) an accelerator composition according to any one of claims 1 to 5.

8. The curable epoxy composition of claim 7, wherein the amount of the accelerator composition added with respect to the epoxy resin is in the range from 0.01 to 15 parts of accelerator composition per 100 parts of epoxy resin.

9. A method of preparing a curable epoxy composition comprising mixing (i) an epoxy resin; (ii) an aromatic amine; and (iii) the accelerator composition according to any one of claims 1 to 5 or, alternatively, a mixture of (1) a metal complex with carboxylate ligands and (2) neat boron trifluoride or boron trifluoride etherate for in-situ formation of a boron trifluoride amine complex with the aromatic amine.

10. A method of producing a cured resin product comprising a step of curing the curable epoxy composition of claim 7 for a time and temperature sufficient to substantially cure the curable epoxy composition.

11. A curable resin product obtained by the method of claim 10.

12. Use of an accelerator composition according to any one of claims 1 to 5 for curing an epoxy resin with an aromatic amine or of a curable composition according to claim 7 or claim 8 for curing an epoxy resin.

13. The use according to claim 12, wherein the aromatic amine is selected from diethyltoluene diamine, 4,4'-methylenebis(2-ethylaniline), 4,4'-diaminodiphenylmethane, 4,4'-diaminodiphenylsulfone, 3,3’-diaminophenylsulfone, 1,2-, 1,3- and 1,4-benzenediamine, bis(4-aminophenyl)methane, 1,3-xylenediamine, 1,2-diamino-3,5-dimethylbenzene, 4,4’-diamino-3,3’-dimethylbiphenyl, 4,4’-methylene-bis(2,6-dimethylaniline), 1,3-bis(m-aminophenoxy)benzene, 9,9-bis(4-aminophenyl)fluorene, 3,3’-diaminodiphenylsulfone, 4,4’-diaminodiphenylsulfide, 1,4-bis(p-aminophenoxy)benzene, 1,3-propanediol-bis(4-aminobenzoate and mixtures thereof.

14. A cured resin product obtained from the use according to claims 12 or claim 13.