CLAIMS

1. A composition comprising a mixture of:
   (i) an aromatic polycarbonate;
   (ii) a graft copolymer including polyacrylonitrile; and,
   (iii) a non-crosslinked acrylic polymer having a weight average molecular weight (Mw) of less than or equal to 65,000 Daltons (Da).

2. A composition as claimed in claim 1 wherein the non-crosslinked acrylic polymer has a weight average molecular weight (Mw) of less than or equal to 60,000 Da, preferably less than or equal to 55,000 Da, more preferably less than or equal to 50,000 Da.

3. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer has a weight average molecular weight (Mw) of greater than or equal to 25,000 Da, preferably greater than or equal to 30,000 Da, more preferably greater than or equal to 35,000 Da.

4. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer comprises a polymer obtainable by polymerising 60 to 100% by weight methyl methacrylate monomer and 0 to 40% by weight of one or more alkyl (alk)acrylate comonomers.

5. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer comprises an acrylic copolymer obtainable by polymerising 60 to 99.9% by weight of methyl methacrylate monomer and 0.1 to 40% by weight of one or more alkyl (alk)acrylate comonomers.

6. A composition as claimed in claim 5 wherein the acrylic copolymer is obtainable by polymerising 80 to 99% by weight, preferably 90 to 99% by weight, of methyl methacrylate monomer and 20 to 1% by weight, preferably 10 to 1% by weight, of one or more alkyl (alk)acrylate comonomers.

7. A composition as claimed claim 5 or 6 wherein the alkyl (alk)acrylate comonomer of the acrylic copolymer comprises an alkyl acrylate comonomer.

8. A composition as claimed in claim 7 wherein the one or more alkyl acrylate comonomers of the acrylic copolymer comprises one or more C_1 to C_8 alkyl acrylate comonomers.

9. A composition as claimed in claim 8 wherein the one or more C_1 to C_8 alkyl acrylate comonomers are selected from the group consisting of methyl acrylate, ethyl acrylate, propyl acrylate, butyl acrylate and mixtures thereof.

10. A composition as claimed in any one of claims 6 to 9 wherein the acrylic copolymer consists essentially of methyl methacrylate monomer and one or more alkyl acrylate comonomers.

11. A composition as claimed in any one of claims 7 to 10 wherein the acrylic copolymer includes only one alkyl acrylate comonomer.

12. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer is present in an amount of greater than or equal to 3% by weight, preferably greater than or equal to 5% by weight, based on the total weight of the composition.

13. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer is present in an amount of less than or equal to 25% by weight, preferably less than or equal to 20% by weight, based on the total weight of the composition.

14. A composition as claimed in any one of the preceding claims wherein the graft copolymer including polyacrylonitrile comprises an acrylic-styrene-acrylonitrile (ASA) polymer, acrylonitrile-EPDM-styrene (AES) polymer, olefin-

styrene-acrylonitrile (OSA) polymer or acrylonitrile-butadiene-styrene (ABS) polymer.

15. A composition as claimed in claim 14 wherein the graft polymer including polyacrylonitrile comprises an ASA polymer, an AES polymer or an ABS polymer, preferably an ABS polymer.

16. A composition as claimed in any of the preceding claims wherein the graft copolymer including polyacrylonitrile is present in an amount of greater than or equal to 0.5% by weight, preferably greater than or equal to 2% by weight, based on the total weight of the composition.

17. A composition as claimed in any one of the preceding claims wherein the graft copolymer including polyacrylonitrile is present in an amount of less than or equal to 60% by weight, preferably less than or equal to 40% by weight, based on the total weight of the composition.

18. A composition as claimed in any of the preceding claims wherein the aromatic polycarbonate is derived from a bis-phenol, preferably 2,2-bis-(4-hydroxyphenyl)-propane (bisphenol A).

19. A composition as claimed in any of the preceding claims wherein the aromatic polycarbonate is present in an amount of greater than or equal to 30% by weight, preferably greater than or equal to 35% by weight, based on the total weight of the composition.

20. A composition as claimed in any one of the preceding claims wherein the aromatic polycarbonate is present in an amount of less than or equal to 90% by weight, preferably less than or equal to 85% by weight, based on the total weight of the composition.

21. A composition as claimed in any of the preceding claims wherein the ratio by weight of the aromatic polycarbonate to the weight of the graft copolymer

including polyacrylonitrile is 90:1 to 0.5:1, preferably 40:1 to 0.75:1, preferably 10:1 to 1:1.

22. A composition as claimed in any one of the preceding claims further including an impact modifier.

23. A composition as claimed in claim 22 wherein the impact modifier comprises an acrylic based impact modifier or a methacrylate-butadiene-styrene (MBS) based impact modifier, preferably a MBS based impact modifier.

24. A composition as claimed in claim 22 or 23 wherein the impact modifier is in the form of core-shell polymeric particles.

25. A composition as claimed in any one of claims 22 to 24 wherein the impact modifier is present in an amount of greater than or equal to 1% by weight, preferably greater than or equal to 3% by weight, based on the total weight of the composition.

26. A composition as claimed in any one of claims 22 to 25 wherein the impact modifier is present in an amount of less than or equal to 20% by weight, preferably less than or equal to 15% by weight, based on the total weight of the composition.

27. A composition as claimed in any of the preceding claims wherein the Melt Flow Index of the composition at 260 °C applying a 5 kg/cm^3 load as determined in accordance with ISO 1133:1997 is at least 5% greater than a comparable composition containing an equivalent level of aromatic polycarbonate and not including the non-crosslinked acrylic polymer.

28. A composition as claimed in any of the preceding claims for use in melt-processing applications.

29. A composition as claimed in any one of the preceding claims further including a reinforcement fibre.

30. A process for manufacturing a composition as defined in any one of claims 1 to 25 comprising mixing an aromatic polycarbonate as defined in any one of claims 1 to 25, a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 25, and a non-crosslinked acrylic polymer as defined in any one of claims 1 to 25.

31. A process as claimed in claim 30 wherein the mixing comprises melt blending the aromatic polycarbonate, the graft copolymer including polyacrylonitrile, and the non-crosslinked acrylic polymer.

32. A process as claimed in claim 30 or 31 further including the step of adding an impact modifier.

33. An article comprising a composition as defined in any one of claims 1 to 29.

34. A method of manufacturing an article comprising adding a composition as defined in any one of claims 1 to 29 in molten form to a mould, allowing the molten composition to solidify in the mould to form the article and removing the article from the mould.

35. A method of forming an article comprising injection moulding a composition as defined in any one of claims 1 to 29.

36. Use of a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 as an additive for enhancing the melt flow rate of a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29, and a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29, and optionally including an impact modifier and/or a reinforcement fibre.

37. Use of a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 as an additive for decreasing the process cycle time in moulding applications of a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29 and a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29 and optionally including an impact modifier and/or a reinforcement fibre.

38. A method of enhancing the melt flow rate of a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29, a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29 and optionally including an impact modifier and/or a reinforcement fibre, the method comprising mixing, preferably melt blending, a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 with the mixture.

39. A method of decreasing the process cycle time for forming an article in injection moulding applications from a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29, a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29 and optionally including an impact modifier and/or a reinforcement fibre, the method comprising mixing a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 with the mixture and then forming an article from the resulting mixture by an injection moulding procedure.

40. A non-crosslinked acrylic polymer having a weight average molecular weight (Mw) of less than or equal to 65,000 Daltons (Da) as defined in any one of claims 1 to 29.

CLAIMS

1. A composition comprising a mixture of:
   (i) an aromatic polycarbonate;
   (ii) a graft copolymer including polyacrylonitrile; and,
   (iii) a non-crosslinked acrylic polymer having a weight average molecular weight (Mw) of between greater than or equal to 25,000 Daltons (Da) and less than or equal to 65,000 Da.

2. A composition as claimed in claim 1 wherein the non-crosslinked acrylic polymer has a weight average molecular weight (Mw) of less than or equal to 60,000 Da.

3. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer has a weight average molecular weight (Mw) of greater than or equal to 30,000 Da.

4. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer comprises a polymer obtainable by polymerising 60 to 100% by weight methyl methacrylate monomer and 0 to 40% by weight of one or more alkyl (alk)acrylate comonomers.

5. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer comprises an acrylic copolymer obtainable by polymerising 60 to 99.9% by weight of methyl methacrylate monomer and 0.1 to 40% by weight of one or more alkyl (alk)acrylate comonomers.

6. A composition as claimed in claim 5 wherein the acrylic copolymer is obtainable by polymerising 80 to 99% by weight of methyl methacrylate monomer and 20 to 1% by weight of one or more alkyl (alk)acrylate comonomers.

7. A composition as claimed in claim 5 or 6 wherein the alkyl (alk)acrylate comonomer of the acrylic copolymer comprises an alkyl acrylate comonomer.

8. A composition as claimed in claim 7 wherein the one or more alkyl acrylate comonomers of the acrylic copolymer comprises one or more C_1 to C_8 alkyl acrylate comonomers.

9. A composition as claimed in claim 8 wherein the one or more C_1 to C_8 alkyl acrylate comonomers are selected from the group consisting of methyl acrylate, ethyl acrylate, propyl acrylate, butyl acrylate and mixtures thereof.

10. A composition as claimed in any one of claims 6 to 9 wherein the acrylic copolymer consists essentially of methyl methacrylate monomer and one or more alkyl acrylate comonomers.

11. A composition as claimed in any one of claims 7 to 10 wherein the acrylic copolymer includes only one alkyl acrylate comonomer.

12. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer is present in an amount of greater than or equal to 3% by weight based on the total weight of the composition.

13. A composition as claimed in any one of the preceding claims wherein the non-crosslinked acrylic polymer is present in an amount of less than or equal to 25% by weight based on the total weight of the composition.

14. A composition as claimed in any one of the preceding claims wherein the graft copolymer including polyacrylonitrile comprises an acrylic-styrene-acrylonitrile (ASA) polymer, acrylonitrile-EPDM-styrene (AES) polymer, olefin-styrene-acrylonitrile (OSA) polymer or acrylonitrile-butadiene-styrene (ABS) polymer.

15. A composition as claimed in claim 14 wherein the graft polymer including polyacrylonitrile comprises an ASA polymer, an AES polymer or an ABS polymer.

16. A composition as claimed in any one of the preceding claims wherein the graft copolymer including polyacrylonitrile is present in an amount of greater than or equal to 0.5% by weight based on the total weight of the composition.

17. A composition as claimed in any one of the preceding claims wherein the graft copolymer including polyacrylonitrile is present in an amount of less than or equal to 60% by weight based on the total weight of the composition.

18. A composition as claimed in any one of the preceding claims wherein the aromatic polycarbonate is derived from a bis-phenol.

19. A composition as claimed in any one of the preceding claims wherein the aromatic polycarbonate is present in an amount of greater than or equal to 30% by weight based on the total weight of the composition.

20. A composition as claimed in any one of the preceding claims wherein the aromatic polycarbonate is present in an amount of less than or equal to 90% by weight based on the total weight of the composition.

21. A composition as claimed in any one of the preceding claims wherein the ratio by weight of the aromatic polycarbonate to the weight of the graft copolymer including polyacrylonitrile is 90:1 to 0.5:1.

22. A composition as claimed in any one of the preceding claims further including an impact modifier.

23. A composition as claimed in claim 22 wherein the impact modifier comprises an acrylic based impact modifier or a methacrylate-butadiene-styrene (MBS) based impact modifier.

24. A composition as claimed in claim 22 or 23 wherein the impact modifier is in the form of core-shell polymeric particles.

25. A composition as claimed in any one of claims 22 to 24 wherein the impact modifier is present in an amount of greater than or equal to 1% by weight based on the total weight of the composition.

26. A composition as claimed in any one of claims 22 to 25 wherein the impact modifier is present in an amount of less than or equal to 20% by weight based on the total weight of the composition.

27. A composition as claimed in any one of the preceding claims wherein the Melt Flow Index of the composition at 260 °C applying a 5 kg/cm^3 load as determined in accordance with ISO 1133:1997 is at least 5% greater than a comparable composition containing an equivalent level of aromatic polycarbonate and not including the non-crosslinked acrylic polymer.

28. A composition as claimed in any one of the preceding claims for use in melt-processing applications.

29. A composition as claimed in any one of the preceding claims further including a reinforcement fibre.

30. A process for manufacturing a composition as defined in any one of claims 1 to 25 comprising mixing an aromatic polycarbonate as defined in any one of claims 1 to 25, a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 25, and a non-crosslinked acrylic polymer as defined in any one of claims 1 to 25.

31. A process as claimed in claim 30 wherein the mixing comprises melt blending the aromatic polycarbonate, the graft copolymer including polyacrylonitrile, and the non-crosslinked acrylic polymer.

32. A process as claimed in claim 30 or 31 further including the step of adding an impact modifier.

33. An article comprising a composition as defined in any one of claims 1 to 29.

34. A method of manufacturing an article comprising adding a composition as defined in any one of claims 1 to 29 in molten form to a mould, allowing the molten composition to solidify in the mould to form the article and removing the article from the mould.

35. A method of forming an article comprising injection moulding a composition as defined in any one of claims 1 to 29.

36. Use of a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 as an additive for enhancing the melt flow rate of a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29, and a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29, and optionally including an impact modifier and/or a reinforcement fibre.

37. Use of a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 as an additive for decreasing the process cycle time in moulding applications of a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29 and a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29 and optionally including an impact modifier and/or a reinforcement fibre.

38. A method of enhancing the melt flow rate of a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29, a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29 and optionally including an impact modifier and/or a reinforcement fibre, the method comprising mixing a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 with the mixture.

39. A method of decreasing the process cycle time for forming an article in injection moulding applications from a mixture comprising an aromatic polycarbonate as defined in any one of claims 1 to 29, a graft copolymer including polyacrylonitrile as defined in any one of claims 1 to 29 and optionally including an impact modifier and/or a reinforcement fibre, the method comprising mixing a non-crosslinked acrylic polymer as defined in any one of claims 1 to 29 with the mixture and then forming an article from the resulting mixture by an injection moulding procedure.

40. A composition as claimed in claim 1, a process as claimed in any one of claims 30, 34, 35, 38 and 39, an article as claimed in claim 33, or use as claimed in claim 36 or 37, substantially as herein described with reference to any one of the Examples.