CLAIMS:

1. A shaped preform component for a face portion of a composite wheel, the shaped preform component having a hub that extends around a central axis, the shaped preform component being formed from a cured composite fibre material having a compressibility of < 2% volumetric under moulding conditions of 50 bar hydrostatic pressure and a temperature of 60 to 200 °C.

2. A shaped preform component according to claim 1, further comprising a plurality of fingers that are annularly spaced apart about the central axis and which extend radially outwardly from the perimeter of the hub away from the central axis.

3. A shaped preform component according to claim 1 or 2, wherein the compressibility of the shaped preform component is < 1% volumetric under moulding conditions of 50 bar hydrostatic pressure.

4. A shaped preform component according to claim 1, 2 or 3, wherein the shaped preform component has a density of between 600 and 1300 kg/m^3, and preferably from 800 to 1200 kg/m^3.

5. A shaped preform component according to any preceding claim, wherein the shaped preform component has at least one of:

- Tensile Strength between 20 and 80 MPa, preferably from 20 and 60 MPa; or
- Stiffness from 1.5 to 30 GPa, preferably 10 to 25 GPa.

6. A shaped preform component according to any preceding claim, wherein the surface of the shaped preform component has a roughened surface having a roughness of at least Ra = 0.2 µm.

7. A shaped preform component according to claim 6, wherein the roughened surface comprises a chemically etched surface, or a mechanically abraded surface.

8. A shaped preform component according to any preceding claim, wherein the shaped preform component is formed from: Tailored Fibre Placement plies or

preforms; at least one layers of single fibre direction plies; at least one layer of multi directional fibre plies; or Fibre Patch Placement preforms; at least one layer of non-woven, isotropic or anisotropic fibres; an isotropic fibre arrangement; fillers; glass microspheres; hydrophobic fumed silica; epoxy resin/hardener; comminuted carbon fibre, milled carbon fibre, or a combination thereof.

9. A shaped preform component according to any preceding claim, wherein the shaped preform component is formed from:

(i) a mixture of resin, milled carbon fibre and hollow glass microspheres;
(ii) a mixture of resin and milled carbon fibres;
(iii) a mixture of resin and comminuted carbon fibres or
(iv) resin only.

10. A shaped preform component according to claim 9, wherein the shaped preform component further includes 1 to 5 wt%, preferably 1 to 2 wt% hydrophobic fumed silica.

11. A shaped preform component according to claim 8, 9 or 10, wherein the milled carbon fibres have a length of at least one of:

less than 20 mm, preferably between 1 and 15 mm, more preferably about 12 mm; or

less than 500 micron length, preferably less than 100 micron, more preferably between 50 and 200 micron.

12. A shaped preform component according to any preceding claim, further comprising a curable matrix material enveloping the comprising components of the shaped preform component.

13. A shaped preform component according to claim 12, wherein the matrix material comprises a resin based on unsaturated polyester, polyurethane, polyvinyl ester, epoxy, thermoplastics, or combinations thereof.

14. A shaped preform component according to any preceding claim, having thermal properties designed to match the thermal properties of the overall composite material

of the face portion of a composite wheel that the shaped preform component is configured to be included therein.

15. A shaped preform component according to any preceding claim, wherein shaped preform component comprises an incomplete or under-cured preform.

16. A shaped preform component according to any preceding claim, wherein the hub is circular in shape about the central axis.

17. A shaped preform component according to any preceding claim, wherein the hub includes at least one aperture.

18. A shaped preform component according to any preceding claim, wherein the hub includes at least three apertures spaced apart about the central axis, preferably at least four apertures spaced apart about the central axis, preferably at least five apertures spaced apart about the central axis.

19. A shaped preform component according to any preceding claim, wherein the hub includes a central aperture.

20. A shaped preform component according to claim 19, wherein central aperture includes a step forming a rim or flange at one end of the aperture.

21. A shaped preform component according to any preceding claim, wherein hub includes a first side having a planar surface and a second side, opposite the first side, having a generally concave or recessed surface.

22. A shaped preform component according to claim 21, wherein the fingers comprise surfaces which taper or slope downwardly from the perimeter of the planar surface of the hub towards a distal end of each finger.

23. A shaped preform component according to any preceding claim, wherein the number of fingers corresponds to the number of spokes formed in the face portion of the composite wheel.

24. A shaped preform component according to any preceding claim, wherein the fingers are spaced apart equally about the central axis.

25. A shaped preform component according to any preceding claim, including at least one of the following features:

fibre ply retention formations;

guide lines to visually indicate the location that the edges of a ply should be located; or

holding/manipulation formations for optimising handling of the shaped preform component.

26. A shaped preform component according to any preceding claim, wherein the shaped preform component is integrally formed with the composite wheel.

27. A method of forming a face portion of a composite fibre wheel, comprising:

locating a shaped preform component according to any one of the preceding claims in the hub portion of the fibre layup of a face portion of a composite fibre wheel; and

laying up composite fibre elements around the shaped preform component thereby forming the pre-moulded structure of the face portion of the composite fibre wheel.

28. A method according to claim 27, further including the steps of:

providing a matrix material in contact with pre-moulded structure of the face portion; and

curing the face portion.

29. A method according to claim 27 or 28, wherein the method further includes the steps of:

concurrently providing a matrix material in contact with each rim portion and the face portion of the composite fibre wheel; and

co-curing the rim portion and the face portion of the composite fibre wheel.

30. A method according to any one of claims 27 to 29, wherein the fibres elements of the fibre layup of the face portion of the composite fibre wheel comprise carbon fibres.

31. A method according to any one of claims 27 to 30, wherein the fibre elements are provided as at least one of prepregs, semi-pregs, woven or non-woven fabrics, mats, preforms, pre-consolidated pre-forms, individual or groups of fibres, tows, or tow-pregs.

32. A method according to any one of claims 27 to 31, wherein the fibre elements are provided as at least one fabric sheet, preferably a multi-axial fabric.

33. A composite wheel including a shaped preform component according to any one of claims 1 to 26.