Claims

1. A core member, wherein the following condition a) is met:

   a) it has a bulk density of ≤ approximately 48, especially ≤ approximately 40, more preferably ≤ approximately 32 kg/m^3, and very especially preferably ≤ 26 kg/m^3;

and also at least one of the two conditions b1) and b2) is met:

   b1) it has a ratio of modulus of compression to bulk density of ≥ approximately 4.5 $\frac{MPa}{kg/m^3}$, preferably ≥ 5.5 $\frac{MPa}{kg/m^3}$, especially preferably ≥ 5.8 $\frac{MPa}{kg/m^3}$;

   b2) it has a cell size of ≤ approximately 9.6 mm, especially ≤ 6.4 mm, and preferably ≤ 4.8 mm, and especially preferably ≤ 3.2 mm, and very especially preferably ≤ 1.6 mm.

2. A core member according to Claim 1, characterised in that the core member is a honeycomb member, the honeycomb member having a polygonal, preferably a hexagonal, right-angled or circular cell geometry.

3. A core member according to at least one of the preceding claims, characterised in that the core member is produced from (E-glass, S-2-glass) glass fibre, carbon fibre, Kevlar fibre, basalt fibre, preferably a quartz glass fibre, or from hybrid constructions of these named fibres.

4. A core member according to at least one of the preceding claims, characterised in that the core member is a quartz glass fibre/plastics-material composite.

5. A core member according to at least one of the preceding claims, characterised in that the core member is produced from a plastics material which comprises a thermoset or

alternatively thermoplastic matrix, preferably from the family of cyanate esters or polyimides, optionally also phenols, epoxides, benzoxazines, BMI, polyether imides (PEI), polyether ketones (PEK, PEEK, PAEK, PEKK), polythioethers (PPS), polyethers (PP, PPO).

6. A core member according to at least one of the preceding claims, characterised in that the core member is a composite consisting of fibres and/or another supporting or filling materials and a plastics material which comprises a thermoset or alternatively thermoplastic matrix, preferably from the family of cyanate esters or polyimides, optionally also phenols, epoxides, benzoxazines, BMI, polyether imides (PEI), polyether ketones (PEK, PEEK, PAEK, PEKK), polythioethers (PPS), polyethers (PP, PPO).

7. A core member according to at least one of the preceding claims, characterised in that the core member is produced from a woven fabric and/or a fleece-like structure.

8. A core member according to Claim 7, characterised in that the woven fabric is not fully impregnated and/or coated and ensures permeability to air by way of the open-cell cell walls between the cells.

9. A core member according to at least one of the preceding claims, characterised in that the core member has a high thermal stability of over 350°C.

10. A core member according to at least one of the preceding claims, characterised in that the core member has excellent dielectric properties with a dielectric constant of $\leq$ 1.1, especially $\leq$ 1.0, and a loss factor (loss tangent) of < 0.003, especially < 0.002.

11. A core member according to at least one of the preceding claims, characterised in that the core member has a ratio of compressive strength to bulk density of $\geq$ approximately 0.04 $\frac{MPa}{kg/m^3}$, preferably $\geq$ 0.06 $\frac{MPa}{kg/m^3}$.

12. A method for producing a core member from an open-cell supporting material, wherein

viii) a material web made of a supporting material is provided with strips of adhesive in regular patterns by means of an application means;

ix) stacks of portions of the material web are formed which lie on one another offset relative to each other with respect to the pattern of strips such

iia) that the strips of an underneath portion in each case are arranged between the strips of the portion lying thereover in each case;

or

iib) that the strips of an underneath portion are arranged offset but not centrally between the strips of the portion lying thereover in each case;

x) portions which lie on one another in each case in the regions of the strips are bonded together;

xi) the stack is expanded, with a honeycomb form of whatever polygonal structure forming, especially a honeycomb form of hexagonal, right-angled or circular cell geometry, for producing hexagonal, over-expanded, right-angled and 3D honeycomb cores;

xii) the honeycomb form is impregnated and/or coated with a synthetic resin;

xiii) the honeycomb form coated with the synthetic resin is subjected to a curing step to cure the synthetic resin;

xiv) the honeycomb form thus formed is cut, forming honeycomb members.

13. A method according to Claim 12, characterised in that the open-cell support is a

woven fabric and/or a fleece-like structure, preferably but not exclusively comprising (E-glass, S-2-glass, quartz glass) glass fibre, carbon fibre, Kevlar fibre, basalt fibre, or hybrid woven fabrics of these named fibres.

14. A method according to Claim 13, characterised in that the support is partly pre-impregnated or coated with a resin in order to reduce the porosity prior to the expansion process, with the porosity after the coating being less than 40% and the coating being in a weight ratio of 10 - 75% relative to the support weight and the coated support after the coating and optionally curing being thermally stable at 160 - 250°C and made flexible, in order to implement the forming of these pre-impregnated layers during the expansion process with low expansion forces.

15. A method according to Claim 13, characterised in that the support in the form of the honeycomb member is not fully impregnated and/or coated with a resin and ensures permeability to air by way of the open-cell cell walls between the cells.

16. A method according to one of Claims 12 to 14, characterised in that a thermoset material, thermoplastic material or alternatively an elastomer, preferably but not exclusively phenol adhesive, epoxy adhesive, polyimide adhesive, cyanate ester adhesive, is used as adhesive.

17. A method according to at least one of Claims 12 to 16, characterised in that after the expansion step iv) stabilisation of the honeycomb form by thermal treatment takes place.

18. A method according to at least one of Claims 12 to 17, characterised in that a thermoset or alternatively thermoplastic matrix system is used as resin, preferably from the family of cyanate esters or polyimides, optionally also phenols, epoxides, benzoxazines, BMI, polyether imides (PEI), polyether ketones (PEK, PEEK, PAEK, PEKK), polythioethers (PPS), polyethers (PP, PPO).

19. A method according to at least one of Claims 12 to 18, characterised in that steps v) and vi) are repeated one or more times, in order to apply one or more further layers of

the synthetic resin.

20. A core member, produced according to the method according to at least one of Claims 12 to 19.

21. A core member according to Claim 20, characterised in that the open-cell support is not fully impregnated and/or coated and ensures permeability to air by way of the open-cell cell walls between the cells.

22. A core member according to Claim 20 and 21, characterised in that the core member has excellent dielectric properties with a dielectric constant of ≤ 1.1, especially ≤ 1.0, and a loss factor (loss tangent) of < 0.003, especially < 0.002.

23. A core member according to Claims 20 to 22, characterised in that the core member has a ratio of modulus of compression to bulk density of ≥ approximately 5.5 $\frac{MPa}{kg/m^3}$, preferably ≥ approximately 5.8 $\frac{MPa}{kg/m^3}$.