Claims

1. A process for producing a PEI particle foam, the process comprising:~~Use of a PEI particle foam in aircraft construction, wherein the foamed PEI has a glass transition temperature between 180 and 215°C, and in that the mean cell diameter of the particle foam is less than 2 mm, and~~
~~wherein the particle foam has been obtained from~~
extruding a composition consisting of 80% to 99.5% by weight of PEI, 0.5% to 10% by weight of ~~a~~ blowing agent and 0% to 10% by weight of additives from an extruder with a perforated plate to give foamed pellets, where temperatures between intake zone and screw tip are within a range between 180 and 380°C, a temperature of the perforated plate is between 250 and 350°C, and a melt temperature on exit through the perforated plate is between 230 and 360°C,
guiding the composition on exit from the extruder into an underwater pelletizer; and
subsequently foaming the foamed pellets further to give the PEI particle foam.

2. ~~Use of a particle foam~~The process according to Claim 1, wherein the additives are flame retardants, plasticizers, pigments, UV stabilizers, nucleating agents, impact modifiers, adhesion promoters, rheology modifiers, fibres and/or nanoparticles.

3. ~~Use of a particle foam~~The process according to Claim 1 or 2, wherein the blowing agents comprise an alcohol, a ketone, an alkane, an alkene, CO2, N2, water, an ether, an aldehyde, chemical blowing agents or mixtures of two or more thereof.

4. ~~Use of a particle foam~~The process according to at least one of Claims 1 to 3, wherein the particle foam has a tensile strength to ISO1926 of greater than 0.5 MPa, an elongation at break to ISO1926 of between 8% and 12%, a shear modulus to ASTM C273 at room temperature of greater than 8 MPa, a shear resistance to ASTM C273 at room temperature of greater than 0.45 MPa, a compressive modulus to ISO 844 at room temperature of greater than 13 MPa, and a compressive strength to ISO 844 at room temperature of greater than 0.4 MPa.

5. ~~Use of a particle foam~~The process according to at least one of Claims 1 to 4, wherein the particle foam has been installed in the interior of an aircraft.

6. ~~Use of a particle foam~~The process according to at least one of Claims 1 to 5, wherein the mean cell diameter of the particle foam is less than 500 µm.

~~7. Process for producing a PEI particle foam for use according to at least one of Claims 1 to 6, wherein a composition consisting of 80% to 99.5% by weight of PEI, 0.5% to 10% by weight of blowing agent and 0% to 10% by weight of additives is processed by means of~~

~~an extruder with a perforated plate to give foamed pellets, where the temperatures between intake zone and screw tip are within a range between 180 and 380°C, the temperature of the perforated plate is between 250 and 350°C, and the melt temperature on exit through the perforated plate is between 230 and 360°C, and wherein the foamed pellets are subsequently foamed further to give a particle foam.~~

~~8. Process for producing a PEI particle foam for use according to at least one of Claims 1 to 6, wherein a composition consisting of 90% to 100% by weight of PEI and 0% to 10% by weight of additives is processed by means of an extruder with a perforated plate to give pellets, where the temperatures between intake zone and screw tip are within a range between 180 and 380°C, the temperature of the perforated plate is between 300 and 350°C, and the melt temperature on exit through the perforated plate is between 250 and 360°C, wherein the pellets are subsequently laden with a blowing agent in an autoclave in such a way that they contain between 0.5% and 10% by weight of blowing agent, and wherein the blowing agent-laden pellets are then foamed by expansion and/or by heating to a temperature exceeding 200°C to give a particle foam.~~

~~9~~7. Process for producing a composite part, wherein the particle foam produced by means of a process according to Claim ~~7 or 8~~1 is bonded, sewn or welded to cover materials.

~~10~~8. Process for producing a composite part, wherein the particle foam produced by means of a process according to Claim ~~7 or 8~~1 is foamed in the presence of a cover material in such a way that it is bonded thereto by means of adhesive bonding or welding.

~~11~~9. Process according to Claim ~~7~~1, wherein the PEI on exit from the extruder is introduced into an optionally heated mould, optionally containing cover materials, and foamed with shaping to give a particle foam or a composite material.

~~12~~10. Process according to at least one of Claims ~~7~~ 1 to ~~11~~9, wherein inserts and/or channels are incorporated into the particle foam during the foaming.