Claims

1. Process for producing (rigid) particle foams using an underwater pelletization system from a polymer composition comprising at least one polymer having a glass transition temperature according to ISO 11357-2 (published: 2014-07) of at least 180°C, wherein

   the polymer melt of the extruder

   a) is conveyed into a first water circuit that is pressurized, the pressure being within a range from 0.2 to 30 bar and the water temperature in the water circuit being within a range from 105°C to 180°C,

   b) is pelletized.

2. Process for producing (rigid) particle foams using an underwater pelletization system according to Claim 1, wherein the polymer melt of the extruder

   a) is conveyed into a first water circuit that is pressurized, the pressure being within a range from 0.2 to 30 bar and the water temperature in the water circuit being within a range from 105°C to 180°C,

   b) is pelletized, and

   c) is supplied to a second water circuit that has a temperature below 100°C and is operated

      1) unpressurized or

      2) under a pressure within a range from 0.2 to 30 bar.

3. Process for producing (rigid) particle foams according to Claim 1, wherein the polymer having a glass transition temperature according to ISO 11357-2 of at least 180°C is selected from the group of polysulfones or polyimides, in particular polyethersulfone (PESU), polyphenylsulfone (PPSU), polysulfone (PSU), polyetherimide (PEI), thermoplastic polyimides and mixtures thereof.

4. Process for producing (rigid) particle foams according to Claim 1, wherein the polymer composition comprises a blowing agent.

5. Process for producing (rigid) particle foams according to Claim 4, wherein the temperature in step a) is at least 5°C below the Tg of the blowing agent-containing polymer melt.

6. Process for producing (rigid) particle foams according to Claim 4, wherein the blowing agent is selected from the group consisting of volatile organic compounds having a boiling point at standard pressure below the glass transition temperature of the base material, inorganic blowing agents, thermally decomposable blowing agents and mixtures of the above.

7. Process for producing (rigid) particle foams according to Claim 1, wherein the polymer composition comprises a nucleating agent.

8. Process for producing (rigid) particle foams according to Claim 7, wherein the nucleating agent is selected from the group consisting of talc, graphite, carbon black, titanium dioxide and mixtures of the above.

9. Process for producing (rigid) particle foams according to Claim 1, wherein the pelletized material obtained is after step b) discharged and supplied to a drying process.

10. Process for producing (rigid) particle foams according to Claim 1, wherein the pelletized material obtained is after step c) discharged and supplied to a drying process.

11. The use of (rigid) particle foams produced by the process according to Claim 1 in the aerospace industry, for shipbuilding, for vehicle construction, particularly in electromobility.