Claims

1. A binder jetting process for the production of three-dimensional objects from a powder bed, wherein the process comprises multiple repetition of the following steps:

    a) application of a new powder layer on the surface of the powder bed; and

    b) selective application of a binder and subsequent or simultaneous hardening of the binder in the powder bed, wherein the powder bed comprises particles, and wherein:

        i) the particles comprise a PMMA suspension polymer and have an average diameter of from 30 to 110 µm;

        ii) the particles have at least two different phases, wherein the glass transition temperature of the first phase, measured by differential scanning calorimetry (DSC), is below 40°C and the glass transition temperature of the second phase, measured by DSC, is above 70°C.

2. The process of claim 1, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

3. The process of claim 2, wherein the ratio of the first phase to the second phase is from 1:9 to 1:1.5.

4. The process of claim 1, wherein the ratio of the first phase to the second phase is from 1:9 to 1:1.5.

5. The process of claim 1, wherein the glass transition temperature of the first phase, measured by DSC, is below 30°C and the glass transition temperature of the second phase, measured by DSC, is above 80°C.

6. A binder jetting process for the production of three-dimensional objects from a powder bed, wherein the process comprises multiple repetition of the following steps:

   a) application of a new powder layer on the surface of the powder bed; and

   b) selective application of a binder and subsequent or simultaneous hardening of the binder in the powder bed, wherein the powder bed comprises particles that:

      i) have a diameter of from 10 to 500 µm; and

      ii) have at least two different phases, wherein

         - the glass transition temperature of the first phase, measured by DSC, is below 30°C;
         - the glass transition temperature of the second phase, measured by DSC, is above 70°C;
         - at least 60% by weight of the first phase is produced from acrylates.

7. The process of claim 6, wherein the ratio of the first phase to the second phase is from 1:9 to 1:1.5.

8. The process of claim 7, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

9. The process of claim 6, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

10. The process of claim 6, wherein at least 60% by weight of the second phase is produced from MMA and the glass transition temperature of the second phase, measured by DSC, is above 80°C.

11. A binder jetting process for the production of three-dimensional objects from a powder bed, wherein the process comprises multiple repetition of the following steps:

    a) application of a new powder layer on the surface of the powder bed; and

    b) selective application of a binder and subsequent or simultaneous hardening of the binder in the powder bed, wherein the powder bed comprises particles that:

        i) have a diameter of from 10 to 500 µm; and

        ii) have at least two different phases, wherein

            - the glass transition temperature of the first phase, measured by DSC, is below 40°C;
            - the glass transition temperature of the second phase, measured by DSC, is above 80°C; and
            - at least 60% by weight of the second phase is produced from MMA.

12. The process of claim 11, wherein the ratio of the first phase to the second phase is from 1:9 to 1:1.5.

13. The process of claim 12, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

14. The process of claim 11, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

15. A binder jetting process for the production of three-dimensional objects from a powder bed, wherein the process comprises multiple repetition of the following steps:

    a) application of a new powder layer on the surface of the powder bed; and

    b) selective application of a binder and subsequent or simultaneous hardening of the binder in the powder bed, wherein the powder bed comprises particles that:

        i) have a diameter of from 10 to 500 µm;

ii) have at least two different phases, wherein the glass transition temperature of the first phase, measured by DSC, is below 40°C and the glass transition temperature of the second phase, measured by DSC, is above 70°C;

iii) have been produced by suspension polymerization with sequential addition of two monomer mixtures that lead to the respective phases.

16. The process of claim 15, wherein the ratio of the first phase to the second phase is from 1:9 to 1:1.5.

17. The process of claim 16, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

18. The process of claim 15, wherein the particles comprise at least one initiator suitable for hardening of the binder or one catalyst or accelerator that accelerates hardening.

19. The process of claim 15, wherein at least 60% by weight of the first phase is produced from acrylates and the glass transition temperature of the first phase, measured by DSC, is below 30°C.

20. The process of claim 15, wherein at least 60% by weight of the second phase is produced from MMA and the glass transition temperature of the second phase, measured by DSC, is above 80°C.