

Claims

1. Process for preparing a bio-resorbable polyester as a granulate or powder by bulk
5 polymerization of one or more monomer(s), comprising the steps a) to g):
a) filling a monomer granulate, comprising the one or more monomer(s), into a container,
b) adding a polymerization catalyst and a chain length moderator on top of the monomer
granulate,
c) adding further monomer granulate on top of the polymerization catalyst and the chain
10 length moderator,
d) closing the container,
e) carrying out a polymerization reaction in the closed container at a temperature in the range
of 50 °C to 170 °C, preferably in the range of 100 to 150 °C, wherein a solid polymer in the
form of a polymer block is formed,
15 f) removing the polymer block from the container,
g) comminuting the polymer block to a granulate or powder,
wherein the container is an unstirred container, wherein steps b) and c) are carried out once or
are repeated, and wherein the steps a) to e) are carried out under inert atmosphere.
- 20 2. Process according to Claim 1, comprising
a) filling a first amount of the monomer granulate of 10 to 90, preferably 20 to 80 % by weight
of from a total amount of 100 % by weight into a container,
b) adding a polymerization catalyst and a chain length moderator on top of the monomer
25 granulate in the container,
c) adding a second amount of the monomer granulate of the one or more monomer(s) into the
container, so that the first amount and the second amount add up to 100 % by weight,
wherein the second amount of monomer granulate covers the polymerization catalyst and
the chain length moderator on top of the monomer portion from step a),
30 d) closing the container,
e) carrying out a polymerization reaction in the closed container at a temperature in the range
of 50 °C to 170 °C, preferably in the range of 100 to 150 °C, wherein a solid polymer in the
form of a polymer block is formed,
f) removing the polymer block from the container,
35 g) comminuting the polymer block to a granulate or powder,
wherein the container is an unstirred container, wherein steps b) and c) are carried out once,
and wherein the steps a) to e) are carried out under inert atmosphere.

3. Process according to Claim 1 or 2, wherein residual monomer from the resulting polymer granulate or powder from step g) is extracted by means of CO₂ extraction.
4. Process according to one or more of Claims 1 to 3, wherein the bio-resorbable polyester
5 has an inherent viscosity IV in the range of 0.5 to 8, preferably in the range of 0.6 to 5 dl/g.
5. Process according to one or more of Claims 1 to 4, wherein the bio-resorbable polyester is a polylactide or polyglycolide.
- 10 6. Process according to one or more of Claims 1 to 5, wherein the bio-resorbable polyester polyester is selected from the group of a poly(L-lactide), a copolymer of D- and L-lactides, a copolymer of L-lactide and DL-lactide, a poly(DL-lactide), a copolymer of glycolide and trimethylene carbonate, a copolymer of lactide and glycolide, a copolymer of DL-lactide or L-lactide with glycolide, a copolymer of lactide and trimethylene carbonate, is a copolymer
15 of lactide and epsilon-caprolactone.
7. Process according to one or more of Claims 1 to 6, wherein the container comprises plastic or steel.
8. Process according to one or more of Claims 1 to 7, wherein the container comprises a
20 polyolefin.
9. Process according to one or more of Claims 1 to 8, wherein the container comprises polypropylene.
- 25 10. Process according to one or more of Claims 1 to 9, wherein the container comprises a fluorinated or partially fluorinated polymers.
11. Process according to one or more of Claims 1 to 10, wherein the internal volume of the container is from 50 ml and 10 liters, preferably from 250 ml to 2.5 liters.
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12. Process according to one or more of Claims 1 to 11, wherein the internal volume of the container is from 500 ml to 1.2 liters.
13. Process according to one or more of Claims 1 to 12, wherein the chain length moderator is
35 dodecanol.
14. Process according to one or more of Claims 1 to 13, wherein the catalyst is Tin(II) 2-ethylhexanoate.
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15. Process according to one or more of Claims 1 to 14, wherein the polymerization reaction in step e) is carried out in a reaction time and temperature from 5 hours to 15 days at 50 to 170 °C, preferably from 3 to 7 days at 100 to 140 °C, most preferably from 4 to 6 days at 110 to 130 °C.
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