

FORM 2

THE PATENTS ACT, 1970
(39 of 1970)
AND
THE PATENTS RULES, 2003

**COMPLETE
SPECIFICATION**

(See Section 10; rule 13)

TITLE OF THE INVENTION

**“PROCESS FOR PREPARING OLEFIN POLYMER BY SLURRY LOOP
POLYMERIZATION HAVING HIGH POWDER DENSITY”**

APPLICANT

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The following specification particularly describes
the invention and the manner in which
it is to be performed

Claims

1. A process for preparing an ethylene homo- or copolymer in the presence of a supported chromium catalyst by slurry loop polymerization or copolymerization, whereby the resulting polymer powder has an increased powder density, in which the supported chromium catalyst has a chromium content of from 0.01 to 5 wt.%, based on the element in the finished catalyst, and shows a particle size distribution measured according to ISO 13320-2009 comprising two main fractions one of which having a d_{50} of from 15 to 40 μm and the other having a d_{50} of from 45 to 80 μm and a total d_{10} value of lower than 20 μm .
2. A process according to claim 1 in which the total d_{10} value is lower than 15 μm .
3. A process according to claim 1 in which one of the two main fractions has a d_{50} of from 20 to 30 μm and the other having a d_{50} of from 30 to 40 μm .
4. A process according to claim 1 in which the supported catalyst is prepared by the following steps:
 - (a) preparing a homogeneous solution comprising an organic or inorganic chromium compound in a protic or aprotic polar solvent,
 - (b) bringing the solution from a) into contact with spray dried silica material ,
 - (c) removing the solvent from the solid and
 - (d) calcining the solid at temperatures of from 350 to 1050°C, under oxidative conditions, said process being characterized by the fact that in at least one of the step (b)-(d) the solid comprises a combination of two main fractions, one having a d_{50} of from 15 to 40 μm and the other having a d_{50} of from 45 to 80 μm .
5. A process according to claim 2, in which the combination is made prior to step (d) where a combination of two spray dried silica support materials the first having a d_{50} of from 15 to 40 μm and the second having a d_{50} of from 45 to 80 μm is prepared.

6. The process according to claim 1 or claim 2, wherein the polymerization in the presence of the catalyst is run in a loop reactor under a pressure of less than 100 bars.

7. The process according to any of the preceding claims, wherein the polymerization in the presence of the catalyst is run in a loop reactor in which the polymer is continuously discharged.

8. The process according to any of the preceding claims, wherein the polymer has a high bulk density of ≥ 500 g/l with a level of fines (< 125 μm) being below 1.5 wt.%.

9. The process according to any of the preceding claims, wherein chromium compounds used are salts of trivalent chromium with an organic or inorganic acid, in particular acetates, oxalates, sulfates or nitrates.

10. The process according to any of the preceding claims, wherein the further compound used is a compound of Zr.

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Dated this 16 day of June 2014

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