Claims

1- A process for removal of volatile components from an olefin polymer, the process carried out in an extruder comprising at least one vacuum degassing zone, said process comprising the steps of:
(a) introducing a stream of an olefin polymer into the extruder, wherein the olefin polymer is a copolymer of ethylene with one or more comonomers selected from alpha olefins having from 3 to 10 carbon atoms;
(b) extruding the olefin polymer in the extruder at a temperature which is higher than the melting temperature of the olefin polymer but lower than the decomposition temperature of the olefin polymer, thereby producing an olefin polymer melt having reduced amount of volatile components,
wherein the process in the extruder has a residence time distribution broadness (σ^2) in the range of 800 to 4000 as define by equation 1

$\sigma^2 = \int_0^\infty (t-\tau)^2 \, E\,(t)\, dt$ equation (1)

wherein:
σ^2 is the residence time distribution broadness,
τ is the mean residence time,
t is the interval of residence time a fluid element of the olefin polymer spends in the extruder,
E(t) is the residence time distribution function,
and wherein the process optionally comprises a step (c) where the melt of the olefin polymer is passed through a die zone to a pelletizer for pelletizing the obtained olefin polymer.

2- The process according to claim 1 wherein the screw speed of the extruder is in the range of 180 to 450 rpm.

3- The process according to claims 1 or 2 wherein the mean residence time (τ) in the extruder is in the range of 100 to 220 seconds.

4- The process according to any one of claims 1 to 3 wherein the copolymer of ethylene with one or more comonomers selected from alpha olefins having from 3 to 10 carbon atoms is a plastomer or a elastomer or mixtures thereof.

5- The process according to claim 4 wherein the plastomer or elastomer is a copolymer of ethylene and 1-octene or a copolymer of ethylene and hexene.

6- The process according to any one of claims 1 to 5 wherein the extruder further comprises at least one stripping zone.

7- The process according to any one of claims 1 to 6 wherein the extruder is a single-screw extruder or a twin-screw extruder.

8- The process according to any one of claims 1 to 7 wherein the resulting olefin polymer has a volatile organic compound content (VOC), as measured according to VDA277, of less than 65 ppm.

9- The process according to any one of claims 1 to 8 wherein the olefin polymer is extruded at a temperature at least 40 °C higher than the melting temperature of the olefin polymer but lower than the decomposition temperature of the olefin polymer.

10- An olefin polymer produced by the process according to any one of claims 1 to 9 having a volatile organic compound content (VOC), as measured according to VDA277, of less than 65 ppm, wherein the olefin polymer is a copolymer of ethylene with one or more comonomers selected from alpha olefins having from 3 to 10 carbon atoms.

11- An olefin polymer according to claim 10 wherein the copolymer of ethylene with one or more comonomers selected from alpha olefins having from 3 to 10 carbon atoms is a plastomer or a elastomer or mixtures thereof.

12- An olefin polymer according to claim 11 wherein the plastomer or elastomer is a copolymer of ethylene and 1-octene or a copolymer of ethylene and hexene.

13- An article comprising the olefin polymer according to any one of claims 10 to 12.

14- Use of the olefin polymer according to any one of claims 10 to 12 for producing an article.