The particles formed are dried in air and activated in an oxygen-containing atmosphere. The activated catalyst intermediate is reduced with an organic aluminum compound.

[010] Durand et al., in U.S. Pat. No. 5,075,395, teach a process for elimination of the induction period in the polymerization of ethylene. The polymerization is conducted with a charge powder in the presence of a catalyst comprising a chromium oxide compound associated with a granular support and activated by thermal treatment, this catalyst being used in the form of a prepolymer. The Durand process is characterized in that the charge powder employed is previously subjected to a treatment by contacting the charge powder with an organoaluminum compound in such a way that the polymerization starts up immediately after the contacting of the ethylene with the charge powder in the presence of the prepolymer.

[011] The above described chromium-based catalysts may be used to produce select grades of polymers. Very often, polymerization reactors are required to produce a broad range of products, having flow indices that may vary from 0.1 dg/min to about 100 dg/min, for example. The flow index response of a chromium-based catalyst refers to the range of the flow index of the polymer made by the catalyst under a given set of polymerization conditions.

SUMMARY

[012] to The present disclosure provides a method of operating a polyolefin reactor system, the method including: feeding a chromium-based catalyst through an inline reduction system to a polymerization reactor; adding a reducing agent to the chromium-based catalyst in the inline reduction system to reduce an oxidation state of at least a portion of the chromium in the chromium-based catalyst; and polymerizing an olefin into a polyolefin in the polymerization reactor in the presence of the chromium-based catalyst.

[013] The present disclosure provides a method of operating a polyolefin reactor system, including: feeding a chromium-based catalyst through a mixer to a polymerization reactor; adding a reducing agent to contact the chromium-based catalyst through the mixer to the polymerization reactor; and polymerizing an olefin into a polyolefin in the presence of the chromium-based catalyst in the polymerization reactor.

[013a] In one aspect, there is provided a method of operating a polyolefin reactor system, comprising:

feeding a chromium oxide catalyst through an inline mixer to a polymerization reactor, where the chromium oxide catalyst includes an inorganic oxide support having a pore volume of about 2.4 to about 3.7 cm^3/g and a surface area of about 410 to about 620 m^2/g;

adding diethylaluminum ethoxide (DEAlE) to contact the chromium oxide catalyst through the inline mixer to the polymerization reactor; and

polymerizing an olefin into a polyolefin in the polymerization reactor in presence of the chromium oxide catalyst, wherein the chromium oxide catalyst is not contacted with the DEAlE prior to feeding the chromium oxide catalyst through the inline mixer.

[014] Additionally, the present disclosure relates to a polymerization reactor system having: a mixer to contact a substantially continuous feed of chromium-based

CLAIMS

What is claimed is:

1. A method of operating a polyolefin reactor system, comprising:

feeding a chromium oxide catalyst through an inline mixer to a polymerization reactor, where the chromium oxide catalyst includes an inorganic oxide support having a pore volume of about 2.4 to about 3.7 cm^3/g and a surface area of about 410 to about 620 m^2/g;

adding diethylaluminum ethoxide (DEAlE) to contact the chromium oxide catalyst through the inline mixer to the polymerization reactor; and

polymerizing an olefin into a polyolefin in the polymerization reactor in presence of the chromium oxide catalyst, wherein the chromium oxide catalyst is not contacted with the DEAlE prior to feeding the chromium oxide catalyst through the inline mixer.

2. The method of claim 1, wherein feeding the chromium oxide catalyst comprises feeding a slurry of the chromium oxide catalyst through the inline mixer to the polymerization reactor.

3. The method of claim 1, wherein adding the DEAlE comprises adding the DEAlE to the chromium oxide catalyst at the inline mixer.

4. The method of claim 1, comprising modulating an addition rate of the DEAlE to the chromium oxide catalyst.

5. The method of claim 1, comprising adjusting a feed rate of the DEAlE to the chromium oxide catalyst to maintain a specified molar ratio of the DEAlE to the chromium oxide catalyst through the inline mixer to give a desired flow index of the polyolefin.

6. The method of claim 1, wherein adding the DEAlE comprises adjusting an addition rate of the DEAlE to maintain a desired ratio of an addition rate of the DEAlE to a feed rate of the chromium oxide catalyst through the inline mixer.

7. The method of claim 1, comprising adjusting a ratio of a feed rate of the DEAlE to a feed rate of the chromium oxide catalyst through the inline mixer to give a desired flow index of the polyolefin.

8. The method of claim 1, comprising adjusting a molar ratio of the DEAlE to the chromium oxide catalyst in response to operating conditions of the polymerization reactor.

9. The method of claim 1, comprising adding a solvent to the chromium oxide catalyst through the inline mixer to the polymerization reactor to maintain or adjust a contact residence time of the chromium oxide catalyst and the DEAlE.

10. The method of claim 1, wherein a contact residence time of the chromium oxide catalyst and DEAlE in the inline mixer is in a range of 2 minutes to 120 minutes.

11. The method of claim 1, comprising adjusting an agitation speed of an agitator of the inline mixer in response to operating conditions of the polymerization reactor.