Title (en)

A PROCESS FOR PRODUCING FIBER OF ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE

Title (de)

VERFAHREN ZUR HERSTELLUNG VON FASERN AUS POLYETHYLEN MIT ULTRAHOHEM MOLEKULARGEWICHT

Title (fr)

PROCÉDÉ DE PRODUCTION DE FIBRE DE POLYÉTHYLÈNE DE MASSE MOLÉCULAIRE TRÈS ÉLEVÉE

Publication

EP 2080824 B1 20100818 (EN)

Application

EP 07816520 A 20071009

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Abstract (en)

[origin: EP2080824A1] A process for producing fiber of ultra high molecular weight polyethylene, with a flat cross-section and high cohesiveness, is disclosed. The process includes: distributing the powder of UHMWPE into a solvent evenly; preparing an uniform emulsion mixture by properly untangling with high shear; at the same time adding polar polymer comprising polar groups, for example a carboxyl group, a carbonyl group, an ether group, or an ester group and so on; evenly distributing the polar polymer together with the polyethylene powder in the solvent to form an uniform emulsion mixture; forming a gel filament from the emulsion mixture by gel spinning method, then extracting, drying, and stretching so as to obtain the UHMWPE fiber, with a flat cross section, high strength and cohesiveness. By properly untangling, the swelling and dissolving of the ultra high molecular weight polyethylene can be accelerated, while the polar polymer being evenly distributed therein can significantly improve the adhesive property of the fiber. The operations in the production method are easy, and furthermore, time, labor and cost can be saved. The section of the fiber is of a flat rectangle shape and the wall is thin and even, so the path for the solvent in the fiber diffusing out of the gel filament can be significantly shorten, and thus the efficiency of extraction and the uniformity of the fiber can be improved.

IPC 8 full level

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CPC (source: EP US)

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Cited by

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