

Obtaining caprolactam by cleavage of molten polycaprolactam

Abstract

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Caprolactam is obtained from caprolactam-containing polymers in the presence of superheated water by bringing polymers which contain the repeating unit

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or mixtures consisting essentially of

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from 40 to 99.9 % by weight of a polymer containing the repeating unit $-[-N(H)-(CH_2)_5-C(O)-]-$,

from 0.01 to 50 % by weight of additives selected from the group consisting of inorganic fillers, organic and inorganic pigments and dyes,

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from 0 to 10 % by weight of organic and/or inorganic additives,

from 0 to 40 % by weight of non-polyamide-containing polymers and

from 0 to 60 % by weight of polyamides, with the exception of polycaprolactam and copolyamides prepared from caprolactam,

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into contact with superheated water at from 280 to 320°C and from 7.5 to 15 MPa and a weight ratio of water to polymer containing the repeating unit $-[-N(H)-(CH_2)_5-C(O)-]-$ of from 5:1 to 13:1 and
30 in a reaction time of less than 3 hours, with the proviso that the reaction mixture, consisting essentially of water and the polymer used or the mixture used, contains no gaseous phase under the conditions of the hydrolysis.

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