

Abstract

The continuous process for producing polyamides by reacting at least one aminonitrile with water comprises the following steps:

- (10) reacting at least one aminonitrile with water at a temperature of from 200 to 290°C at a pressure of from 40 to 70 bar in a flow tube containing a Brönsted acid catalyst selected from a beta-zeolite, sheet-silicate or metal oxide catalyst in the form of a fixed bed,
- (11) diabatically or adiabatically expanding the reaction mixture from step (1) into a first separation zone to a pressure of from 20 to 40 bar, the pressure being at least 10 bar lower than the pressure in step (1), and to a temperature within the range from 220 to 290°C by flash evaporation and removal of ammonia, water and any aminonitrile monomer and oligomer,
- (12) further reacting the reaction mixture from step (2) in the presence of water at a temperature of from 200 to 290°C and a pressure of from 25 to 55 bar and in the presence or absence of a Brönsted acid catalyst selected from a beta-zeolite, sheet-silicate or metal oxide catalyst in the form of a fixed bed,
- (13) diabatically or adiabatically expanding the reaction mixture from step (3) into a second separation zone to a pressure of from 0.01 to 20 bar, the pressure being at least 20 bar lower than the pressure in step (3), and to a temperature within the range from 220 to 290°C by flash evaporation and removal of ammonia, water and any aminonitrile monomer and oligomer.