

Improved process for preparing hexamethylenediamine

Abstract

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A process for catalytic hydrogenation of adiponitrile to hexamethylenediamine at elevated temperature and elevated pressure in the presence of catalysts based on elemental iron as catalytically active component and ammonia as solvent comprises

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a) hydrogenating adiponitrile at from 70 to 220°C and from 100 to 400 bar in the presence of catalysts based on elemental iron as catalytically active component and ammonia as solvent to obtain a mixture comprising adiponitrile, 6-aminocapronitrile, hexamethylenediamine and high boilers until the sum total of the 6-aminocapronitrile concentration and the adiponitrile concentration is within the range from 1 to 50% by weight, based on the ammonia-free hydrogenation mixture,

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b) removing ammonia from the hydrogenation effluent,

c) removing hexamethylenediamine from the remaining mixture,

25 d) separating 6-aminocapronitrile and adiponitrile from high boilers individually or together, and

e) returning 6-aminocapronitrile, adiponitrile or mixtures thereof into step a).

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