Reducing the level of an unsaturated amine in a mixture containing an aminonitrile, a diamine, a dinitrile or mixtures thereof

Abstract

A process for reducing the level of an aliphatic monounsaturated amine (IV) in a mixture (V) containing an aminonitrile (I) or a diamine (II) or a dinitrile (III) or mixtures thereof as well as said amine (IV) by steps including

a) reacting said mixture (V) with an anionic nucleophile (VI)

which contains a nucleophilic atom selected from the group consisting of oxygen, nitrogen and sulfur,

which is capable of taking up an H^+ ion to form an acid having a pK_a value in the range from 7 to 11, as measured in water at 25°C, and

which has a relative nucleophilicity, as measured in methyl perchlorate/methanol at 25°C,

in the range from 3.4 to 4.7 when said nucleophilic atom is oxygen,

in the range from 4.5 to 5.8 when said nucleophilic atom is nitrogen, and

in the range from 5.5 to 6.8 when said nucleophilic atom is sulfur,

in an amount in the range from 0.01 to 10 mol per mole of said amine (IV) in said mixture (V) at a temperature in the range from 50 to 200°C to obtain a mixture (VII),

b) distilling said aminonitrile (I) or said diamine (II) or said dinitrile (III) or mixtures thereof from said mixture (VII) at a temperature in the range from 50 to 200°C and at a pressure in the range from 0.1 to 100 kPa to obtain a bottom product (VIII),

comprises

c) distilling an aminonitrile (I) or diamine (II) or dinitrile (III) or

mixtures thereof from said bottom product (VIII) at a temperature which is lower than that chosen in step b).