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(54) Title: IMPROVED METHOD FOR MAKING CAPROLACTAM FROM IMPURE 6-AMINOCAPRONITRILE

(57) Abstract: The invention relates to the field of production of lactams from aminonitriles, and in particular to the production of ϵ -caprolactam by the vapor phase hydrolytic cyclization of 6-aminocapronitrile. A crude liquid caprolactam comprising ϵ -caprolactam (CL), 6-aminocapronitrile (ACN) and water obtained from a vapor phase cyclization reaction of ACN is contacted with hydrogen in the presence of a hydrogenation catalyst to convert the ACN in the crude liquid caprolactam to a product comprising hexamethylenediamine (HMD) and hexamethyleneimine (HMI). Tetrahydroazepine (THA) in the crude liquid caprolactam is converted to HMI during this hydrogenation. The HMD and HMI have lower boiling points compared to ACN and thus they are more easily separated from CL in the subsequent distillation operations. Thus a process to make CL from ACN with fewer distillation stages, and with lower pressure drop and lower base temperature, is accomplished.



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