

ALIEN PROPERTY CUSTODIAN

SUPERPOLYAMIDES AND PROCESS OF PRODUCING SAME

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The present invention relates to superpolyamides and a process of producing same.

Superpolyamides, as is known for example from British Patent Specification No. 461,237, can be prepared by condensing certain diamines and dicarboxylic acids or derivatives or salts thereof or mixtures of these materials. The properties of the superpolyamides are dependant, in particular, on the degree of condensation and on the chemical nature of the diamines and dicarboxylic acids employed. The desired degree of condensation can be secured by employing definite temperatures and pressures during the condensation or by adding slight proportions of compounds capable of checking the growth of the chain of molecules in the condensation products, as for example primary amines, ammonia or organic monocarboxylic acids. Superpolyamides prepared in the presence of such additions do not undergo a further condensation upon heating as would be the case with superpolyamides prepared in the absence of such additions, which superpolyamides get tougher and tougher and contain an increasing amount of vapor bubbles when melted for a prolonged time and can therefore in certain cases be worked, for example spun, only with difficulty.

We have now found that superpolyamides which are heat-resistant, i. e. are no longer subject to further condensation and can therefore be well worked, in particular well spun in the molten state, are obtained by condensing about molecular proportions of superpolyamide-forming dicarboxylic acids and diamines in the presence of up to 20 per cent by weight (calculated with regard to the final superpolyamide) of a glutaric acid diamine salt. The superpolyamides thus obtained also possess a high gloss which is often desirable for films and threads. An addition of 10 per cent. of glutaric hexamethylenediamine

salt to adipic acid hexamethylenediamine salt, for example yields a superpolyamide which melts only about 30° C below the superpolyamide from adipic acid hexamethylenediamine salt alone, and can be kept in the molten state for a long time without its viscosity becoming higher and bubbles being developed, i. e. without undergoing further condensation. Though glutaric acid diamine salts, when condensed alone, only yield brittle products giving but fragile threads when spun, the loss of mechanical strength is surprisingly small with additions up to 20 per cent according to our invention and especially at 10 per cent and below (calculated with reference to the final superpolyamide) and the practical use of the superpolyamides is not interfered with thereby.

The following Example serves to illustrate how the present invention may be carried out in practice, but the invention is not restricted to the said Example. The parts are by weight.

Example

100 parts of glutaric acid hexamethylenediamine salt and 900 parts of adipic acid hexamethylenediamine salt are heated to 280° C in a pressure-tight vessel of chromium-nickel steel, after the air having been eliminated by means of free nitrogen. The pressure produced by the water formed in the condensation is released after at least one hour's heating, whereupon heating is continued at from 280° to 285° C for 4 hours. The melt of superpolyamide formed is then forced through a nozzle into water. The superpolyamide obtained is well fusible and can be easily spun from the melt without leaving any residue.

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