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[54] **COPOLYAMIDE FIBERS OF REDUCED STICKINESS CONTAINING A NORMAL PARAFFIN**

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[30] **Foreign Application Priority Data**

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[58] **Field of Search**260/78 R, 78 A, 78 L, 78 S, 260/33.6 R

[56]

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[57]

ABSTRACT

A copolyamide fiber of reduced stickiness which consists essentially of a fibers forming copolyamide consisting of 70 - 95 percent by weight of polycapraamide polyhexamethylene adipamide and 30 - 5 percent by weight of at least one of comonomers copolymerizable therewith and from 0.01 to 5 percent by weight, based on the copolyamide, of at least one normal paraffin selected from the group consisting of methane series hydrocarbons represented by the formula C_nH_{2n+2} , wherein n is an integer of from 14 to 70, dispersed homogeneously throughout said copolyamide.

4 Claims, 2 Drawing Figures

FIG. 1

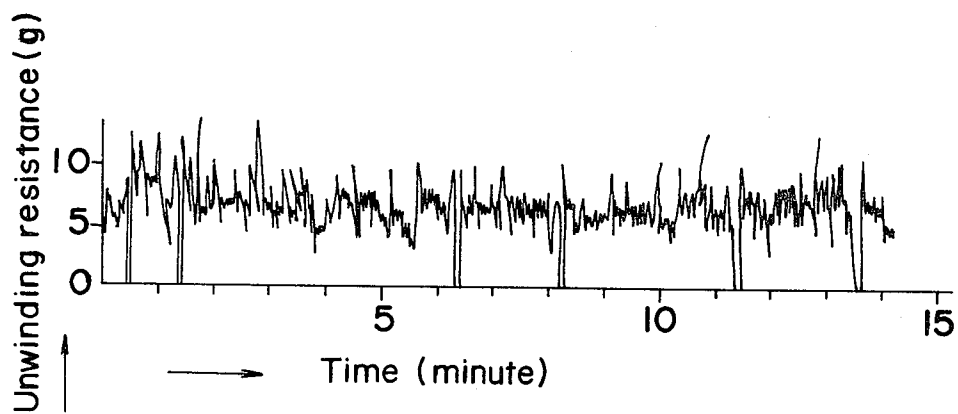
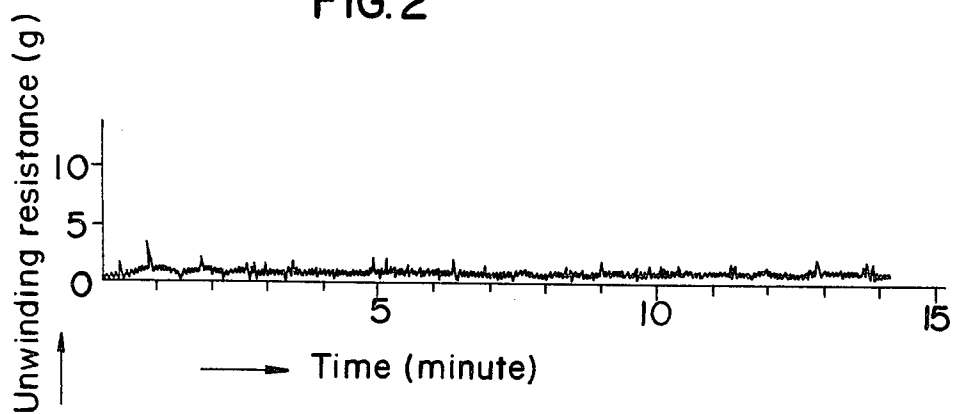


FIG. 2



COPOLYAMIDE FIBERS OF REDUCED STICKINESS CONTAINING A NORMAL PARAFFIN

This application is a continuation-in-part of the co-pending application serial No. 601,756 filed Dec. 14, 1966 and now abandoned.

The present invention relates to copolyamide fibers of reduced stickiness.

The polyamide fibers have been heretofore used in a wide field owing to its excellent properties, but most of these fibers have been formed from homopolyamides.

On the other hand, however, the homopolyamides have a number of disadvantages in dyeability, hygroscopicity, elastic recovering property etc., so that a large number of copolyamides copolymerized with at least two polyamide forming materials have been proposed in order to improve these disadvantages. It is considered that, in general, the fibers consisting of these copolyamides have excellent properties in dyeability, hygroscopicity, elastic recovering property, etc. as compared with homopolyamide fibers and also the shrinking property in hot water is increased, so that they suit for particular uses. A serious disadvantage to retard practice of the copolyamide fibers consists in an inherent stickiness of the copolyamides, so that in spite of that said fibers have a large number of advantages, these fibers have heretofore not been produced commercially.

Namely, when the copolyamides are melt spun and then treated with an oil composition, such as, in aqueous emulsion and thereafter taken up on a bobbin, the fibers stick with each other, so that when said fibers are subjected to next processes, such as, drawing and the other processes, an unevenness occurs in yarn tension when unwinding yarn from a bobbin and a uniform treatment can not be effected and moreover in the worst case, the yarn is broken and the operability is highly damaged.

Moreover, when a side-by-side type of composite filament having a latent crimpability, in which two or more polymers have been arranged highly eccentrically in the cross-section of a unitary filament, has been heretofore produced, it has been necessary to use polymers having similar chemical configuration and property in order to prevent separation of each component of the polymers after spinning, so that in general, a copolyamide has been used in combination with a homopolyamide. In order to make the crystal structures of the both polymers in these fibers different as far as possible and to increase the difference of shrinking property, that is, to increase the latent crimpability, although it is preferable to increase a copolymerization ratio of the copolyamide, the stickiness phenomena are remarkably increased as the copolymerization ratio increases, so that the copolymerization ratio must be limited fairly, and therefore, it has been difficult to prepare a side-by-side type of polyamide composite fibers having a satisfactory crimp developability.

The inventors have made various investigations in order to solve the above described problems resulting in accomplishment of the present invention.

The object of the present invention is to provide fiber consisting of copolyamide, which has no stickiness without deteriorating the other excellent properties.

A further object is to provide a method of producing a practical fiber from polyamide having such a high copolymerization ratio that a practical fiber can not be obtained as such due to a high stickiness.

The other object is to provide polyamide composite filaments having no stickiness but an excellent latent crimpability, which consist of a copolyamide and a homopolyamide.

The above mentioned objects can be attained in such a manner that in melt-spinning a copolyamide, the copolyamide is previously mixed and contained homogeneously with a small amount of at least one normal paraffin selected from the group consisting of methane series hydrocarbons represented by the formula C_nH_{2n+2} wherein n is an integer equal to or greater than 14.

The copolyamides to be applied to the method of the present invention include polyamides obtained by copolycon-

densing ϵ -caprolactam and/or 6-aminocaproic acid or a salt of hexamethylenediamine and adipic acid as a major component with one or more of the other polyamide forming compounds (comonomer) selected from the group consisting of lactams, ω -aminocarboxylic acid and salts of diamines and dicarboxylic acids, for example γ -butyrolactam, δ -valerolactam, heptolactam, 7-aminoheptanoic acid, 9-aminononanoic acid, 11-aminoundecanoic acid or salts of diamines, such as, tetramethylenediamine, pentamethylenediamine, hexamethylenediamine, heptamethylene diamine, octamethylenediamine, nonamethylenediamine, decamethylenediamine, undecamethylenediamine, dodecamethylenediamine, metaxylylenediamine, paraxylylenediamine, bis(γ -aminopropyl)ether, N,N'-bis(ω -aminopropyl)piperazine, 1,11-diaminoundecanone-6 and dicarboxylic acids, such as, terephthalic acid, isophthalic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid, sebacic acid, dodecandicarboxylic acid, hexahydroterephthalic acid, diphenylene-4,4'-dicarboxylic acid, diphenylmethane-4,4'-dicarboxylic acid, diphenylether-4,4'-dicarboxylic acid, diphenylpropane-4,4'-dicarboxylic acid, or salts of diamines and dicarboxylic acid derivatives or salts of diamine derivatives and dicarboxylic acids as a minor component.

When a salt of hexamethylenediamine and adipic acid is used as the major component, as the comonomers use may be made of ϵ -caprolactam and/or 6-aminocaproic acid and further in this case, if nylon salts are used as the comonomers, salts of the above described diamines other than hexamethylenediamine and the above described dicarboxylic acids or salts of the above described dicarboxylic acids other than adipic acid and the above described diamines can be used.

The copolyamide according to the present invention consists of 70 to 95 percent by weight of polycapraamide or polyhexamethylene adipamide (major component) and 30 to 5 percent, preferably 25 to 8 percent, more preferably 20 to 10 percent by weight of at least one of comonomers copolymerizable therewith (minor component). These copolymerizable comonomers are, for example hexamethylene isophthalamide, hexamethylene terephthalamide, hexamethylene sebacamide and the like.

Furthermore, when the above major component is polycapraamide, the above minor component may be polyhexamethylene adipamide and reversely when the above major component is polyhexamethylene adipamide, the above minor component may be polycapraamide.

When the above minor component is less than 5 percent by weight, it is impossible to obtain the copolyamide fibers having excellent dyeability, moisture absorbing property, elastic recovering property and the like. On the other hand, when the above minor component is more than 30 percent by weight, the crystallinity significantly lowers and the copolyamide fibers having an excellent yarn properties can not be obtained.

In addition, the copolyamides include terpolymers consisting of at least 70 percent by weight of polycapraamide 5 to 15 percent by weight of polyhexamethylene isophthalamide and 3 to 15 percent by weight of the other polyamide forming component. Such a combination is, for example, polycapraamide/polyhexamethylene isophthalamide/polyhexamethylene adipamide and polycapraamide/polyhexamethylene isophthalamide/polyhexamethylene sebacamide.

Furthermore, these copolyamides involve copolyamides added with inorganic or organic substances of delustrants, pigments, dyestuffs, light stabilizers, heat resistants, antistatic agents and plasticizers.

The normal paraffines which may be used in the invention are alkanes represented by the general formula C_nH_{2n+2} having a straight chain structure with $n \geq 14$. For example, mention may be made of tetradecane, pentadecane, hexadecane, heptadecane, octadecane, nonadecane, eicosane, heneicosane, docosane, tricosane, tetracosane, pentacosane, hexacosane, heptacosane, octacosane, nonacosane, triacontane,

dotriacontane, pentatriacontane, tetracontane, pentacontane, hexacontane, dohexacontane, tetrahexacontane, heptacontane etc.

Those which, contain a small amount of isoparaffin and cycloparaffin in addition to said normal paraffins such as found in some of the articles on the market, may also be used. These can be used singly or in combination of two or more of them.

All of normal paraffins having less than 14 carbon atoms are not suitable to use in the present invention, since they have relatively low melting points and tend to volatilize during heat treatments such as polymerizing process and melt-spinning process, thus failing to attain the intended merits of the invention. Among the normal paraffins, there are natural ones contained in petroleum and synthetic ones, but it is advantageous in cost to use natural paraffins or those which are obtained by refining the same. As to natural paraffins, those which have carbon atoms up to 70, i.e. up to heptacontane, are well-known, and these paraffins having molecular weight up to such extent can satisfactorily be employed in the invention. The extent of molecular weight has no appreciable effect on the merits of the invention.

The above mentioned normal paraffins having carbon atoms equal to or greater than 14 are applied in such a manner either that they are added to copolyamide materials, followed by polycondensation reaction or that they are added thereto during the polycondensation reaction or after the completion of polycondensation reaction and then the resulting mixture are subjected to mixing and agitation so as to be homogeneously dispersed. The copolyamide containing normal paraffin in a homogeneously dispersed state will be melt-spun by usual practice either intact or after being formed into fine particles or fine chips. The good results can also be obtained by applying paraffin to or mixing it with the fine particles or fine chips of paraffin-free copolyamide and then subjecting the particles or chips to melt-spinning, whereby the paraffin is homogeneously contained in the spun yarn during the spinning. In either case, it is important that paraffins to be contained in copolyamide in a molten state must be exist in a homogeneously dispersed state. From this point of view, the method in which paraffin is added to raw copolyamide materials and polymerization is then effected, has such an advantage that a homogeneously dispersed state can be attained without mechanical means. In such a case that the addition of paraffin is effected during or after polymerization, a mechanical or physical mixing and dispersing operation such as agitation or shaking may be effected, when required. Such operation may also be effected by a screw, pump or the like in a melt extruder.

The content of the normal paraffin for attaining the objects of the invention is suitably within a range of 0.01 - 5 percent by weight based on the copolyamide. In case of less than 0.01 percent by weight, the effect for preventing stickiness is insufficient, while in case of more than 5 percent by weight, yarn breakage is developed during the manufacture of fiber and the drawing step, and further the quality of the fiber is deteriorated, so that it is not preferable.

The paraffin added and dispersed according to the method mentioned above satisfactorily maintains the dispersed state for a long time in the molten copolyamide, so that under the usual melt-spinning conditions both of the two components do not separate each other to separate out the paraffin.

The mechanism of the sticking phenomena between the fibers of copolyamide have been hardly made clear, notwithstanding it may be presumed that the moisture contained in the oil composition contributes to the stickiness since a remarkable sticking phenomena are appeared when an aqueous emulsion is imparted to the spun filament.

It is therefore assumed that the *n*-paraffins contained in the copolyamide according to the method of the invention disturb the mutual action between the fiber and water resulting in having an ability to prevent the stickiness, although the detailed mechanism and function thereof are not yet clear.

According to the addition of *n*-paraffins, the stickiness of the copolyamide may be never developed and moreover the copolymerization ratio which has heretofore been considerably restricted owing to the increase of the stickiness is relatively increased, whereby the polyamide fiber free from stickiness while having an extremely high heat shrinking property can be obtained. Furthermore, within the above range of the content amount of *n*-paraffin, the strength, elongation, dyeability, hygroscopicity, elastic recovering property and the other desired properties are not substantially decreased.

Moreover, although composite filaments obtained by melting the copolyamide containing the *n*-paraffins according to the invention and well known homopolyamide separately and by spinning them from the common orifice simultaneously have a good mutually bonding property of the both polymers and also the copolymer does not show any stickiness, the latent crimpability is increased due to the high heat shrinking property and the fiber having extremely excellent crimpability and bulkiness can be obtained by heat treatment.

The fiber consisting of or comprising the copolyamide melt spun according to the method of the invention can be treated uniformly and easily in a treatment with an oil composition, taking up, drawing after spinning and the succeeding knitting and weaving processes without accompanying any disadvantages, such as, bad unwinding from a bobbin or stickiness between fibers, as in a conventional homopolyamide fiber and furthermore the treatment velocity can be further increased.

Furthermore, the fibers obtained by the method of the invention are provided with excellent properties as described above which have never been seen in conventional homopolyamide fibers, so that they are preferable as raw material for producing various clothings, interior decorations, commercial articles, etc. by using solely or in combination with the other fibers. Particularly, if said fibers are mix-spun or mix-woven with the fibers and then subjected to heat treatment by utilizing the high shrinking property interesting fancy yarns or fancy fabrics can be manufactured.

For a better understanding of the invention reference is made to the accompanying drawings:

FIG. 1 is a graph showing a resistance of a well known and undrawn copolyamide yarn in unwinding it from a bobbin; and

FIG. 2 is a graph showing a resistance of the undrawn copolyamide yarn improved by the method according to the invention in unwinding it from a bobbin.

The invention will be explained further in detail by the following examples, in which "parts" and "%" means "parts by weight" and "% by weight" unless any special reference provided.

EXAMPLE 1

To 85 parts of ϵ -caprolactam and 15 parts of hexamethylenediammonium isophthalate was added 1/300 mol of acetic acid as a viscosity regulator and further 0.5 percent of paraffin (produced by Wako Junyaku K.K.) having a melting point of 64° C. and consisting mainly of triacontane and the resulting mixture was heated in the nitrogen gas atmosphere at 250° C. for 7 hours under a normal pressure to conduct copolymerization, whereafter the reacted product was extruded from bottom of a reactor in the form of strip to permit passing through water bath so as to be cooled and solidified, which was then cut into copolyamide fine granules of 3 mm ϕ \times 3 mm. The thusly obtained fine granules were washed with hot water of approximately 80° C. to remove monomer therefrom and dried by a vacuum drier at 80° C. under 0.1 mmHg to reduce the water content to 0.07 percent and whereafter supplied to a heat grid type of melt-spinning device. After residence for 40 minutes, the copolymer melted at 270° C. was extruded from nozzles and applied with the spinning oil composition consisting of an aqueous emulsion by means of the rotary roller and then taken up on a bobbin as an undrawn yarn having 287 d/34 filaments.

Moreover, the polymerization and the spinning were carried out under the same condition as the above, except that paraffin was not added, to produce an undrawn yarn consisting of copolyamide of the same denier filaments which was adapted as a control yarn. In any case, there perceived no yarn breakage and the other barriers on spinning.

The resulting two yarns were tested with respect to degree of stickiness by the following method. A bobbin was arranged at right angle to the bottom thereof. A tension meter (TI-80 type made by Toyo Sokki Co.) was located at a position right above the bobbin and spaced 90 cm from it along the line of the bobbin axis.

A guide was secured to a point spaced 12 cm from the tension meter along a line inclined at 20° to the bobbin axis. A winding machine was arranged in a position located horizontally with respect to the guide.

In the thus arranged apparatus, the yarn unwound from the bobbin was passed through the tension meter and taken up by the winder through the guide. The unwinding resistance of the yarn measured on the tension meter was recorded on a chart by means of a pen writing recorder (WTR-211 type made by Watanabe Sokki Co.). In the testing conditions, the take-up velocity was 100 m/min and a graduation of 1 cm on the chart used to record the unwinding resistance of yarn was adjusted to correspond to a resistance of 5 g load.

The results obtained by determining the resistances of the above described two filaments from bobbin are shown in FIGS. 1 and 2, respectively.

FIG. 1 is a diagrammatic view of a control yarn containing no paraffin, which shows a stickiness corresponding to 8 to 11 g.

On the other hand, FIG. 2 illustrates the resistance of the sample used in the method according to the invention which exhibits a resistance of only 1 to 2 g.

Moreover, these two yarns taken up on the bobbins were drawn to 4.1 times their original length and as a result the control yarn was found to break simultaneously with starting the drawing machine, so that drawing was not performed. On the contrary, the yarn containing paraffin was normally drawn without breaking.

EXAMPLE 2

To 10 kg of 3 mmφ × 3 mm fine particles of copolyamide such as produced in Example 1 and containing no paraffin was added 0.1% of paraffin (manufactured by Wako Junyaku K.K.) having a melting point of 38°–40° C. and consisting mainly of heneicosane in powder form. The resulting mixture was filled into a regular hexahedron type rotary mixer which, in turn, was then sealed and rotated at 4 revolutions per minute for 3 hours, in order to adhere the paraffin uniformly to the fine particles. The resulting fine particles were then supplied to a screw type melt extruder (Model YE4NT, manufactured by Yamakawa Tekko Seisakusho K.K.) in order to work again and form 2 mmφ × 2 mm fine particles, which were then dried under a reduced pressure to reduce a water content to 0.065 percent, and whereafter they were melt-spun by usual practice by means of a heat grid type melt-spinning device. Then the extruded copolymer was applied with an aqueous emulsion oil composition and then taken up on a bobbin as an undrawn yarn having 400 d/34 filaments. The yarn taken up on a bobbin was measured as to the unwinding resistance in accordance with the method described in Example 1, and a resistance value of only 2 to 3 g was recorded. Further, the yarn could be subjected to drawing process to obtain a uniform drawn yarn with no trouble.

EXAMPLE 3

To 20 parts of salt of metaxylylene diamine and adipic acid and 80 parts of ε-caprolactam was added, as viscosity stabilizer, acetic acid in an amount of 1/300 mol based on said raw material for polycondensation and was further added 0.05 percent of liquid paraffin (manufactured by Wako Junyaku

K.K.) consisting of tetradecane, pentadecane, hexadecane and heptadecane. The resulting mixture was then heated at 250° C. for 7 hours in the nitrogen gas atmosphere to copolymerize. The molten copolymer was extruded through a nozzle at the bottom of the reaction vessel, and after being cooled with water, the extruded copolymer was cut into 2 mmφ × 2 mm fine particles, which were then washed with water to remove the monomer and dried in a vacuum dried to reduce a water content to 0.068 percent.

On the other hand, 2 mmφ × 2 mm fine particle copolyamides were produced under the same condition as described above except without the addition of paraffin.

Further, a preparation obtained by adding 0.5 percent of aminocaproic acid to ε-caprolactam and further adding acetic acid in an amount of 0.3 mol percent based on said raw material for polymerization, was subjected to the processes ranging from polymerization to chip drying under the same conditions as mentioned above, to obtain 2 mmφ × 2 mm Nylon-6 fine particles which had water content of 0.068%.

These Nylon-6 fine particles and the above mentioned paraffin-containing copolyamide fine particles were supplied to a heat grid type melt spinning apparatus for producing composite filament, separately melted therein and simultaneously spun through a common orifice to form a 280 d/18 filaments side-by-side type undrawn filament (conjugating ratio 1:1), which was applied with a spinning oil composition consisting of aqueous emulsion and then taken up on a bobbin. Let us designate it as "filament (A)." On the other hand, the above mentioned Nylon-6 fine particles and paraffin-free polyamide fine particles were subjected to conjugate spinning, oil composition treatment and taking up in the same manner, to produce a composite undrawn filament, which is designated as "filament (B)."

The degree of stickiness of the filaments (A) and (B) were measured by the method described in Example 1, and it was found that the filament (A) showed an unwinding resistance of only 0.2 to 0.3 g whereas the filament (B) showed a resistance of 3 to 5 g. Further, the drawing operation of the filament (B) was found difficult as in the filament (B) frequent yarn breakages were occurred. The two drawn samples were measured with respect to the strength, elongation, crimpability, dyeability, hygroscopicity and etc., but there was no significant difference therebetween in these properties, so that the effect caused by the addition of paraffin was not recognized.

EXAMPLE 4

To 83 parts of ε-caprolactam and 12 parts of hexamethylenediammonium isophthalate was added 1/300 mol of acetic acid as a viscosity regulator and further added with 2.0 percent of paraffin (produced by Wako Junyaku K.K.) having a melting point of 64° C. and consisting mainly of triacontane. According to the method described in Example 1, the resulting mixture was polycondensed, and the polycondensation product was cut into fine granules, washed with water and dried to obtain fine granules having a water content of 0.068 percent.

As a control, the polycondensation reaction was effected under the exactly same condition as described above, except that paraffin was not added, to obtain fine granules having a water content of 0.065 percent.

The above described two kinds of fine granules were spun to obtain two kinds of undrawn yarns of 287 d/34 filaments respectively, and the unwinding resistances of the yarns were determined according to the method described in Example 1. The unwinding resistance of the yarn containing no paraffin was 10–13 g, while that of the yarn containing paraffin was only 1–2 g.

Moreover, the undrawn yarn containing paraffin to be drawn smoothly and uniformly without breaking, while the undrawn yarn containing no paraffin broke simultaneously with starting the drawing machine, and drawing was impossible.

EXAMPLE 5

90 parts of hexamethylenediammonium diadipate, 10 parts of ϵ -caprolactam and 40 parts of water were introduced into a reaction vessel together with 1/400 mol of sebacic acid as a viscosity regulator and 1.0 percent of paraffin (made by Wako Junyaku K.K.) having a melting point of 70°–73° C. and consisting mainly of pentatriacontane. After air in the reaction vessel was purged with nitrogen, an initial polycondensation was effected for 2 hours at a temperature of 200°–210° C. under a pressure of 20 Kg/cm² (gauge pressure), and then the pressure was released in 1 hour, and further a polycondensation was effected at 270° C. for 2 hours under atmospheric

mmHg to reduce the water content to 0.063 percent by weight.

The dried fine granules containing pentacosane in the amount shown in the following Table were supplied to a melt-extrusion spinning apparatus and melt spun to form filaments, on which an aqueous emulsion of a spinning oil composition was applied by means of a rotary roller, and then thus treated filaments were taken up on a bobbin as an undrawn yarn having 260 d/18 filaments. Then the undrawn yarn was cold drawn 3.7 times its original length to obtain a drawn yarn having 70 d/18 filaments.

The spinning property, drawing property, tenacity and elongation are shown in the following Table.

Amount of pentacosane added per copolyamide (wt. percent)	Spinning property	Drawing property	Tenacity (g./d.)	Elongation (percent)
0	Good	Yarn breakage occurs very often due to stickiness and the drawing is difficult.	4.8	31
0.5	do.	Good	4.9	30
1	do.	do.	4.8	32
3	do.	do.	4.8	32
5	do.	do.	4.2	31
7.5	do.	Yarn breakage occurs very often and the drawing is difficult.	3.4	30
10	Yarn breakage occurs very often and the taking up of yarn is not feasible.			
15	do.			
20	do.			

pressure in nitrogen atmosphere. The reaction product was extruded from the bottom of the reaction vessel in the form of string, cooled, and cut into fine granules, which were dried at 80° C. under a reduced pressure of 0.1 mmHg in a vacuum drier to obtain fine granules having a water content of 0.063 percent.

As a control, the polycondensation was effected under the exactly same condition as described above, except that paraffin was not added, to obtain fine granules having a water content of 0.061 percent.

The resulting two kinds of fine granules were spun by means of a screw-type extruder, and the resulting yarns were applied with a spinning oil composition comprised of an aqueous emulsion with a rotating roller to obtain undrawn yarns of 268 d/18 filaments, respectively.

The unwinding resistances of the resulting two undrawn yarns were determined according to the method described in Example 1, and as a result, the unwinding resistance of the yarn containing no paraffin was 7–9 g, while that of the yarn containing paraffin was only 1–2 g.

Moreover, the undrawn yarn containing paraffin was able to be drawn without breaking, while the undrawn yarn containing no paraffin broke very often, and uniform drawn yarn was not obtained due to uneven tension.

EXAMPLE 6

The following example indicates that copolyamide containing more than 5 percent paraffin would not be operative and deteriorate the yarn properties.

To 10 parts of hexamethylenediammonium isophthalate and 90 parts of ϵ -caprolactam were added 1/320 mol of acetic acid as a viscosity regulator and further a given amount of paraffin consisting mainly of pentacosane and having a melting point of 54° C. and the resulting mixture was heated in the nitrogen gas atmosphere at 260° C. for 7 hours under atmospheric pressure to conduct copolymerization, whereafter the reacted product was extruded from bottom of a reactor in the form of strip and passed through water bath to cool and solidify and then cut into fine granules of 3 mm ϕ \times 3 mm.

The thus obtained fine granules were washed with hot water at about 80° C. to remove water soluble components therefrom and dried by a vacuum drier at 80° C. under 0.1

As seen from the above Table, in case of the fine granule containing no pentacosane, the stickiness between mutual filaments is significant and the unwinding resistance from the bobbin is high, and therefore the yarn breakage occurs very often and the drawing is effected with difficulty. In case of the fine granule containing more than 10 percent by weight of pentacosane, the yarn breakage occurs very often during the spinning operation and the spinning can not be effected. In case of the fine granule containing 7.5 percent by weight of pentacosane, the spinning and taking up can be effected, but the tenacity of the yarn lowers and the yarn breakage occurs frequently during the drawing operation, so that it is difficult to effect the drawing.

On the contrary, when the amount of pentacosane added is within the range of the present invention, the spinning, drawing and taking up can be smoothly effected and yarn properties are not deteriorated.

What is claimed is:

1. A copolyamide fiber of reduced stickiness which consists essentially of a fiber forming copolyamide consisting of 70–95 percent by weight of polycapraamide or polyhexamethylene adipamide and 30–5 percent by weight of at least one polyamide forming comonomer copolymerizable therewith and from 0.01 to 5 percent by weight, based on the copolyamide, of at least one normal paraffin selected from the group consisting of methane series hydrocarbons represented by the formula C_nH_{2n+2} , wherein n is an integer of from 14 to 70, dispersed homogeneously throughout said copolyamide.

2. The copolyamide fiber as claimed in claim 1, wherein said copolymerizable comonomer is hexamethylene isophthalamide, hexamethylene terephthalamide or hexamethylene sebacamide.

3. The copolyamide fiber as claimed in claim 1, wherein said fiber forming copolyamide is a terpolymer consisting of at least 70 percent by weight of polycapraamide, 5 to 15 percent by weight of polyhexamethylene isophthalamide and 3 to 15 percent by weight of the other polyamide forming component.

4. The copolyamide fiber as claimed in claim 3, wherein said terpolymer is polycapraamide/polyhexamethylene isophthalamide/polyhexamethylene adipamide or polycapraamide/polyhexamethylene isophthalamide/polyhexamethylene sebacamide.

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