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Datasheet for the decision of 19 June 2015

Case Number: T 1899/12 - 3.3.06

Application Number: 05257033.0

Publication Number: 1659199

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Language of the proceedings: EN

Title of invention:
Polyamide filament and industrial fabric using the polyamide filament

Applicant:
NIPPON FILCON CO., LTD.

Headword:
Polyamide filaments without reduction of thermal contraction stress/NIPPON FILCON

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure - (no) (Main Request and Auxiliary Request) - enabling disclosure (no) - undue burden (yes)

Decisions cited:
G 0001/03, T 0326/04, T 0895/04

Catchword:

Beschwerdekammern
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Case Number: T 1899/12 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 19 June 2015

Appellant: (Applicant)	NIPPON FILCON CO., LTD. 2220 Ohmaru Inagi-shi, Tokyo (JP)
Representative:	Duncan, Garreth Andrew D Young & Co LLP 120 Holborn London EC1N 2DY (GB)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 17 April 2012 refusing European patent application No. 05257033.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	G. Santavicca
Members:	E. Bendl
	C. Heath

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division to refuse the European patent application No. 05 257 033.0 (published as EP 1 659 199 A2).

II. In the decision under appeal, the Examining Division concluded that at least one of the requirements of Articles 83 and 123(2) EPC was not met by each of the then pending Main and 1st to 3rd Auxiliary Requests.

III. With its statement setting out the grounds of appeal, the Applicant (hereafter, the Appellant) withdrew all the sets of claims dealt with in the decision under appeal and submitted two sets of amended claims as Main Request and Auxiliary Request, respectively.

IV. Claim 1 of the Main Request reads as follows:

"*1. A polyamide filament for an industrial fabric, comprising:*
a polyamide resin composition obtained by mixing
(a) a crystalline polyamide (A), obtained by a polycondensation reaction of metaxylylenediamine and adipic acid, in an amount comprising from 5 to 50 wt. % of the resin, with
(b) another polyamide (B) in an amount comprising from 50 to 95 wt. % of the resin,
characterized in that after heating to 160°C to 200°C under a constant length condition at an initial load of 20 mg/d, a thermal contraction stress of the filament is not reduced in a cool-down region not greater than 80°C."

Claim 1 of the Auxiliary Request reads as follows:

"*1. A polyamide filament for an industrial fabric, characterized in that it comprises:*
a polyamide resin composition obtained by mixing
(a) a crystalline polyamide (A), obtained by a polycondensation reaction of metaxylylenediamine and adipic acid, in an amount comprising 5 wt. % of the resin, with
(b) Nylon 6 in an amount comprising 95 wt. % of the resin,
wherein after heating to 160°C to 200°C under a constant length condition at an initial load of 20 mg/d, a thermal contraction stress of the filament is not reduced in a cool-down region not greater than 80°C."

V. The arguments of the Appellant of relevance for the present decision, as filed with the grounds of appeal, can be summarised as follows:

a) The amendments made to the claims (i.e. the deletion of the claims of the previous Main Request objected to by the Examining Division) overcame the ground for refusal under Article 123(2) EPC.

b) The claimed subject-matter was sufficiently disclosed, because the skilled person knew how to produce the claimed polymer filaments and was aware of how to identify filaments falling within the definition of Claim 1.

c) More particularly, as regards sufficiency of disclosure,

i) it was acknowledged that testing would be required to establish whether a polyamide filament fell within the definition of the claims;

ii) T 0895/04 of 24 October 2005 set out the key criteria for an invention to be sufficiently disclosed;

iii) said criteria were met by the present application; more than one way of making polyamide filaments falling within the claims was described in the application; and

iv) the "thermal contraction stress" parameter was a parameter well understood by the skilled person and could easily be determined;

v) therefore, the claimed invention was sufficiently disclosed.

VI. In preparation for the oral proceedings, the Board issued a preliminary opinion on issues likely to be dealt with, in which, *inter alia*, the following objections with regard to the sufficiency of disclosure of the claimed subject-matter were raised (Point 3.3 of this communication):

"*3.3 Article 83 EPC*

Main Request

3.3.1 It seems that according to the application in suit, the properties of the final polyamide filament can only be influenced by varying the starting ingredients, i.e. the kind of crystalline polyamide (A), the polyamide (B) and the amounts of both (e.g. see also samples 1 and 2).

3.3.2 The appellant considers the variation of these parameters as routine for the skilled person (see the grounds of appeal of 24 August 2012, page 2, last full paragraph): "This method is completely

standard and could easily be altered by a skilled polymer chemist to produce a composition falling within ranges specific in claim 1, by simply varying either or both of the proportions of polyamide (A) and polyamide (B) or using a different polyamide (B)."

3.3.3 However, from the declaration by Mr Shinya Murakami submitted in examination with letter of 21 June 2010 it appears that these data are not sufficient to obtain necessarily filaments falling within the definition according to claim 1.

Mr Murakami performed 22 tests, out of which only 3 filaments met the criteria defined in claim 1. This is even more astonishing as several of the tests appear to have used identical amounts of identical components (A) and (B) (compare sample 4 with 10 and 21 with 17 and 21-2 of table 1 of this declaration). Although the starting material and processing conditions appear to be identical, different properties of the final products were obtained.

Therefore, the board can only conclude that the properties of the filaments resulting from this method cannot be predicted and that the filaments can consequently not be consistently and reliably reproduced.

3.3.4 Thus, with regard to the production of the claimed filaments it appears that

a) the amounts and conditions for obtaining polyamide (A) out of the two defined starting materials have to be identified,

b) a suitable polyamide (B) has to be identified,
c) a suitable ratio of (A) to (B) has to be found, out of the filaments obtained,
d) only those have to be selected which meet the criteria according to claim 1.

3.3.5 Performing steps (a) to (d) involves a lot of experimentation. Therefore, it seems that the application in suit does not give sufficient guidance as to to carry out this task without undue burden.

3.3.6 Even the specific embodiments disclosed in the application in suit (samples 1, 2) do not give details on items (a) and (d) and still require quite some experimentation.

3.3.7 Given the low number of experiments, it can also not be concluded that generally about every seventh (3 out of 22) experiment is successful, as in the tests carried out by Mr Murakami specific starting materials and processing conditions were used.

Auxiliary Request

3.3.8 The considerations above seem to apply mutatis mutandis to claim 1 of the auxiliary request, as items (a) and (d) (see above point 3.2.4) do not appear to be met."

VII. The Appellant did not submit any comments or amended claim requests dealing with the objections raised in the Board's communication. Instead, with fax dated 10 June 2015, the appellant announced that no-one would attend the oral proceedings on its behalf.

VIII. Oral proceedings took place on 19 June 2015 in the announced absence of the duly summoned Appellant, in accordance with Rule 115(2) EPC and Article 15(3) RPBA.

IX. In its statement setting out the grounds of appeal, the Appellant had requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the Main Request or the Auxiliary Request, both submitted with the statement setting out the grounds of appeal dated 24 August 2012.

Reasons for the Decision

Article 83 EPC - Sufficiency of disclosure

Main Request

1. Article 83 EPC requires that a European patent application "*shall disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art*".

1.1 According to the established jurisprudence of the Boards of Appeal of the EPO (e.g. T 0895/04 of 24 October 2005, Point 1.1 of the Reasons), a European patent application complies with the requirements of Article 83 EPC if a skilled person, on the basis of the description of the respective patent application and of the common general knowledge, is able to carry out the claimed invention in its whole extent without undue burden and without needing inventive skill.

1.2 If for instance an effect is expressed in a claim, but this claim comprises non-working embodiments and the

description does not contain sufficient information on the relevant criteria for finding alternatives over the claimed range with reasonable effort, which results in lack of reproducibility, then there is lack of sufficient disclosure (G 0001/03, point 2.5.2 of the Reasons).

1.3 In this respect also a reasonable amount of trial and error is permissible, provided that the specification contains adequate instructions or common general knowledge which would lead the skilled person necessarily and directly towards success through the evaluation of initial failures or through an acceptable statistical expectation rate in case of random experiments; moreover, if a claim is directed to novel products, the description of the patent in suit should indicate at least one reliable and repeatable way for preparing it (T0895/04, Point 1.1 of the Reasons).

1.4 More specifically, still as regards trial and error, according to decision T 0326/04 of 12 December 2006 (Points 1.2 and 1.3 of the grounds for the decision) "[...] *trial and error experiments may turn out necessary in order to carry out the embodiments of the invention. The jurisprudence of the Boards of Appeal has established that when empirical investigation is needed to reproduce the invention, it should not amount to an undue burden* [...] *Hence, when trial and error experiments are required, the disclosure in the patent should provide adequate information leading necessarily and directly towards success through the evaluation of the initial features and, therefore, only a few attempts should be required to transform failure into success*.".

2. For the Board, these requirements have not been met in the present case.

2.1 Claim 1 of the Main Request concerns a polyamide filament comprising a mixture of a crystalline polyamide (A), obtained by a polycondensation reaction of metaxylylenediamine and adipic acid in an amount of 5 to 50 wt.% of the resin and another polyamide (B) in an amount of 50 to 95 wt.% of the resin.

2.1.1 The final polyamide filament according to the invention is supposed to show no reduction of the thermal contraction stress in a cool-down region not greater than 80°C.

2.1.2 According to the application as filed (Paragraphs [0034] and [0035]), this result is achieved when at least 5 wt% of (A) and not greater than 95 wt% of (B) (Nylon 6, 6N, 6NN, 610N or 612N) is used in the composition of the filament.

2.1.3 Still according to the application as filed (Paragraph [0040]), the upper limit of 50 wt% of (A) is instead related to the prevention of poor impact crack resistance.

2.1.4 The preparation of specific embodiments according to the invention, i.e. monofilaments M1 and M2, is described in Paragraphs [0028] and [0029] of the application as published. Apart from the nature of the polyamides and the relative amounts thereof, these disclosures contain no particular recommendations concerning their process of preparation as regards the sought-for thermal contraction stress.

3. For facilitating the argumentation *infra* it will be assumed below that the term "*thermal contraction stress*" is an established term in the corresponding technical field and has a well recognised, clearly defined meaning for the person skilled in the art.

3.1 In the examination proceedings (see letter of 21 June 2010, page 2, 6th full paragraph), the Applicant (now Appellant) conceded that the mere selection of polyamides (A) and (B) as defined in Claim 1, within the ratios specified is **not** sufficient to inevitably lead to the desired thermal contraction stress properties. This was *inter alia* confirmed by the declaration of Mr Shinya Murakami dated 9 June 2010 (see Point 10, i.e. the paragraph bridging pages 5 and 6; the declaration was submitted in examination proceedings with letter of 21 June 2010).

3.2 According to this declaration, 22 samples comprising a polyamide (A) as defined in Claim 1 and Nylon 6 (this item of information is not given in the declaration but was given by the Applicant in its letter of 21 June 2010, see page 2, third full paragraph), as polyamide (B), with ratios as claimed, were prepared and tested by the inventor. Only three of the examples showed the sought-for thermal contraction stress and were therefore considered to fall within the definition of Claim 1.

3.3 The Appellant argued that filaments of (A) and (B) with ratios as claimed could be prepared *per se* and that the subsequent selection of filaments possessing the required thermal contraction stress properties would also be a standard operation for a skilled person. It therefore concluded that the production of polyamide filaments as claimed would be sufficiently disclosed

and did also not impose any undue burden on the skilled person when re-working the invention.

3.4 The Board does not share this view.

3.4.1 As conceded by the Appellant (letter dated 21 June 2010, and confirmed by the declaration attached to said letter), the choice of suitable polyamides and the selection of appropriate ratios is not sufficient to achieve the desired thermal contraction stress properties of the filaments.

3.4.2 For instance, Examples 17, 21 and 21-2 according to Table 1 of Mr Murakami's declaration apparently contain each 30 wt.% of a crystalline polyamide (A) obtained by polycondensation reaction of metaxylylenediamine and adipic acid and 70 wt.% of Nylon 6 as polyamide (B) - see Page 2, third full paragraph of Appellant's letter of 21 June 2010, to which the declaration was appended; all of these features being in line with Claim 1.

3.4.3 However, only two of the three filaments (examples 17 and 21-2) were considered by the inventor of the application in suit to fall within Claim 1 (point 6 of the declaration). No explanation has been given why Example 21 has significantly different properties. Even Examples 17 and 21-2 are different in their shower resistance (see Table 1).

3.4.4 This means that in spite of the use of identical ratios of identical components, i.e. in spite of an identical preparation, different properties of the final product, in particular of the thermal contraction stress, may and will be achieved.

3.4.5 Due to the low number of tests presented (22 experiments) and the exclusive use of the specific combination of polyamide (A) and Nylon 6 (as polyamide (B)), no conclusions can be drawn as to an expected success rate of the experiments, i.e. the number of filaments possessing the desired thermal contraction stress properties compared to the total number of filaments possible, when using **another** polyamide (B), e.g. Nylon 610N.

3.4.6 Thus, the Board can only come to the conclusion that, at least with regard to the thermal contraction stress, the properties of the claimed filaments cannot be predicted and that the claimed filaments cannot be reliably reproduced on the basis of the information contained in the application in suit. The testing of any possible polyamide resin combination covered by Claim 1 in order to identify those filaments possessing the required thermal contraction stress properties would thus result in an undue burden for the skilled person.

3.5 Although this objection was raised by the Board in its preliminary opinion (see VI *supra*), no explanation in this respect was given by the Appellant.

3.6 In the grounds for appeal the Appellant argued that in view of T 0895/04 the claimed subject-matter was sufficiently disclosed, as the criteria for sufficiency of disclosure defined in this decision were met by the application in suit. In particular, the skilled person could routinely determine whether the required thermal contraction stress properties were met and because more than one way to carry out the invention was indicated in the application in suit.

3.7 The cited decision T 0895/04 relates to sodium percarbonate compositions with specific moisture pick-up properties, refers under Point 1.7 (cited by the Appellant) to the drying of percarbonate samples as a standard operation and considers this drying step (even of a large number of samples) not as an undue burden.

3.8 In contrast to the situation in T 0895/04, where compositions had to be dried and "*a correlation curve between the moisture pick up values and the drying conditions*" had to be established to "*reduce the number of attempts needed by the skilled person for obtaining a product with the right moisture pick up*", the present application **does not give any indication** on how to obtain a compound, i.e. a filament, with the sought-for thermal contraction stress. It only teaches to produce polyamide filaments, which need to be checked afterwards for selecting those having the sought-for thermal contraction stress. No test for selecting the filament having the sought-for thermal contraction stress is (sufficiently) disclosed in the application as filed. In contrast to the case at issue, in decision T 0895/04 a test was described and also claimed in the corresponding patent. More particularly, the application as filed does not give any indication whatsoever that thermal contraction stress does not depend only on the compositional range defined in Claim 1, i.e. that the thermal contraction stress is not automatically obtained, let alone any guidance on how to proceed in case of failure.

3.9 T 0895/04 even highlights under point 1.1 of the reasons that "[...] *if a claim is directed to a novel class of products, the description of the patent in suit should indicate at least one* ***reliable and repeatable way*** *for preparing it (see, for example*

T 639/95, point 1 of the reasons for the decision, unpublished in the OJ EPO; T 226/85, OJ EPO 1988, 336, point 8 of the reasons for the decision; T14/83, OJ EPO 1984, 105, headnote; T409/91, OJ EPO 1994, 653, point 3.5 of the reasons for the decision)" (emphasis added).

Such a reliable and repeatable way of preparing the claimed compounds and of selecting those possessing the desired thermal contraction stress properties is not disclosed in the present application.

3.10 It follows from the foregoing that the Board has no reason to deviate from its preliminary opinion in the communication issued in preparation for the oral proceedings. Thus, the Board considers that the claimed subject-matter cannot be reliably and consistently reproduced, without undue burden, on the basis of the disclosure in the application as filed.

3.11 In summary, the invention defined in Claim 1 of the Main Request cannot be considered to have been sufficiently disclosed.

3.12 Therefore, the Main Request does not meet the requirements of Article 83 EPC and is not allowable under the EPC.

Auxiliary Request

4. Claim 1 of the Auxiliary Request differs from Claim 1 of the Main Request in the fixed amount of polyamides (A) to (B) and in the limitation of polyamide (B) to Nylon 6.

4.1 Thus, Claim 1 of the Auxiliary Request is based on the disclosure of Filament M2 in the application as filed (see Paragraph [0029]).

4.2 According to the Figure of the application as filed, Filament M2 produced according to Paragraph [0029] also fulfils the requirement for the thermal contraction stress defined in Claim 1.

4.3 However, the admission by the Applicant in its letter dated 10 June 2010 (page 2, sixth full paragraph, "it is not the case that a polyamide filament ... would inevitably possess the property ...") and the declaration annexed thereto contradict this disclosure of the application as filed.

4.3.1 As mentioned *supra*, Examples 17, 21 and 21-2 of Mr Murakami's declaration show that in particular with Nylon 6 as polyamide (B) the thermal contraction stress properties of the filaments cannot be predicted.

4.3.2 Thus, although a specific ratio of (A) to (B) is referred to in Claim 1 of the Auxiliary Request, no reason has been given why this specific ratio would normally result in filaments with predictable thermal contraction stress, whatever preparation is used within the disclosure of Paragraph [0029] of the application as filed, which is rather generic as to the conditions for the preparation apart from the compositional range.

4.4 Therefore, the reasons laid down *supra* for the Main Request are considered by the Board to apply to the Auxiliary Request *mutatis mutandis*.

4.5 Consequently, the invention as defined by Claim 1 of the Auxiliary Request is not sufficiently disclosed and

therefore does not meet the requirements of Article 83 EPC.

4.6 The Auxiliary Request is not allowable either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano G. Santavicca

Decision electronically authenticated