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Datasheet for the decision of 29 September 2009

Case Number: T 1345/06 - 3.3.06

Application Number: 97942283.9

Publication Number: 0932724

IPC: D21H 13/26

Language of the proceedings: EN

Title of invention:
Para-fully aromatic polyamide pulp, its preparing process and its preparing equipment

Patentee:
KOLON INDUSTRIES, INC.

Opponent:
Teijin Aramid B.V.

Headword:
Polyamide pulp/KOLON

Relevant legal provisions:
EPC Art. 123(2), 83, 54, 56
EPC R. 103

Relevant legal provisions (EPC 1973):
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Keyword:
"Admissibility of a new ground of opposition (no)"
"Sufficiency of disclosure - main request (yes)"
"Novelty and inventive step - main request (yes)"
"Refund of appeal fee (no) - appeal not deemed allowable"

Decisions cited:
G 0010/91

Catchword:

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1345/06 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 29 September 2009

Appellant: (Opponent)	Teijin Aramid B.V. Westervoortseddijk 73 NL-6827 AV Arnhem (NL)
Representative:	Heimann, Anette CPW GmbH Patentabteilung Kasinostrasse 19-21 D-42103 Wuppertal (DE)
Respondent: (Patent Proprietor)	KOLON INDUSTRIES, INC. Kolon Tower 1-23, Byulyang-dong Kwacheon-city Kyunggi-do 427-040 (KR)
Representative:	Merkle, Gebhard TER MEER STEINMEISTER & PARTNER GbR Patentanwälte Mauerkircherstrasse 45 D-81679 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 26 June 2006 rejecting the opposition filed against European patent No. 0932724 pursuant to Article 102(2) EPC 1973.**

Composition of the Board:

Chairman: P.-P. Bracke
Members: E. Bendl
J. Van Moer

Summary of Facts and Submissions

I. The appeal is against the decision of the Opposition Division to maintain the European patent 0 932 724 as granted.

II. The granted patent contains a total of fifteen claims, with the three independent claims 1, 11 and 15. The wording of Claim 1 is as follows:

"1. A para-fully aromatic polyamide pulp, being composed of micro fibrils, which fibrils have an average diameter of less than 1 µm,
wherein the pulp has a crushed oval shaped cross-section area, and
wherein the longest distance crossing the center point of weight of the cross-section of the pulp is at least 1.2 times that of the shortest distance."

III. In the notice of **opposition**, filed with a letter of 28 July 2004, the revocation of **Claims 1-10** was requested, arguing that the requirements of Article 100(a) EPC - lack of novelty and inventive step - and Article 100(b) EPC were not met. In particular documents

D1 = EP-A-0 104 410
D3 = Polymer Commun. 30, 151-152, 1989
Exhibits II, III = photographs relating to Kevlar pulp 6F625,

as well as arguments concerning the prior uses of Kevlar pulp type 6F265 and Twaron 1095 were submitted.

IV. The Opponent cited in his letter of 9 December 2005 additionally for the first time the alleged prior use of Kolon pulp and submitted the following documents:

Exhibit VII(a to d) = photographs relating to Twaron 1095 fibre, batch 150582 and
Exhibit X(a to d) = photographs relating to Kolon pulps.

V. In its decision the Opposition Division came to the conclusion that the patent as granted met the requirements of the EPC and rejected the opposition.

VI. An appeal was filed by the Opponent (Appellant), arguing that the requirements of Article 100(a) (lack of novelty and inventive step) and 100(b) EPC of granted Claims 1-10 were not met.

To support his argumentation the Appellant submitted among other documents

D31 = J Material Science 28, 225-238 (1993).

VII. In the oral proceedings before the Board, which took place on 29 September 2009, the Appellant additionally raised an objection with regard to Article 123(2) EPC.

VIII. **Appellants** main arguments were as follows:

Article 123(2) EPC
The Appellant argued that the interpretation of Claim 1 as granted by the Opposition Division necessitated a literal interpretation. However, such a literal

interpretation would contravene the requirements of Article 123(2) EPC.

Article 83 EPC

Claim 5

The Appellant alleged, that with the apparatus indicated in paragraph [0074] of the description measurements between 100-190 nm could not be performed. A reflection ratio against UV rays of 0% could consequently not be measured at these wavelengths.

Claim 6

He argued that the reference used for defining the reflection **ratio** has not been disclosed.

Claim 4

The Appellant pointed out that, when determining the refraction index according to the formula given in Claim 4, the cross section of the pulp could not be correctly determined and no suitable refraction oil has been disclosed. He concluded that the method as described therefore in paragraph [0070] of the patent-in-suit would not work with the pulp.

Article 54 EPC

Document D1

It was highlighted that the fibres of D1 have diameters of from 2 to 12 µm and it was put forward that, since the fibre consisted of fibrils and micro fibrils, the micro fibrils necessarily would have diameters much smaller than 1 µm.

The Appellant reiterated that D1 reported fibres with elliptic shape and irregular cross section - this could only mean crushed oval shaped cross section.

The Representative of the Appellant reported that the photographing of the cross sections of these pulps caused difficulties, because it was not possible to cut the pulps exactly perpendicular.

Article 56 EPC

The Appellant stated that no effect had been shown in the patent-in-suit vis-à-vis D1.

He concluded that, even if the dimensions and shape of the pulp/micro fibrils were not directly and unambiguously derivable from D1, the combination of D1 with D31 would lead to the claimed invention.

The **Respondent** filed with letter of 2 April 2007 auxiliary requests I to III and mainly argued as follows:

Article 123(2) EPC
The Respondent did not agree to the introduction of this new ground for opposition.

Article 83 EPC
Claim 5
The Respondent argued that the cited ambiguity concerning the spectrometer only represented an unclear passage of the description.

Claim 6

The Respondent stressed, that the reference for measurements would be 100% reflection, as described in paragraph [0074].

Claim 4

According to the Respondent no evidence was provided that the measurement of the cross section would not be possible.

Article 54 EPC

The Respondent argued that the disclosure of D1 would be ambiguous and would therefore not directly and unambiguously disclose the present invention.

He furthermore argued, that none of the alleged prior uses showed the parameters as defined in present Claim 1, thus no proof up to the hilt would be possible.

Article 56 EPC

The Respondent concluded that the person skilled in the art would not combine D1 with documents relating to fibres like Vectran or Kevlar (D31).

According to Respondent's opinion Kevlar was the only commercially available product at the filing date of the patent-in-suit.

Even when defining the problem of the patent-in-suit as the provision of an alternative to the fibres of D1, the subject-matter of Claim 1 would not be obvious.

IX. The Appellant (Opponent) requested that the decision under appeal be set aside and that the European patent be revoked in the scope of its Claims 1 to 10. He requested reimbursement of the appeal fee.

The Respondent (Patentee) requested that the appeal be dismissed or, in the alternative that the patent be maintained on the basis of auxiliary requests I to III.

Reasons for the Decision

Main request

1. *Article 123(2) EPC*

1.1 Appellant's argumentation, that the Opposition Division's interpretation of Claim 1 justifies the introduction of a new objection according to Article 123(2) EPC, cannot be followed by the Board.

1.2 It is established case law, that fresh grounds for opposition may be considered in appeal proceedings only with the approval of the patentee (cf. G 10/91, EPO OJ, 1993, 420, opinion, item 3.).

1.3 Since in the current case the ground for opposition has been raised for the first time in the oral proceedings before the Board and the Respondent (Proprietor) explicitly did **not** agree to introducing such a ground, the introduction of the new ground for opposition is refused.

2. *Article 83 EPC*

2.1 Claim 5

By arguing that the apparatus mentioned in paragraph [0074] of the description is not suitable to carry out measurements between 100 and 190 nm the Appellant has highlighted a shortcoming of the description.

However, the teaching of the patent-in-suit has to be interpreted in the way the skilled person would have done. Claim 5 refers to a "reflection ratio of pulp against UV rays", which is 0%. This does not necessarily mean that the 0% reflection ratio has to be found throughout the **entire** UV region. The wording of the claim does not indicate exactly for **which** part of the UV range the criterion has to be met.

Since it has not been demonstrated by the Appellant that the cited criterion concerning the 0% reflection ratio in the UV region is not met at all, insufficiency of disclosure is considered not to be proven.

2.2 Claim 6

Again, no indication is given in the claim exactly at which range of wavelength the reflection has to be between 10-85%.

The term "**ratio**" used when referring to reflection does not necessarily mean that a white reference has been used for comparison. The term has rather to be interpreted as a reference to 100% reflection, as mentioned in paragraph [0074]. No proof to the contrary has been submitted.

2.3 Claim 4

The Appellant explained the meaning of the formula in Claim 4, the difficulties when determining its parameters and argued, that in the absence of a teaching of a suitable immersion oil in the patent-in-suit, a skilled person could not measure the interference fringe of Claim 4.

However, D3, page 152, left-hand column, cited by the Respondent, mentions that immersion oils with a refraction index in the ranges 2.02-2.06 and 1.7-1.8 were used. Thus, obviously such immersion oils were known to the person skilled in the art. It can therefore not be concluded that the skilled person would not know which oils to use.

With regard to the alleged problems in connection with the determination of the parameters mentioned in the formulas of Claim 4 and in particular the skilled person's inability to measure the cross section of the pulp, the arguments merely relate to theoretical considerations, no evidence or proof has been submitted.

2.4 Thus, the requirements of Article 83 EPC are considered to be met.

3. *Request not to admit evidence relating to the prior use of Twaron 1095 and Kolon fibres*

3.1 At the beginning of the oral proceedings before the Board the Respondent changed his initial request not to admit allegedly late filed documents and requested

instead not to admit evidence relating to the prior use of Twaron 1095 and Kolon fibres.

3.2 Respondent's request cannot be accepted by the Board:

The letter of **opposition** contained a reference to the prior use of **Twaron 1095**; novelty of Claim 1 as granted with regard to this alleged prior use was denied by the Opponent (Appellant). Even though additional arguments and evidence were filed in the course of the procedure, the Board concludes that the basic objection was already raised in the letter of opposition.

3.3 Although the alleged prior use of the **Kolon** pulp has only been introduced into the procedure in December 2005, i.e. after the limit date for the opposition, it has to be born in mind that Kolon is a product of the Respondent. The latter must consequently have been aware of this product.

Given the evidence submitted by the Opponent in the opposition procedure the Opposition Division correctly considered the alleged prior use to be prima facie relevant and introduced the documents associated with Kolon into the procedure. The Board does not see any reason to deviate from this opinion.

3.4 The Board decides that both alleged prior uses form part of the appeal procedure.

4. *Article 54 EPC*

4.1 Document D1

In D1, page 2, second paragraph and in Claim 1 the **fibres** described are characterised as having irregular cross section and a diameter of between 2 and 12 µm.

According to the first paragraph on page 13 such fibres consist of unit cell fibres. The cross section of the fibres (which must consequently comprise the unit cell fibres) is shown in Figs. 1B and 2B.

However, when looking at Fig. 1B the diameter of the **unit cell fibres** is at least 2 µm. This observation is also supported by Fig. 2B, where the **unit cell fibres** have a diameter of at least 2 µm. Thus, the use of the term "diameter" and the ranges mentioned are not consistent throughout D1.

The term "**microfibril**" only occurs on page 3, but no indication is given, what the size of the crystalline micro fibrils could be. Fig. 2B only shows schematically the lattice structure of unit cell fibres. The micro fibrils are crystalline and form a parallelogram network.

The Respondent has doubted that the lattice structure of D1 even relates to a micro fibril substructure. Although the term has been mentioned in D1, also the Board cannot derive without any doubt, that the individual diameters of the micro fibrils, and consequently the average diameter, can be determined, given the "peculiar structure which has been developed in the form of parallelogram network in the direction

perpendicular to the axes of the fibers". Additionally, Fig. 2B only shows just one example of such a structure, which does not permit to draw conclusions about the **average** diameter of the micro fibrils.

Thus, given the inconsistencies and ambiguities with regard to the teaching, terminology and dimensions described, it can not be directly and unambiguously derived from this document that the **average** diameter of the micro fibrils is less than 1 µm.

Additionally the cross section of the fibres is on page 3, second paragraph described as being of **elliptic** shape; on page 2, last paragraph an **irregular** cross section is mentioned. Opponent's argumentation that the combination of these features leads necessarily to crushed oval-shaped cross section cannot be followed by the Board. Fig. 1B and 2B are only schematic drawings and neither from the description nor from the drawings the crushed-shape oval cross section can be derived.

Also the criterion relating to the ratio 1.2 with regard to the longest and shorted distance cannot be found in D1. As mentioned before the drawing represent the invention only schematically. It is not possible to derive any exact lengths from these figures.

Consequently, none of the features of claim 1 can be directly and unambiguously derived from the teaching of D1.

4.2 Twaron 1095

In the oral proceedings the Appellant explained the photographs of Twaron 1095, batch 150582, Exhibit VIIa. He argued about the technical difficulties to make a perpendicular cut of the pulp. Given this situation, he stated that the cuts would be inclined, i.e. instead of the desired 90° angle a different angle had been used. This could be seen by the "tails" of the ellipses in Exhibit VIIa, showing the remaining part of the pulp.

Due to this situation the Board cannot consider the photographs as a proof that the pulp has a **crushed oval shaped cross section** and a **ratio** of the longest to the shortest distance of 1.2.

There is no doubt to the Board, that in the description on file the term "cross section" means a **perpendicular** cut of the pulp, i.e. that the cut has to be carried out at a 90° angle to the length of the pulp. This can for instance be derived from paragraph [0038]: "...the cross section of pulp has crushed oval shape **other than round shape**" (emphasis added). A clear distinction from round shape is made, but this is only possible if the cut is exactly perpendicular. Otherwise, when cutting a fibre of round shape, any deviation from perpendicular direction would automatically result in a cross section area of oval shape - as would a cut through an oval-shaped pulp.

Thus, given Appellant's explanation, Exhibit VIIa is **not** suitable to demonstrate that the cross-section area is oval.

In addition, the angle used for cutting the pulp determines also the length of at least one (i.e. the longer) axis of the ellipse obtained. The more the cut deviates from perpendicular direction, the longer this axis of the ellipse becomes and consequently the higher the ratio of the length of the two axis is. Therefore the lengths shown in photographs like Exhibit VIIa cannot serve as a basis to determine the ratio of 1.2 as required by Claim 1 of the patent-in-suit.

At least the crushed oval-shaped cross section area of the pulp and the ratio of longest to shortest distance could not be demonstrated for Twaron 1095. The alleged prior use cannot be considered to destroy novelty of the subject-matter of Claim 1 of the patent-in-suit.

4.3 Kevlar pulp type 6F625

Similar considerations apply to Exhibit II showing the cross-section area of the Kevlar pulp.

4.4 Kolon pulp

Also for the Kolon pulp (Exhibits Xa, Xc) the same considerations as made above are of relevance.

5. *Article 56 EPC*

According to the problem-solution-approach, which is used by the Boards of Appeal of the European Patent Office in order to decide on the question of inventive step, it has to be determined which technical problem the object of a patent effectively solves vis-à-vis the closest prior art document. It also has to be

determined whether or not the solution proposed to overcome this problem is obvious in the light of the available prior art disclosures.

5.1 The problem underlying the invention, as described in paragraph [0004] and illustrated in Examples 8-13 of the patent-in-suit, is to provide a material having good heat resistance, restoration stability, friction coefficient and defacement ratio.

D1 relates to a quite similar problem, namely to fibres with non-fusible and non-flammable properties (see D1, page 17, first paragraph).

Both parties agreed to D1 being the closest state of the art. Taking into account the other prior art documents cited in the course of the procedure, the Board does not see any reason to deviate from this approach.

5.2 Claim 1 of the patent-in-suit differs from the disclosure of D1 in the three parameters mentioned in section 4.1: (a) the average diameter of the micro fibrils, (b) the crushed oval shaped cross-section area and (c) the ratio of the longest to the shortest distance being 1.2.

No effects have been shown with regard to these features. The only reference to a fibre of the prior art is given in paragraph [0118] of the patent-in-suit. The table in that paragraph shows a comparison of the friction coefficient and of the defacement ratio of the fibres according to the invention with Kevlar, a commercially available fibre. However, no evidence has

been submitted, that Kevlar would in any way have the properties mentioned above. Given the fact that for showing an effect over the closest prior art, it has to be proven that the alleged effect has its origin in the distinguishing feature of the invention, this comparison is not suitable to demonstrate any effects of the patent-in-suit with regard to D1.

Thus, no evidence or proof has been submitted that effects different from the ones described in the closest state of the art, D1, have been achieved. Therefore the problem underlying the present invention has to be reworded to become less ambitious: The objective problem of the patent-in-suit is the provision of a fibre as an alternative to the one described in D1.

The Board has no reason to doubt that this less ambitious problem has been solved.

5.3 To solve this problem fibres as defined in Claim 1 on file have been proposed.

5.4 The question to clarify is, whether it was obvious, starting from D1 as the closest prior art document, to arrive at the subject-matter of Claim 1 of the patent-in-suit.

As mentioned in chapter 4.1 above, D1 contains quite a number of contradicting statements concerning size and form of the pulp.

Given these contradicting teachings and the fact that no hints are given in D1 to modify the form and size of

the pulp with the **irregular** cross section, the person skilled in the art would not conclude that D1 focuses towards the production of a pulp with a crushed **oval** shaped cross section area, as presently required.

In particular it cannot be concluded that only cross sections with the required ratio of the longest to the shortest distance of at least 1.2 should be produced.

Furthermore, the fourth paragraph on page 3 of D1 is the only reference to micro fibrils of the fibres. Since Fig. 2B only represents the structure schematically, represents a parallelogram network and shows only **one** fibre bundle, no conclusions can be drawn about the **average** diameter of the micro fibrils, in particular not that it is less than 1 µm.

5.5 The Opponent has furthermore argued that the combination of D1 with D31 would also lead to the subject-matter of Claim 1.

D31 discusses the fibrillar hierarchy in liquid crystalline polymers. In particular Figures 9 and 10 were cited to show the fibre distribution. There is no hint to link the teaching of this document with the one of D1: Figure 9 relates to the micro fibrils of **Vectran** and **Kevlar**, i.e. different fibres. But even if such a link existed, no teaching could be found to produce a specific crushed oval shape cross section or the ratio given in present Claim 1.

5.6 Consequently, the requirement of Article 56 EPC is considered to be met.

Auxiliary requests I-III

Since the main request was found to meet the requirements of the EPC, further discussion of the auxiliary requests is not considered necessary.

6. *Request for reimbursement of the appeal fee*

Since the appeal is not deemed allowable, there is no basis to examine the other conditions for a reimbursement of the appeal fee (Rule 103 EPC).

Hence, the request for reimbursement of the appeal fee has to be rejected.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

G. Rauh P.-P. Bracke