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**Datasheet for the decision  
of 24 October 2012**

**Case Number:** T 2120/08 - 3.3.07

**Application Number:** 98945227.1

**Publication Number:** 1005585

**IPC:** D06M 23/00, D06M 15/285,  
H01B 7/28

**Language of the proceedings:** EN

**Title of invention:**  
Process for manufacture of superabsorbent-coated yarn

**Applicants:**  
Teijin Aramid B.V.

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 54, 84, 111(1), 123(2)  
RPBA Art. 13

**Keyword:**  
"New main request submitted during the oral proceedings -  
admissible (yes)"  
"Amendments - allowable (yes) - clear (yes) - reference to  
description absolutely necessary"  
"Novelty (yes)"  
"Remittal (yes) - further prosecution to be carried out by the  
Examining Division"

**Decisions cited:**  
T 0908/04, T 1156/01

**Catchword:**  
-



Case Number: T 2120/08 - 3.3.07

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.07  
of 24 October 2012

**Appellants:** Teijin Aramid B.V.  
(Applicants) Velperweg 76  
NL-6824 BM Arnhem (NL)

**Representative:** Heimann, Anette  
CPW GmbH  
Kasinostrasse 19-21  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 23 June 2008  
refusing European patent application  
No. 98945227.1 pursuant to Article 97(2) EPC.

**Composition of the Board:**

**Chairman:** F. Rousseau  
**Members:** G. Santavicca  
D. T. Keeling

## Summary of Facts and Submissions

- I. The appeal by the Applicants lies from the decision of the Examining Division, posted on 23 June 2008, refusing European patent application 98 945 227.1, originating from international application PCT/EP98/05123 (international publication number WO 99/10591 A1).
- II. The decision under appeal was based on Claims 1 to 5 filed with letter of 25 January 2007 (Main Request) and on Claims 1 to 5 handed over during the oral proceedings held on 4 June 2008 (Auxiliary Request). Claim 1 of the Main and Auxiliary Requests respectively read as follows (Compared to the claims as filed, additional features are indicated in bold, deleted features in strike-through):

### *Main Request*

"1. A process for the manufacture of a yarn provided with a superabsorbent material having a swelling value of at least 60 and having hydrophilic properties which is capable of absorbing and retaining quantities of water, characterized in that an aqueous solution comprising a water-soluble ~~pre-superabsorbent~~ material **that after heating polymerizes or cross-links to the superabsorbent material** is applied onto the yarn, after which the yarn is dried and heated in order to cross-link or to polymerize the water-soluble ~~pre-superabsorbent~~ material to the superabsorbent material."

*Auxiliary Request*

Compared to Claim 1 of the main Request, Claim 1 of the Auxiliary Request specified the aqueous solution as **"not being a water-oil emulsion"**.

- III. In the decision under appeal, it was held that:
- (a) The amended claims of the Main and Auxiliary Requests complied with Article 123(2) EPC.
  - (b) The process of Claim 1 of the Main Request was novel over D1 (EP-A-0 351 100), which did not disclose swelling values of 60 or more, but lacked novelty over any of D2 (EP-A-0 784 116) and D3 (EP-A-0 482 703). According to D2 and D3, products having swelling values of well beyond 60 were obtained by applying to yarns water-in-oil emulsion containing in the aqueous phase a water-soluble superabsorbent material, followed by drying and heating. The drying and heating conditions used in the processes of D2 and D3 were held to lead to a crosslinking, which was comparable to that illustrated in the examples of the application, hence as requested by Claim 1 of the Main Request.
  - (c) The subject-matter of Claim 1 of the Auxiliary Request excluded the use of water-in-oil emulsions, so novelty over D2 and D3 could be acknowledged.
  - (d) As regards inventive step, the problem to be solved was to avoid environmental risks caused by volatile organic solvents present in the oil phase of the emulsions used in D2 and D3.
  - (e) The problem as such could not contribute to inventive step, as the use of aqueous systems was

common in technical fields such as coatings, adhesives, paintings.

- (f) Also, such aqueous systems were already known, from D2 and D3 or D1. Consequently the claimed subject-matter lacked an inventive step.
- (g) None of the claims requests being allowable, the application was to be refused.

IV. In their statement setting out the grounds of appeal, the Appellants contested the decision under appeal and maintained their claims requests.

V. In a communication in preparation for oral proceedings (dated 14 December 2011), the Board indicated the points that needed debate and decision, *inter alia* the compliance of the amendments made to the claims of all the requests with Article 123(2) EPC, as well as a number of issues under Articles 83 and 84 EPC, novelty and inventive step. Having regard to the crucial question of whether the use of an aqueous solution of crosslinkable polymers leading to superabsorbents was known at the priority date of the present application, further items of prior art were enclosed, *inter alia* D4 (US-A-4 888 238), acknowledged in both D2 and D3.

VI. In response (letter of 15 February 2012), the appellants submitted three new sets of claims as their Main, First and Second Auxiliary Requests (i.e. to replace all of the claims requests then on file), as well as further items of evidence, namely:

D9: Handbook of Chemistry and Physics, 53rd edition, 1972-1973, Pages C-74 and C-75;

D10: Product sheet of Aridall™ 1125-S.

VII. In a further communication (dated 9 October 2012), the Board indicated that a review of the decision under appeal, as regards the grounds for rejection under Articles 54 and 56 EPC, was still necessary, as the amendments contained in the newly filed requests did not appear to change the framework of the issues dealt with in the decision under appeal. In particular, D1 to D3 all concerned communication cables comprising yarns made of aramid or glass fibres.

VIII. Oral proceedings took place on 24 October 2012. The appellants filed a new set of Claims 1 to 3 as their Main Request and withdrew their previous Main, First and Second Auxiliary Requests on file. After deliberation by the Board, the decision was announced.

IX. Claim 1 according to the new Main Request reads as follows (compared to the claims as filed, additional features are indicated in bold, deleted features in strike-through):

"1. A process for the manufacture of an **endless multifilament aramid or glass** yarn provided with a superabsorbent material having a swelling value of at least 60 (**as specified in the description**) and having hydrophilic properties, which **yarn** is capable of absorbing and retaining quantities of water **and suitable for optical communication cables**, ~~characterized in that~~ **wherein** an aqueous solution comprising a water-soluble pre-superabsorbent material **selected from polymers derived from acrylamide, from acrylamide and sodium acrylate, and from acrylamide and dialkylaminoethylmethacrylate** is applied onto the yarn, after which the yarn is dried and heated **at 100 to**

300°C in order to cross-link ~~or to polymerize~~ the water-soluble pre-superabsorbent material to the superabsorbent material."

X. The Appellants have essentially argued as follows:

(a) Amended Claim 1 was clear and based on the application as filed (Articles 84 and 123(2) EPC).

(b) The subject-matter of Claim 1 was distinct from the disclosure of D1, D2, D3 and D4.

(i) As also apparent from D2 and D3, D1 dealt with a method using an aqueous dispersion of water-insoluble (crosslinked) polymer, which water-insoluble (crosslinked) polymer prior to its application onto the yarn might have been prepared from water-soluble polymers. No swelling values were disclosed by D1. Hence, D1 did not take away novelty.

(ii) As regards D2 and D3, a water-in-oil emulsion was applied on the yarn, whereby an emulsion was not a water solution, even if the superabsorbent materials were soluble in the aqueous phase. Hence, aqueous solutions were not disclosed in D2 and D3.

(iii) Even if D4, not dealt with in the decision under appeal, were considered, novelty would not be taken away. In fact, D4 disclosed a process for coating short fibres, which was not suitable for cables, on which polymeric materials other than those defined in

Claim 1 were applied and then crosslinked *in situ* at temperatures lower than those defined in Claim 1.

Thus, novelty over D1 to D3 and D4 was to be acknowledged.

(c) As to inventive step, the process defined in Claim 1 created a situation not dealt with in the decision under appeal, or at any stage of the examination proceedings. Also, further document D4 cited by the Board had not been considered by the Examining Division. Therefore, the right of the Applicants to have their case decided in two instances prevailed and warranted a remittal to the first instance, which was also explicitly requested.

(d) Therefore, remittal was appropriate.

XI. The Appellants (Applicants) requested that the decision under appeal be set aside and that the case be remitted to the first instance for further prosecution on the basis of Claims 1 to 3 submitted as the Main Request during the oral proceedings on 24 October 2012.

## **Reasons for the Decision**

1. The appeal is admissible.



*Amendment to Appellants' case*

2. The Main Request submitted during the oral proceedings held on 24 October 2012 constitutes an amendment to appellants' case within the meaning of Article 13 of the Rules of Procedure of the Boards of Appeal of the EPO (RPBA). Thus, the admissibility of the Main Request is at the discretion of the Board.

2.1 The submission of the Main Request was in reaction to the objections raised in the Board's communication of 9 October 2012, discussed during the oral proceedings, in particular having regard to D4. The amendments made did not raise new issues and actually overcame objections under Articles 123(2), 84 and 54 EPC (*infra*).

2.2 Therefore, the new Main Request has been admitted.

*Main Request*

*Amendments*

3. Compared to Claim 1 as filed, Claim 1 of the Main Request comprises amendments having their respective basis in the original application as indicated below:

(a) "an endless multifilament aramid or glass yarn" is based on Claim 4 as filed, with the further restriction "endless", which is the only meaning for the term "multifilament yarn" given on page 3, lines 4-5, of the application as filed;

(b) "(as specified in the description)". The reference included in Claim 1 that the swelling value is

defined as specified in the description does not introduce new subject-matter, as the application as filed discloses only one method for determining the swelling value;

- (a) "suitable for optical communication cables" is disclosed as such e.g. on Page 1, lines 7-8, and on Page 8, lines 31-33, and reflects the preferred use of the endless multifilament yarns made by the process of Claim 1;
- (b) "~~characterized in that~~ wherein", merely removes the original transitional clause of a two-part form, as a consequence of all amendments made;
- (c) "selected from polymers derived from acrylamide, from acrylamide and sodium acrylate, and from acrylamide and dialkylaminoethylmethacrylate", finds its basis e.g. on Page 5, lines 3-5, and reflects the teaching of the application as filed that these polymers are particularly suitable for use in superabsorbent materials defined in the application as filed;
- (d) "at 100 to 300°C", has a basis on Page 6, line 14, and is the more general teaching for the heating temperature disclosed in the application as filed;
- (e) "or to polymerize" has been deleted as a consequence to the restriction of the water-soluble pre-superabsorbent materials to polymers.

3.1 It follows from the above that the combination of features defined in Claim 1 does not introduce

information, such as a combination of features, which was not available to the skilled reader of the application as originally filed.

- 3.2 As regards Claims 2 and 3 of the Main Request, the additional features they define, which are general measures identically disclosed in Claims 2 and 3 as filed, are considered to be disclosed also in combination with the subject-matter of present Claim 1.
- 3.3 Therefore, the claims of the Main Request comply with Article 123(2) EPC.

*Clarity of Claim 1*

4. In present Claim 1, the Board's objection that the term "pre-superabsorbent" lacked a clear definition has been overcome by specifying the kind of material meant (namely, selected from polymers derived from acrylamide, from acrylamide and sodium acrylate, and from acrylamide and dialkylaminoethylmethacrylate).
- 4.1 As regards the reference to the description for the meaning of the "swelling value" and the manner according to which it is determined, it aims at clarifying the scope of Claim 1, as this parameter does not have a well recognized meaning in the art, whilst safeguarding its conciseness. In fact, the description for determination of the swelling value in the application as filed (page 7, line 27, to page 8, line 28) is in the present case too long to be included in Claim 1, so that the repetition of the full description of the method in Claim 1 would result in a lack of conciseness. Hence, the reference "(as

specified in the description)" is in the present case absolutely necessary (Rule 43(6) EPC) (Case Law of the Boards of Appeal, 6th edition 2010, II.B.1.1.2 and 1.1.3, e.g. in connection with T 908/04 or T 1156/01) in order to fulfil both requirements under Article 84 EPC that the claim must be clear *per se* and concise, in particular as regards the definition of the "swelling value".

4.2 Therefore, Claim 1 of the Main Request fulfils the requirements of Article 84 EPC.

#### *Novelty*

5. The process defined in Claim 1 of the Main Request requires application of an aqueous solution comprising a water-soluble pre-superabsorbent material as defined.

5.1 In the process disclosed by D1, a suspension of (already formed) superabsorbent material is applied on the yarn, whereas in the process of any of D2 and D3 an emulsion containing in the aqueous phase a material named superabsorbent is applied on the yarn.

5.2 Dispersion, emulsion and solution represent different mixtures or systems. A suspension is made up of a liquid carrying insoluble material, e.g. as in D1, hence a two-phase system. An emulsion is a system made up of at least two immiscible liquids, as in D2 and D3, one of which may be water, hence also a multiple phase system. These two systems are different from a solution, which is made up of a solvent (e.g. water) and a solute dissolved in the solvent, hence a single phase system. Thus, at least in view of these distinctions, novelty

of the claimed process over those disclosed by D1 to D3 is given.

- 5.3 As regards D4, mentioned in the communication by the Board, it does not disclose e.g. multifilament aramid or glass yarns.
- 5.4 Hence, the process of Claim 1 of the Main Request is novel over the process of any of these documents (Article 54, paragraphs (1) and (2), EPC). This conclusion applies *a fortiori* to the process of Claims 2 and 3.
- 5.5 As regards documents other than D1 to D4, not dealt with in the decision under appeal, their consideration, if any, is left to the discretion of the Examining Division, upon remittal of the case (*infra*).

#### *Remittal*

6. The appellants have requested a remittal to the first instance for further prosecution.
- 6.1 The grounds for refusal of the present application, underlying the decision under appeal, were lack of novelty (Main Request) and lack of an inventive step (Auxiliary Request).
- 6.2 Claim 1 of the Main Request submitted during the oral proceedings before the Board defines a new combination of features, some of which were taken from the description, which are significantly restricted compared to the claims underlying the decision under appeal. Such a combination was not dealt with in the

decision under appeal. So Claim 1 of the Main Request lies outside the Board's review of the decision under appeal.

6.3 The change from a process for manufacturing a yarn of unspecified use (as in the claims underlying the decision under appeal) to a process for manufacturing an endless multifilament aramid or glass yarn for optical communication cables, which is also defined by more specific material and process steps, requires a new assessment of inventive step, which the Board could not reasonably be expected to deal with during the oral proceedings.

6.4 As established in the case law (*supra*) (VII.E.10.3), if amendments to the claims are made during an appeal from a decision to refuse the application, which require further examination, the case should be remitted to the Examining Division, to maintain the Applicants' right to appeal.

6.5 The Board, in the exercise of its discretion under Article 111(1) EPC, considers it appropriate to remit the case to the Examining Division for further prosecution.

*Further prosecution*

7. The present decision only deals with compliance with Articles 123(2) and 84 EPC as well as with novelty over any of D1 to D4.

7.1 The decision whether novelty over further documents is to be examined, or the further requirements of the EPC

such as sufficiency of the disclosure and inventive step are fulfilled by the claimed subject-matter of the Main Request, is left to the discretion of the Examining Division.

- 7.2 As to inventive step, a crucial question was raised in the Board's communication, i.e. whether the use of an aqueous solution of crosslinkable polymers leading to superabsorbents was known at the priority date of the present application for coating multifilament yarns, which still needs to be answered. In particular, attention is drawn to the fact that it is not yet established with certainty whether e.g. the non-cross-linked copolymer of (sodium) acrylate and acrylamide present in W/O Emulsion B (Trade name A 3116) mentioned in Table A (Page 7) of D3 is present in the water phase in solubilised or insolubilised form, as well as whether it is already a superabsorbent within the meaning of the present application or it undergoes cross-linking during the subsequent drying or heating step.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.
  
2. The case is remitted to the first instance for further prosecution on the basis of Claims 1 to 3 submitted as the Main Request during the oral proceedings on 24 October 2012.

The Registrar:

The Chairman:

S. Fabiani

F. Rousseau