BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 13 April 2010

Case Number: T 1239/07 - 3.4.02

Application Number: 00919703.9

Publication Number: 1082633

IPC: G02B 6/44

Language of the proceedings: EN

Title of invention:
Optical fiber ribbons containing radiation cured encapsulating materials

Patentee:
Hexion Specialty Chemicals Inc.

Opponent:
-

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step - claim 1, 13 (no)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1239/07 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 13 April 2010

Appellant: Hexion Specialty Chemicals Inc.
1600 Smith Street, 24th Floor
Houston
Texas 77002 (US)

Representative: Baker, Karen Veronica
Baker Associates
Intellectual Property Law Offices
Irongate Lodge
5 Alderson Road
Harrogate HG2 8AS (GB)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 16 March 2007 refusing European patent application No. 00919703.9 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: A. G. Klein
Members: M. Rayner
B. Müller

Summary of Facts and Submissions

I. The applicant appealed against the decision of the examining division refusing European patent application number 00919703.9. The patent application concerns an optical fibre ribbon and radiation cured material.

Documents mentioned in the examination and appeal proceedings include the following:

D8 EP-A-0 843 187
D10 JP-A-09 197210

In the grounds for the decision under appeal, the examining division substantiated its refusal with lack of novelty of the subject matter of claim 1 having regard to the disclosure of document D8. The division remarked that according to lines 7 and 8 on page 4 of this document the bonding resin is just strong enough (Young's modulus being greater than equal to 5 kg/mm^2) to avoid inadvertent splitting. Therefore it was not credible that tear resistance was above 1 kg (2.2 pounds) force. Moreover, there is no doubt the encapsulating material can be split by hand because the physical properties disclosed in document D8 imply the "hand tearing feature". The size of the test strip used by the applicant in determining adhesion was taken into account and the value of adhesion force given in claim 1 translates into customary units disclosed within the range given in claim 1 of document D8.

The division commented further that while document D8 advocates avoidance of inadvertent splitting, which is also believed to be the case in the present

application, the general subject of document D8 is nevertheless an optical fibre ribbon intended to be split. A jig for splitting mentioned in document D8 is for quantitative exactness in automatic production and does not involve a knife but functions like hand splitting. Claim 1 of the application does not specify chemical composition, but only a radiation cured encapsulating material with certain physical properties.

While an explicit disclosure of tear resistance is not made in document D8, even assuming the feature were not implicit and thus novel, then reference can be made to document D10, which discloses a ribbon with a Young's Modulus between 3 and 30 $kg.mm^{-2}$ and a tearing resistance between 0.001 and 0.033 kg force. The skilled person thus ends up with a material having a tearing resistance of less than 0.033 kg force, which is less than the 1 kg (2.2 pounds) force recited in claim 1 so that the claimed subject matter, even with the assumption, would not be considered to involve an inventive step.

II. The appellant requested that the decision under appeal be set aside and a patent granted on the basis of claims presented with its letter dated 01.02.2007, i.e. the claims before the examining division. The appellant again offered to amend, if necessary, the recitation of adhesion force to recite "per surface area of 1.5 square inches (9.7 square centimetres)". Oral proceedings were requested in the event that the appeal is unsuccessful, which the board understood, in the terminology often used at the EPO, to be a request on an auxiliary basis.

III. According to the appellant, no teaching can be found in document D8 that the bonding resin is just strong enough to avoid inadvertent splitting. As the document teaches adhesion strength is increased in a moist environment of hot water, both the ability to tear by hand and the value of 1 kg (2.2 pounds) are not disclosed. Moreover, document D8 explicitly teaches a jig which cuts a right and left ribbon optical fibre core in the vertical direction. Moreover, it cannot be determined if the products according to document D8 inherently exhibit the physical properties required in claims 1 and 13, as no details of the bonding resin are given, leading to prevention of reproduction of the teaching. The present application, on the other hand, provides sufficient detail for the skilled person to reproduce ribbons having the claimed combinations of properties. Likewise document D10 discloses no specific formulations. Moreover, the machine translation of document D10 discloses that when the unification material is covered around, the tensile strength thereof becomes large, thus teaching away from the invention. Therefore neither document D8 nor document D8 in combination with document D10 can defeat inventive step of the claimed optical fibre ribbon.

The subject matter of the independent claims can thus be considered to involve an inventive step.

IV. Oral proceedings were appointed for the date set by the summons. In a communication attached to the summons, the board gave its preliminary view as follows.

It seemed common ground between the examining division and the appellant that with respect to document D8, there is no novelty introduced into the independent claims by the Young's modulus or adhesion force features as such, the calculations as to correspondence between units not being disputed. The area of dispute is thus only the tear resistance recited in claims 1 and 13 of less than about 2.20 pounds (about 1 kilogram) force, and the last part of claim 1. i.e. "thereby allowing separation of the subunit ribbons by hand tearing of the encapsulating materials while maintaining adherence of the radiation cured encapsulating material to the subunit ribbons upon twisting of the optical fiber ribbon".

The examining division would seem correct in its interpretation of the recitation in lines 7 and 8 on page 4 of document D8 because the permissible range of Young's modulus starts at 5 $kg.mm^{-2}$, i.e. just at the point above which the ribbon may (inadvertently) split. On the question of moist heat or immersion in water, adhesion is, even in this case, only stated as disadvantageous below 1 $g.cm^{-1}$. This does not seem inconsistent with "greater than about 0.0044 pounds (about 0.002 kilogram) force" as claimed. Moreover, looking at the jig 20, it does rather seem that the jaws move in opposite vertical directions, not unlike hands or a twist, there not seeming to be a knife like member present. The examining division thus seems not incorrect in its view.

It is true that the present application gives specific examples of relatively high tear resistance and composition (examples 1 and 2 at the end of the

description), but even there it is not clear what the Young's modulus is. However, prior to this disclosure, the application is, like the prior art documents, very generally cast in relation to material composition.

With reference to the features relating to the tear resistance of less than about 2.20 pounds (about 1 kilogram) force in claims 1 and 13 and "thereby allowing separation of the subunit ribbons by hand tearing of the encapsulating materials while maintaining adherence of the radiation cured encapsulating material to the subunit ribbons upon twisting of the optical fiber ribbon", supposing, arguendo, they were not considered implicitly known but novel over the disclosure of document D8, then the general problem to be solved thereby would be to improve the fibre ribbon, specifically to allow better reliability in tearing. Paragraph 0009 of the translation provided by the appellant indicates that document D10 addresses reliability in tearing, finding specifically that less than 1g allows the tear to run too far and that greater than 33g is difficult to tear. This disclosure appears to solve the problem and thus render obvious the subject matter of the independent claims.

Document D10 involves different configurations, seeming to consider material covering around and only on the contact area. However, the figures plainly show a configuration like that of the application and document D8. The submissions of the appellant are thus not well founded enough to be credible. In the application, it seems the only specific disclosure of adhesion force is the sample films 1 and 2 of example 2.

At the end of the oral proceedings, it was intended, if possible, to decide the case, even should the appellant not attend. Attention was directed to Articles 13(3) and 15(3) RPBA.

V. The board received no substantive response to its communication.

VI. Independent claims 1 and 13 are worded as follows.

"1. An optical fiber ribbon, comprising at least two optical fiber subunit ribbons encapsulated within a radiation cured encapsulating material, the radiation cured encapsulating material having a Young's modulus of from about 3000 psi to about 15,000 psi (about 2.1 kg/mm2 to about 10.5 kg/mm2), a tear resistance of less than about 2.20 pounds (about 1 kilogram) force, and an adhesion force to an outer surface material of each subunit ribbon of greater than about 0.0044 pounds (about 0.002 kilogram) force, thereby allowing separation of the subunit ribbons by hand tearing of the encapsulating materials while maintaining adherence of the radiation cured encapsulating material to the subunit ribbons upon twisting of the optical fiber ribbon.

13. A radiation cured material having a tear resistance of less than about 2.20 (about 1 kilogram) force, an adhesion force to an outer surface material of each subunit ribbon of greater than about 0.0044 pounds (about 0.002 kilogram) force, and a Young's modulus of from about 3000 psi to about 15,000 psi."

VII. The oral proceedings took place in the absence of the appellant. At the end of the oral proceedings, the board gave its decision.

Reasons for the Decision

1. The appeal is admissible.

2. An optical fibre ribbon, comprising at least two optical fibre subunit ribbons encapsulated within a radiation cured encapsulating material is disclosed in document D8 as can be seen for example from Figure 1 taken with page 4, lines 18, 19, 22 and 47.

3. As set out in the board's communication, the calculations of the examining division in relation to Young's modulus, adhesion force and tear resistance have not been disputed on appeal.

4. Since the appellant offered no response to the communication of the board, the board has not been offered any reason to change the view expressed in that communication. Nor has the board itself identified any reason to change its position. In other words, as set out in the board's communication, the area of dispute is only the tear resistance recited in claims 1 and 13 of less than about 2.20 pounds (about 1 kilogram) force, and the last part of claim 1, i.e. "thereby allowing separation of the subunit ribbons by hand tearing of the encapsulating materials while maintaining adherence of the radiation cured encapsulating material to the subunit ribbons upon twisting of the optical fiber ribbon".

5. *Patentability*

5.1 Young's modulus

5.2 The range of 2.1 to 10.5 kg/mm^2 claimed is not novel because it overlaps with the range of 5 to 100 kg/mm^2 disclosed in claim 2 of document D8, reference also being made to Table 1, showing e.g. examples 4 and 8 with values of 10 kg/mm^2 and 3 kg/mm^2 respectively. The range claimed is therefore not sufficiently far removed from the prior document to be novel.

5.3 Adhesion force

The adhesion force of "greater than about 0.0044 pounds (about 0.002 kilogram) force" is not upwardly limited. The range is not therefore narrow because it is upwardly open nor is it sufficiently far removed from the value of 1 to 100 g/cm as recited for example in claim 1 of document D8. The feature relating to adhesion force is not therefore novel.

Since the range is upwardly open, the situation would not be changed by the amendment offered in relation to surface area, but not made, by the appellant, as the range is not made narrow thereby. Moreover, the examples at the end of the description referred to by the board in its communication concern 0.028 pounds force, i.e. 12.7 grams force. If this value of 12.7 is divided by 9.7 to give 1.3 grams, thus referring to cm^2, it is, in any case, in the known range of document D8.

5.4 Material composition

The chemical composition of the radiation cured material is not specified in either claim 1 or claim 13. In particular, the specific compositions referred to at the end of the description, themselves not specific in Young's modulus, are not included in the claims. Previous references to chemical composition in the description are, like those of the prior art documents, very generally cast. Accordingly, since the material mentioned in point 2 above meets the independent claims, these therefore have no novelty in this respect, and submissions in relation to patentability of specific materials disclosed in the application are not relevant.

5.5 Teaching of document D10

As set out in the board's communication, the drawings of document D10 show a configuration of material "covering around" and a configuration of material "only on" the contact area. These configurations can be seen in Figure 4 and Figure 1, respectively. The submissions of the appellant that document D10 teaches away from the unification material being "covered around" are thus not well founded enough to be credible.

5.6 Tear resistance

There is no explicit disclosure of tear resistance in document D8 and thus the subject matter referred to in point 4 above can be considered novel. The general problem to be solved thereby is to improve the fibre ribbon, specifically to allow better reliability in tearing.

As set out in the board's communication, paragraph 0009 of the translation provided by the appellant indicates that document D10 addresses reliability in tearing, finding specifically that less than 1 gram allows the tear to run too far and that more than 33 grams is difficult to tear. This range falls within that claimed and therefore solves the problem addressed. There is no bar to reference to document D10 in the context of the problem solution approach for the reasons set out in point 5.5 above. The board therefore reached the view that the tear resistance claimed is obvious.

Moreover, as set out in the board's communication the jaws of the jig 20 disclosed in document D8 move in opposite vertical directions, not unlike hands or a twist and not a knife like member. Therefore hand tearing is not excluded by the teaching of document D8 and the last feature of claim 1 is accordingly also obvious.

6. Since the subject matter of claims 1 and 13 novel over the disclosure of document D8 is rendered obvious in the light of the disclosure of document D10, the board reached the conclusion that these claims cannot be considered directed to subject matter involving an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

M. Kiehl A. G. Klein