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D E C I S I O N
of 31 January 2001

Case Number: T 0903/97 - 3.4.2

Application Number: 88108822.3

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Language of the proceedings: EN

Title of invention:
Coated optical fiber tape

Patentee:
SUMITOMO ELECTRIC INDUSTRIES LIMITED

Opponent:
ALCATEL CABLE

Headword:

-

Relevant legal provisions:
EPC Art. 56, 87(1), 88; 123(2)

Keyword:
"Validity of first priority right claimed - (no) not in
respect of same invention"
"Inventive step - main request (no)"
"Admissibility of amendments - first and second auxiliary
requests (no)"

Decisions cited:
G 0002/95, G 0001/98, T 0078/88, T 0596/96

Catchword:

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Case Number: T 0903/97 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 31 January 2001

Appellant: SUMITOMO ELECTRIC INDUSTRIES, LTD.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 11 June 1997
revoking European patent No. 0 293 886 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: S. V. Steinbrener
B. J. Schachenmann

Summary of Facts and Submissions

I. The appellant (proprietor of the patent) lodged an appeal against the decision of the Opposition Division revoking European patent No. 0 293 886.

II. An opposition against the patent as a whole had been filed by the respondent (opponent) and based on the ground of lack of inventive step (Article 100(a) EPC).

III. The opposition *inter alia* referred to the following documents (using the referencing of the opposition proceedings):

P1: JP-U-86458/87 (and English translation P1* thereof furnished by the appellant in examination proceedings)

B: JP-A-63-281109 (and English translation B* thereof furnished by the respondent in opposition proceedings)

C: EP-A-0 262 340

D: IOOC-ECOC '85: 5th International Conference on Integrated Optics and Optical Fibre Communication, 11th European Conference on Optical Communication, Venezia, 1 to 4 October 1985, pages 379 to 382,

which documents were again cited by the parties in the present appeal proceedings.

In addition, *inter alia* the following documents:

D1: "Lueger Lexikon der Technik", Band 1: Grundlagen

des Maschinenbaues, Deutsche Verlags-Anstalt
Stuttgart 1960, page 98

- D2: K. P. Menard: "Dynamic Mechanical Analysis",
(undated), page 22
- D3: Grand Larousse Universel, Tome 5, Larousse Paris
1983, keyword "Elasticité"
- D4: "Tables of Physical and Chemical Constants...",
John Wiley and Sons, New York 1986, pages 32 to 34

have been submitted by the parties for the first time
in the appeal proceedings.

- IV. In the impugned decision, the Opposition Division held
that the subject matter of the patent in suit was not
entitled to the first right of priority claimed, i.e.
3 June 1987 based on priority document P1. In view of
this finding, the issue of whether priority application
P1 or the previous application B was to be considered
to be the first application under Article 87(4) EPC for
the purposes of determining priority has not been
decided by the first instance.

Furthermore, the Opposition Division found that the
subject matter of both the patent as granted and the
then fourth auxiliary request which was considered
admissible by the Opposition Division, lacked an
inventive step with respect to the prior art
identified, in particular with respect to a combination
of documents C and D.

- V. With the statement of grounds of appeal, the appellant
filed a main request to maintain the patent as granted

and a (first) auxiliary request which in substance corresponded to the above-mentioned fourth auxiliary request submitted before the first instance.

VI. Oral proceedings were arranged by the summons dated 7 August 2000 in accordance with the respective auxiliary requests of the parties.

In a communication of 12 October 2000, the Board expressed its non-binding opinion that in view of intermediate document C the validity under Articles 87(1) and 88(3) EPC of the first priority right claimed in respect of the contested patent seemed to be of primary importance.

In this context, the Board had serious doubts as to whether the higher upper limit of the modulus of elasticity set out in the respective claims of the main and auxiliary request could be derived from priority document P1.

Moreover, in the Board's provisional view, said higher upper limit could not be considered to be a mere exclusion of protection for part of the subject matter covered by the first priority document, nor to be void of any technical contribution to the subject matter of the claimed invention. It rather appeared that the original disclosure of P1 had been extended by raising the upper limit. Therefore, the point of law referred by the President of the EPO to the Enlarged Board of Appeal with respect to the requirement of the "same invention" in Article 87(1) EPC (case pending under G 2/98; see OJ EPO 1998, 509) would not seem to be relevant to the present case.

Should, however, the validity under Articles 87(1) and 88(3) EPC of the first priority right be confirmed at the oral proceedings, then the further priority issue raised by the respondent, i.e. validity of the rights of priority under Article 87(4) EPC having regard to previous application B, would have to be addressed at the oral proceedings.

The assessment of inventive step depended on the findings with respect to the priority rights claimed. If the first right of priority were not found to be valid, document C would have to be regarded as closest prior art from which the subject matter of the main request only differed by the claimed specification of the modulus range. In consequence, it would have to be assessed whether or not such specification was obvious to a skilled person from the remaining prior art, in particular from document D.

In case the main request were not considered allowable, the respondent's objections against admissibility of the (first) auxiliary request under Article 123(2) EPC would have to be discussed at the oral proceedings. On a provisional basis, the Board considered the admissibility of the (first) auxiliary request to be questionable.

- VII. By a letter dated 9 November 2000, the appellant requested adjournment of the oral proceedings until after the Opinion of the Enlarged Board of Appeal in pending case G 2/98 had been given. As the oral proceedings were maintained by the Board on the date already fixed, the appellant filed claims according to a second auxiliary request with the letter dated 14 November 2000.

VIII. Oral proceedings took place on 14 December 2000. At the end of the oral proceedings, the Chairman declared the debate closed and announced that the decision of the Board would be given in writing.

IX. The appellant requested

- that the decision under appeal be set aside and that the patent be maintained (main request) or, as auxiliary requests,

- that the patent be maintained as amended on the basis of claim 1 filed with the statement of grounds of appeal on 21 October 1997 (first auxiliary request) or on the basis of claim 1 filed with the letter dated 14 November 2000 (second auxiliary request).

X. The respondent requested that the appeal be dismissed.

XI. The wording of the single claim according to the appellant's respective requests reads as follows:

Main request

"1. A coated optical fiber tape comprising a plurality of optical fibers each having a coating and being aligned parallel in the same plane, a common coating layer covering the array of said optical fibers, and a peelable cured coating layer being provided between each of the coatings on the optical fibers and said common coating layer to prevent the latter from being bonded or urged to said coatings on the optical fibers, characterised in that said peelable cured coating layer has a compression modulus of elasticity of at least

5 kg/mm² but not exceeding 300 kg/mm²."

First auxiliary request

"1. A coated optical fiber tape comprising a plurality of optical fibers, each having a coating and being aligned parallel in the same plane, a common coating layer covering the array of said optical fibers, and a peelable cured coating layer being provided between each of the coatings on the optical fibers and said common coating layer to prevent the latter from being bonded or urged to said coatings on the optical fibers, characterised in that the coating of each optical fiber includes an inner first layer and a second outer layer, that the second outer layer has a substantially higher compression modulus of elasticity than the first inner layer, and in that said peelable cured coating layer has a compression modulus of elasticity of at least 5 kg/mm² but not exceeding 300 kg/mm²."

Second auxiliary request

"1. A coated optical fiber tape comprising a plurality of optical fibers each having a coating and being aligned parallel in the same plane, a common coating layer covering the array of said optical fibers, and a peelable cured coating layer being provided between each of the coatings on the optical fibers and said common coating layer to prevent the latter from being bonded or urged to said coatings on the optical fibers, characterised in that said peelable cured coating layer has a compression modulus of elasticity of at least 5 kg/mm² but not exceeding 100 kg/mm²."

In the above wording of the second auxiliary request, a

clerical error ("100 kg mm²") has been corrected by the Board.

XII. The appellant's arguments in support of its requests can be summarised as follows:

In deciding on the validity of the first priority right claimed, the contents of the first priority document P1 has to be assessed without using further special knowledge. According to decision T 73/88 "Snackfood/Howard", a priority is validly claimed if the inclusion of an additional feature in a claim of a European patent does not change the character and nature of the invention as disclosed in the priority document, which is the case if the additional feature does not make any contribution to the solution of the problem underlying the invention.

In the present case, only the upper limit for the compression modulus of elasticity K has been increased, while the object of avoiding transmission loss remained unchanged. According to Figure 2 of P1, high losses are to be expected below 5 kg/mm², whereas above said lower limit a clear tendency of loss reduction with higher K values will be apparent to a skilled person from Figures 2 and 4 of P1. Since the highest K value of Figure 4 is only 10.3 kg/mm², a skilled person will readily understand that the upper limit of 100 kg/mm² in document P1 has no technical significance, but has been selected by the drafter of the priority application as some kind of arbitrary, sufficiently remote value which does not make any contribution to the claimed solution of the underlying technical problem and thus is not essential.

Any different technical effects associated with the upper limit of the claimed K range, as alleged by the respondent referring to sufficient flexibility of the fibre tape, cannot be derived from document P1.

No other conclusion can be reached on the basis of the paragraph bridging pages 11 and 12 of the English translation P1* since it clearly refers to Figures 2 and 4 of P1 which would be understood in the sense explained above. In particular, when studying these Figures, a skilled person would seriously contemplate the exclusion of the modulus range below the lower limit claimed and the extension of investigations into the range above the upper limit of P1.

Document B cannot be considered to be a previous first application for the same subject matter since it concerns a different fibre type and deals with a different problem.

Having regard to inventive step, document C has to be taken into account if the first priority right claimed were not considered valid for the subject matter of claim 1 in accordance with the main request. Document C discloses a coated optical fibre tape having a structure similar to that of the patent in suit, however without specifying any numerical values for the compression modulus of elasticity. In the prior art, the peelable layer should be as thin as possible (preferably < 10 μm) so as to avoid an unfavourable influence of the layer on the transmission characteristics of the tape.

A conventional dual coated fibre tape having a plurality of optical fibres surrounded by an inner

coating, an outer coating and a common coat of the fibre tape is known from document D. However, no peelable layer is provided in that prior art. The thickness of the outer coating appears to be 80 μm , i.e. about 10 times thicker than the peelable layer of document C. In view of the different dimensions it would not be obvious for a skilled person to apply the teaching of document D to a fibre tape described in document C. Furthermore, Figure 4 of D shows a strong influence of the diameter of the inner coating on the stress induced by lateral pressure on the fibre. Since a skilled person knows that the result of a finite element numerical analysis depends on the proportions of the system under consideration, he would not readily assume such result to be also valid for systems having different proportions, in particular entirely different coating thicknesses.

Moreover, a tensile modulus E of 50 kg/mm^2 as provided in document D for the outer coating is not directly comparable to the compression modulus K claimed in the patent in suit because the latter depends on the Poisson's ratio (see document D1) which in turn depends on the specific material and numerically is about 0.5. For a value of 0.49, the E value disclosed in D transforms into an upper limit of about 1000 kg/mm^2 for K which has no bearing on that claimed in the contested patent.

The meaning of "compression modulus of elasticity" is clear and cannot be called into question for the only reason to enhance the relevance of the prior art. Neither is this term synonymous with the tensile or Young's modulus nor can it be regarded as an obvious mistake since it is not directly derivable from the

patent in suit which parameter is the relevant one and whether or not investigations and theories of the prior art are identical to those of the contested patent.

According to the first auxiliary request, dual coated fibres are provided so that document C is no longer relevant but document D becomes the closest prior art which, however, does not disclose a peelable layer having the claimed properties. In view of the examples given in the contested patent, the general nature of the two-layer scheme should be admissible under Article 123(2) EPC.

If the upper limit is chosen to be 100 kg/mm² as is the case in the second auxiliary request, then the first priority right is validly claimed and document C has to be disregarded. Although not explicitly disclosed in the patent in suit, such a limitation should be admissible as a specific type of disclaimer serving the analogous effect of ascertaining a particular scope of protection of the application relative to a different source of disclosure, i.e. of making the scope of protection identical to that of the priority document in the present case in order to safeguard the validity of the priority right. It is admitted that peelable layers as such were known at the priority date, but not for fibre tapes requiring a specific design of the layer properties.

The additional documents D2 to D4 handed over by the respondent at the oral proceedings only confirm general textbook knowledge, hence are superfluous and should not be admitted.

XIII. The respondent advanced the following counterarguments:

At various places of first priority document P1, in particular at page 11, last paragraph of P1*, the importance of the modulus range claimed for the solution of the problem posed is underlined so that this feature must be considered to be an essential feature according to the priority application. Hence, decision T 73/88 cannot be applied to the present case since it deals with a limitation which is entirely unrelated to the claimed invention. The mere fact of filing a second priority application which contains two further examples based on additional experiments (and corresponds to the patent in suit), shows that - even in the eyes of the appellant - a second separate invention was made. The present case indeed corresponds to an analogous situation considered in decision T 260/85, where an essential element has been replaced by another essential element.

As can already be seen from the fact that modulus values below 0.04 kg/mm^2 , although providing low fibre stress, have not been taken into consideration in P1 because they are technically not useful, a skilled person will apply his common general knowledge in putting physical phenomena into practice. The graph in Figure 2 of P1 ends at an upper limit of about 10 kg/mm^2 and there is no indication of its course between 10 kg/mm^2 and 100 kg/mm^2 . In view of this lack of information and further requirements the fibre tape has to meet, a skilled person would not consider the upper limit to be void of any technical significance. Hence, the patent in suit does not relate to the same invention as the first priority document P1, and the first priority claimed is accordingly not valid.

In accordance with Hooke's law describing elastic

changes of length under external stress, the same modulus of elasticity E or Young's modulus applies for tensile or compressive deformations (see e.g. document D3). Only very recently in the appeal proceedings, the appellant advanced the allegation that the patent in suit does not claim the Young's modulus E in compression, but the so-called bulk modulus K which is associated with an isotropic compression in three dimensions. However, it has to be emphasised that the two parameters do not relate to the same physical effect and that in the present case dealing with transmission of one-dimensional lateral compressive stress only modulus E can play a role. Hence, the confusion of two totally unrelated parameters constitutes a fundamental mistake as can also be seen from the appellant's own documents B and D, both relating to Young's modulus E in the same context.

The subject matter of the main request differs from document C, which - as a result of the finding on priority - has to be taken into account, by the specification of a modulus range for the outer peelable layer with the goal to increase the resistance of the fibre against lateral pressure. Document D aims at the same object and imparts a solution which is very similar to that claimed (see Figure 6 of D in comparison with Figure 2 and the Table of the patent in suit). In accordance with the solution of D, a modulus of 50 kg/mm² is provided for the outer coating, in fact for any coating above the inner coating which directly contacts the optical fibre. A skilled person would therefore readily select such a numerical value for the modulus of elasticity and thus arrive at the claimed subject matter without exercising inventive skill.

Since the correct thickness of the outer coating calculated from the dimensions given in document D is only about 40 μm , this thickness is of the same order of magnitude as the thickness of the peelable layer known from document C (less than 20 μm).

The first auxiliary request offends against Article 123(2) EPC in that

- the two values given in the Table of the patent in suit for the moduli of the first and second layer, respectively, have been generalised in an inadmissible way, and
- the other parameter values listed in the Table, in particular those for the respective layer thicknesses (which the appellant considered very relevant in the prior art), have not been included in the claim.

The subject matter of the second auxiliary request is, indeed, more restricted, however, the upper limit of 300 kg/mm^2 is an essential element of the patent in suit and a limit of 100 kg/mm^2 is nowhere disclosed in said patent. Moreover, also with respect to this lower limit document B would remain a previous first application so that the first priority right claimed would not be valid and the above arguments concerning lack of inventive step of the main request still apply.

Reasons for the Decision

1. *Admissibility of appeal*

The appeal complies with the provisions mentioned in Rule 65 EPC and is therefore admissible.

2. *Validity of the first priority right claimed*

2.1 The patent in suit claims rights of priority on the basis of Japanese utility model applications JP 86458/87 U (= document P1) and JP 48541/88 U (document P2) filed on 3 June 1987 and 11 April 1988, respectively. Since document C also originating from the appellant contains relevant subject matter and was published on 6 April 1988, i.e. between the first and second priority dates and before the filing date of the patent in suit (1 June 1988), it depends on the validity of the first priority right claimed whether or not this document has to be taken into account as prior art pursuant to Article 54(2) EPC.

2.2 In this context, the main issue - as agreed upon by both parties - concerns the fact that in the patent in suit the modulus of elasticity of the peelable layer does not exceed 300 kg/mm² whereas in priority document P1 such upper limit is not explicitly disclosed. Rather, document P1 explicitly refers to an upper limit not exceeding 100 kg/mm² (see the English translation P1*, the claim; page 5, first paragraph; and page 11, last paragraph).

2.3 The question therefore arises whether or not there is an implicit disclosure in document P1 for said modification, whereby pursuant to Article 88(4) EPC the priority document as a whole has to be considered.

2.4 The appellant based his arguments in favour of such an implicit disclosure mainly on a skilled reader's

understanding of Figures 2 and 4 of P1. It is true that both Figures are consistent in that a modulus above 5 kg/mm² leads to a reduction of stress on the fibre (see Figure 2 of P1*) and a corresponding reduction of loss increment for a fixed load (see curves III and IV in Figure 4 of P1* as compared to curves I and II; see also the Table of P1* in this context). Furthermore, as can be seen from the Figures, there appears to be a general tendency of these effects becoming more pronounced with increasing modulus values.

However, both Figures only show a very limited portion of the modulus range claimed in P1 (up to slightly above 10 kg/mm² in Figure 2 and up to 10.3 kg/mm² in Figure 4). Although a skilled person may possibly tend to extrapolate the Figures to higher modulus values, he will certainly not expect that such extrapolation may be extended *ad infinitum*, at least from the standpoint of fibre handling requiring a finite stiffness for the tape (see e.g. page 380, paragraph 3.3 of document D in this context). In other words, the Board holds the view that the existence of an upper limit for the modulus of elasticity would be implicit to a skilled person even if such limit is not apparent from Figures 2 and 4 of P1.

The only value for such upper limit disclosed in P1 is 100 kg/mm² (see the passages of P1* cited above). Any experimental data or explanations for this particular value are not given so that a skilled person is left in the dark about its justification, in particular whether it does rely on solid experimental evidence or only on a best guess of the drafter of the priority application as the appellant asserts. However, there are also neither explicit nor implicit indications in P1 that

the upper limit may be extended beyond said value of 100 kg/mm² and in particular up to 300 kg/mm². On the contrary, document P1 explicitly summarises the effect of the limitation "at least 5 kg/mm² but not exceeding 100 kg/mm²" to consist in improving the lateral pressure resisting properties of the fibre tape, i.e. in solving the problem posed (see P1*, page 11, last paragraph to page 12, first paragraph). Hence, the teaching imparted by P1 to a skilled person consists in confining himself to work within the modulus range claimed in P1.

The possibility of extending the upper limit to higher values has only been verified on the basis of additional experiments in the second priority document P2 corresponding to the patent in suit (see Examples VI and VII added to the Table and curves VI and VII added to Figure 4). In consequence, even if a skilled person were assumed to consider going beyond the upper limit of P1 on the basis of some vague expectations, he would lack the information that the claimed invention works up to the new upper limit of 300 kg/mm², but not beyond said new upper limit.

The Board therefore comes to the conclusion that an upper limit of 300 kg/mm² has not been implicitly disclosed in the first priority document. Rather, the information that transmission loss can also be reduced with moduli above 100 kg/mm² up to 300 kg/mm² has been added to the subject matter of P1 after the first priority date. The fact that the appellant filed a separate priority application for the extended modulus range may be seen to be in line with this finding.

- 2.5 In order to still justify the validity of the first priority right claimed, the appellant referred to

decision T 73/88 "Snackfood/Howard" which under certain circumstances allows the addition of features absent from the disclosure of the priority document and thus is less stringent with respect to the requirement of Article 87(1) EPC, according to which the priority right depends on whether or not the European patent application is "in respect of the same invention" as the previous priority application.

The Board notes in this context that the opinion expressed in T 73/88 has not been shared by other decisions, but has eventually lead to the referral G 1/98 still pending before the Enlarged Board of Appeal.

However, even if the finding of T 73/88 (see in particular the Headnote) taking the most liberal position with respect to the requirement of identity of invention were adopted to the present case, then the Board is convinced that this would not lead to a more favourable result for the appellant because the modification of the modulus range disclosed in P1 is related to the function and effect of the claimed invention in that this function and effect is now achieved over a broader range, i.e. in the sense of T 73/88 the extension is related to the character and nature of the invention. This is also clear from the fact that the patent in suit does not define a more specific embodiment of a feature more generally disclosed in the priority document (which feature had been modified in T 73/88 for the mere purpose of limiting the scope of protection), but to a more general embodiment of a feature more specifically disclosed in the priority document, i.e. the added features clearly extends the scope of protection.

Therefore, in the Board's view, even on the basis of T 73/88 the requirements of Articles 87(1), 88(3) and 88(4) EPC would not be met, and the opinion of the Enlarged Board of Appeal in G 1/98 can accordingly not have any relevant bearing on the present case.

2.6 In consequence, it must be concluded that the subject-matter of the patent in suit has been extended beyond the content of the first priority document and thus is not in respect of the same invention. Therefore, the first priority right is not valid and document C being published before the second priority date has to be considered under Article 54(2) EPC.

2.7 In view of this finding, the Board agrees with the Opposition Division that the respondent's further objection raised against the validity of the first priority claim and based on the assertion that previous application B is the first application for the same subject matter, may be left aside.

3. *Main request*

3.1 Novelty

The novelty of the subject matter of the single claim as granted has not been contested in the present proceedings, nor has the Board any doubts in this respect.

3.2 Inventive step

3.2.1 There was agreement amongst the parties with the view of the Board that document C comes nearest to the subject matter of the claim and already discloses a

coated optical fibre tape according to the pre-characterising portion of the claim (see in particular column 4, line 27 to column 6, line 19 and Figure 2 of document C: plurality of optical fibres 10; coating 20; common coating layer 30; peelable cured coating layer 40).

The subject-matter of the claim differs from the optical fibre tape known from document C by the features of the characterising portion of the claim, i.e. in that the peelable cured coating layer has a compression modulus of elasticity of at least 5 kg/mm² but not exceeding 300 kg/mm², whereas said modulus is not specified in document C. The materials utilised for the peelable layer in the prior art and in the patent in suit are, however, similar (in particular UV curable silicone or fluorine resins, see column 4, lines 42 to 50 of document C and page 3, lines 48 to 51 of the patent in suit).

Apparently, the claimed specification of the modulus range has the effect of achieving good lateral pressure resisting characteristics of the fibre tape, thereby reducing transmission loss of the fibre (see page 2, lines 34 to 51 and Figures 2 and 4 of the patent in suit).

The problem of loss reduction is of basic nature in the technical field concerned.

- 3.2.2 Since no information about the selection of specific modulus values is given in document C, a skilled person would either have to make tests on his own or derive such values from the existing prior art in order to put the invention of document C into practice.

An analysis of fibre stress caused by lateral pressure with the aim of designing an optical fibre tape having improved lateral pressure resistance and, thus, reduced loss is known from document D also originating from the appellant (see D, the Abstract). The fibre tape investigated in D consists of several dual coated fibres in a common tape coating. The coating materials for fibres and tape are silicone resin, nylon and UV curable resins (see D, page 379, paragraph 1). The outer coating of the dual coated fibres is, however, not described to be peelable.

According to this analysis, which is based on the finite element method, the fibre stress begins to decrease with increasing the Young's modulus of the outer coating beyond 1.0 kg/mm² (see D, Figure 6 and page 380, paragraph 3.3). As can be seen from Figure 6 of D, said effect exists at least up to a modulus of more than 100 kg/mm². Although no upper limit is apparent from the Figure, taking account of the increase in microbending loss at low temperature due to thermal contraction, document D suggests a modulus of 50 kg/mm² as a practically large value for the Young's modulus of the outer coating, this value falling within the range claimed in the patent in suit.

Therefore, on a *prima facie* basis, a skilled person starting from an optical fibre tape including an outer peelable layer as suggested in document C and aiming at a reduction of fibre stress caused by lateral pressure must be assumed to readily try a modulus value of 50 kg/mm² as a first approximation for the elasticity of said layer and thus work within the modulus range set out in the claim as granted.

The fact that the outer coating of D is not disclosed to be peelable should, in the Board's view, not dissuade a skilled person from such an approach since the materials provided in documents C and D for said layer are similar, and peelability on one hand and the amount of elasticity desirable for stress reduction on the other hand seem to be independent properties of a fibre coating: in any case, for reduction of fibre stress a peelable layer would also have to meet the requirements established by document D.

3.2.3 The appellant based his counterargument mainly on two aspects, i.e.

- the meaning of the term "compression modulus of elasticity" employed both in the translated priority documents P1* and P2* and in the patent in suit, and
- the thicknesses of the outer coatings provided in documents C and D.

3.2.4 Having regard to the first argument, in the Board's view, the term "compression modulus of elasticity" employed throughout the patent in suit could theoretically be considered to mean

- (i) the longitudinal modulus of elasticity or Young's modulus E existing for uniaxial compressive (or tensile) stress (see document D3) or
- (ii) - as alleged by the appellant - the "compression modulus" K existing for volume deformations by isotropic compression and being related to the Young's modulus E by the equation

$$K = E/(3(1-2\mu)),$$

μ being the so-called Poisson's ratio (see document D1).

The Board, however, has no doubts that in the present context a skilled reader would unambiguously understand the term to have the meaning (i) for the following reasons:

Firstly, in the Anglo-Saxon literature, the term "compression modulus" is normally not used for describing the modulus K for isotropic compression, the usual term being "bulk modulus" (see e.g. the excerpts D2 (though undated) and D4, p.32 from textbooks in the English language).

Secondly, in the available prior art relating to the technical field concerned, only the Young's modulus E is considered. This is particularly true for the appellant's own previous application B which is closely related to the patent in suit (see B*, claims 1 and 2) and for document D, the stress calculations of which are also based on a finite element method as is the case for the patent in suit (see D, page 379, paragraph 2 and page 3, lines 15 to 23 of the patent in suit). As can be seen from Figures 6 of D and 2 of the contested patent, in substance identical results are achieved with both methods, whereby Figure 6 of D refers to Young's modulus and Figure 2 of the patent refers to the "compression modulus". Hence, it should be assumed that in both cases the same parameter is referred to.

Thirdly, the very nature of the physical problem would

lead a skilled person to the conclusion that the modulus to be considered is the longitudinal modulus of elasticity. This is due to the fact that the influence of lateral pressure on the optical fibres is to be investigated, i.e. the influence of uniaxial stress, as is also apparent from the experimental setup used in the contested patent for establishing the lateral pressure characteristics of the fabricated fibre tapes (see Figures 3a and 3b): the fibres are compressed between metal plates so that lateral pressure leading to longitudinal deformation is exerted, and no isotropic compression leading to volume deformation occurs.

Hence, the Board agrees with the respondent that an identification of the term "compression modulus" with the term "bulk modulus K" would be a manifest misinterpretation in the eyes of a skilled reader. Therefore, the parameter called "compression modulus" in the disputed patent must be considered to directly correspond to the parameter E determined in document D.

- 3.2.5 The second argument is based on a feature, i.e. the thickness of the peelable layer or outer coating, which is not included in the claim so that it would be assumed by a skilled reader either to be not essential or to fall within the competence of an average practitioner.

Moreover, from Figure 4 of D, it can be seen that with a fixed outer coating diameter of 300 μm , there is a broad minimum of the calculated stress dependence on the diameter of the inner coating centred at about 220 μm (a similar diameter of the inner coating is provided in document C, see column 5, lines 43 to 47), which

leads to a thickness of the outer coating of about 40 μm in this case $((300 \mu\text{m} - 220 \mu\text{m})/2$; see document D, paragraph 3.1). This value is of the same order of magnitude as the value provided for the peelable layer in document C ("generally less than 20 μm "; see column 4, line 51 to column 5, line 5) and would be reduced by a skilled person following the advice given in document C without coming into conflict with the teaching of document D which does not attribute any importance to the thickness of the outer coating.

- 3.2.6 The Board, therefore, comes to the conclusion that the subject matter of the claim according to the main request lacks the inventive step required by Article 56 EPC, and that said claim is accordingly not allowable.

4. *First auxiliary request*

4.1 Admissibility of amendments

- 4.1.1 In the first auxiliary request, the coating of each optical fibre has been specified to include an inner first layer and a second outer layer, the second outer layer having a substantially higher compression modulus of elasticity than the first inner layer.

- 4.1.2 This feature is nowhere explicitly disclosed in the patent in suit, but has been considered by the appellant (and the Opposition Division in its impugned decision) to be an admissible generalisation implicit from the Table in the contested patent.

However, although there are seven examples listed in the Table, only one numerical value is disclosed for each coating, i.e. 0.14 kg/mm² for the modulus of the

first inner layer and 55 kg/mm² for the second outer layer. Moreover, these layers have specific thicknesses which - at least in accord with the appellant's argumentation concerning the main request - would also have to be taken into account.

In any case, even if the Board could accept the relative definition ("substantially higher") of the moduli of the different layers as admissible on the basis of the original disclosure, the generalised version of the claim does not include any fixed point of reference for this relationship so that - irrespective of the modulus value of the inner layer - any two layers are covered by the claim, provided that the modulus of the outer layer is "substantially higher" than that of the inner layer. In the Board's view, this general teaching is not imparted by the rather limited disclosure of the patent in suit.

4.1.3 In consequence, the claim of the first auxiliary request is not admissible (Article 123(2) EPC).

5. *Second auxiliary request*

5.1 Admissibility of amendments

5.1.1 In the claim of the second auxiliary request, the upper limit 300 kg/mm² of the modulus range set out in the claim of the main request has been replaced by 100 kg/mm².

5.1.2 As admitted by the appellant, the new value can neither be derived from the patent in suit, nor from the corresponding European application documents. It only appears in the first priority document P1 which,

however, cannot be taken into account as a source of disclosure without infringing Article 123(2) EPC according to the jurisprudence of the Enlarged Board of Appeal (see in particular decision G 2/95, OJ EPO 1996, 555; point 2 of the reasons). Documents other than the description, claims and drawings of a European patent application, as e.g. priority documents, may only be used as evidence for the common general knowledge on the date of filing, i.e. for interpreting the contents of said application which is not the case in the present context.

- 5.1.3 The appellant advanced the argument that the limitation should be considered as some kind of disclaimer with respect to the priority document P1 so as to establish the validity of the first priority right claimed in analogy to a limitation with respect to an item of prior art for establishing novelty.

However, apart from the fact that the reduced modulus range of the second auxiliary request is not worded in the form of a disclaimer, in accordance with established case law of the boards of appeal (see e.g. decision T 596/96, not published in OJ; points 2.1 and 2.2 of the reasons) such disclaimers are not admissible pursuant to Article 123(2) EPC if they are neither supported by the application documents as filed nor justified by an accidental anticipation in the prior art. Finally, if the specific form of disclaimer were allowed in the present case, this would lead to an amendment of the patent in suit, the disclosure of which is solely based on the first priority document P1 and thus does not comply with the above-mentioned findings of the Enlarged Board.

5.1.4 Therefore, the claim of the second auxiliary request also offends against Article 123(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

P. Martorana

E. Turrini