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D E C I S I O N
of 28 October 2004

Case Number: T 0208/01 - 3.3.3

Application Number: 90304243.0

Publication Number: 0407004

IPC: C08F 299/06

Language of the proceedings: EN

Title of invention:

Radiation-curable matrix material, optical fiber ribbons containing same; and process for preparing said optical fiber ribbons

Patentee:

Borden Chemical, Inc.

Opponent:

ALCATEL ALSTHOM CIE. GEN. D'ELECTRICITE
Koninklijke DSM N.V.

Headword:

-

Relevant legal provisions:

EPC Art. 54(2), 56, 84, 114(2), 123(2), 123(3)

Keyword:

"Disclosure of prior art under Article 54(2) EPC - accidental (no)"

"Disclaimer - allowable (no)"

Decisions cited:

G 0010/91, G 0001/92, G 0001/03, T 0117/86, T 0472/92,
T 1002/92

Catchword:

-



Case Number: T 0208/01 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 28 October 2004

Appellant I: Borden Chemical, Inc.
(Proprietor of the patent) 180 East Broad Street
Columbus
Ohio 43215 (US)

Representative: Wilkinson, Stephen John
Stevens, Hewlett & Perkins
1 St. Augustine's Place
Bristol BS1 4UD (GB)

Appellant II: Koninklijke DSM N.V.
(Opponent 02) P.O. Box 9
NL-6160 MA Geleen (NL)

Representative: -

Respondent: ALCATEL ALSTHOM CIE. GEN. D'ELECTRICITE
(Opponent 01) 54 rue la Boétie
F-75382 Paris Cedex 08 (FR)

Representative: -

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office dated
23 November 2000 and posted 5 December 2000
concerning maintenance of European patent
No. 0407004 in amended form.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
R. Moufang

Summary of Facts and Submissions

I. The grant of the European patent No. 0 407 004 in the name of Borden, Inc. (later Borden Chemical, Inc. (a New Jersey corporation)) in respect of European patent application No. 90 304 243.0 filed on 20 April 1990 and claiming priority of the US patent application No. 371833 filed on 27 June 1989 was announced on 14 August 1996 (Bulletin 1996/33) on the basis of 34 claims.

Independent Claims 1, 14, 26 and 33 read as follows:

"1. A liquid radiation-curable release matrix material for coating an inked substrate and/or embedding and securing therein a plurality of coated and inked optical fibers in a desired configuration, comprising:

(a) from 35 percent to 98 percent by weight of an aliphatic polyether-based urethane acrylate;

(b) from 0.5 percent to 35 percent by weight of a monomer having a plurality of acrylate or methacrylate moieties per monomer molecule and selected from trimethylolpropane triacrylate; trimethylolpropane trimethacrylate; pentaerythritol triacrylate; pentaerythritol trimethacrylate; pentaerythritol tetracrylate; pentaerythritol tetramethacrylate; trimethylolpropane propoxylate triacrylate; trimethylolpropane propoxylate trimethacrylate; trimethylolpropane ethoxylate triacrylate; trimethylolpropane ethoxylate trimethacrylate; glycerol propoxytriacrylate; glycerol

propoxytrimethacrylate; dipentaerythritol monohydroxy pentaacrylate; dipentaerythritol monohydroxy pentamethacrylate; C₆-C₁₂ hydrocarbon diol diacrylates; C₆-C₁₂ hydrocarbon diol dimethacrylates; and mixtures thereof;

(c) from 0.5 percent to 20 percent by weight of a component selected from an acrylate or methacrylate monomer having an alkyl moiety comprising from 7 to 18 carbon atoms, C₁₄ to C₁₅ hydrocarbon diol diacrylates; C₁₄ to C₁₅ hydrocarbon diol dimethacrylates; caprolactone acrylate; caprolactone methacrylate, and mixtures thereof;

and

(d) from 0 percent to 10 percent by weight of a photoinitiator,

all of said percentages by weight being based on the total weight of (a), (b), (c) and (d).

14. An optical fiber ribbon assembly comprising:
- a plurality of optical fibers disposed in an arrangement in which the fibers are held in a fixed relationship; and the radiation curable matrix material of any one of claims 1 to 13 bonding said fibers in said arrangement, said matrix material having sufficient adhesion to said fibers to remain adhered thereto during use but being easily strippable therefrom.
26. A process for preparing an optical fiber ribbon comprising:
- mechanically arranging optical fibers in a generally parallel arrangement;

applying about said fibers the matrix material of claims 1 to 13; and curing said matrix material, thereby securing said fibers in said arrangement.

33. A process for adjusting the adhesive bond of a cured, radiation-curable matrix material, to coated and inked glass optical fibers to which said cured matrix material is bonded, wherein said optical fibers are coated with a coating comprising a cured acrylate-containing or a cured methacrylate-containing coating composition, said coated fibers are colored by the application over their respective coatings of inks of different respective colors, for individual fiber identification, and said matrix material comprises a radiation-curable matrix material of claims 1 to 13, said process comprising incorporating in said uncured matrix material a component which comprises a polyester based aliphatic urethane acrylate oligomer."

Dependent Claim 2 read as follows:

"A radiation curable matrix material according to claim 1, wherein said polyether-based urethane acrylate is silicone-modified."

Claims 3 to 13, 15 to 25, 27 to 32, and 34 were dependent claims.

II. Two notices of Opposition were filed against the patent, as follows:

- (i) by Alcatel Alsthom Compagnie Générale d'Electricité (Opponent I), on 14 May 1997, on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC), and
- (ii) by DSM N.V (later Koninklijke DSM N.V) (Opponent II), on 14 May 1997, on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC), and of Article 100(b) EPC. The objection under Article 100(b) EPC was, however, withdrawn at the oral proceedings of 23 November 2000.

The objections were supported *inter alia* by the following documents:

- D1: JP-A-1-153 710 (English translation);
- D2: EP-A-0 114 982;
- D3: EP-A-0 157 396;
- D4: JP-A-63-281 109 (English translation);
- D5: EP-A-0 194 891;
- D6: JP-A-63-275 619 (English translation);
- D9a: Technical Data Sheet of Cablelite 950-700, dated September 1988;
- D9b: Technical Data Sheet of Desolite 3036-114E; dated September 1983;
- D10: Technical Data Sheet of Cablelite 950-701, dated September 1988; and
- D12: EP-A-0 270 854.

III. By a decision announced orally on 23 November 2000, and issued in writing on 5 December 2000, the Opposition Division held that the grounds of opposition did not prejudice the maintenance of the patent in amended form. The decision was based on the following requests of the Patent Proprietor:

- (i) A main request consisting of the set of Claims 1 to 34 as granted,
- (ii) A first auxiliary request consisting of a set of Claims 1 to 34, filed during the oral proceedings of 23 November 2000; and
- (iii) A second auxiliary request consisting of a set of Claims 1 to 32, also filed at the oral proceedings of 23 November 2000.

The first auxiliary request differed in substance from the main request in that the proviso that "when component (b) is a C₆-C₁₂ hydrocarbon diol diacrylate or methacrylate component (c) is not 7-18C alkyl acrylate or methacrylate" had been incorporated in independent Claim 1 and that Claim 2 had been drafted as an independent claim incorporating the features of granted Claim 1 and of granted Claim 2.

The second auxiliary request differed from the main request in that in Claim 1 the component (a) had been restricted to "an aliphatic polyether-based silicone-modified urethane acrylate", i.e. the features of granted Claim 2 had been incorporated in Claim 1 and the remaining claims had been renumbered and re-appended accordingly.

The decision stated that comparative Example 3 of document D6 described a material as defined in Claim 1 of the patent in suit, and that the intended use of the material of Claim 1 could not establish the novelty of said material.

Concerning the first auxiliary request, the decision held that Claim 1 thereof did not meet the requirements of Article 123(2) EPC since the proviso had no basis in the application as filed or in document D6.

The decision stated that the subject-matter of Claim 1 of the second auxiliary request was novel, since none of the documents cited by the parties described a composition comprising an aliphatic polyether-based silicone-modified urethane acrylate in combination with compounds (b) and (c) as defined in Claim 1.

Concerning inventive step, document D1, which dealt with matrix material for optical fibers, was considered as the closest state of the art. Starting from D1, the technical problem was seen as the provision of a radiation curable matrix material for inked optical fibers, said matrix material being resistant to breakout failure, i.e. to the removal of the ink from coated, coloured fibre when the matrix was stripped. The matrix material should be moisture and solvent resistant and non yellowing and should exhibit thermal, oxidative and hydrolytic stability, ease of stripping, fast cure and resistance to failure during cabling.

The decision stated that D1 did not mention the problem of breakout failure. It also held that, even if the

composition of the products Cabelite 950-700 and Cabelite 950-701 would have been known before the priority date of the patent in suit and even if it would have been known that these components might solve a partial problem of the patent in suit, this would not suggest to combine such component with components (b) and (c) as defined in Claim 1 to solve the technical problem.

The decision further stated that the other documents cited did not deal with matrix compositions.

Thus, the Opposition Division came to the conclusion that the subject-matter of the second auxiliary request involved an inventive step.

IV. Notices of Appeal were filed on the 15 February 2001 by both the Appellant I (Patent Proprietor) and the Appellant II (Opponent II). The prescribed fees were paid on the same day.

V. With the Statement of Grounds of Appeal filed on 12 April 2001, Appellant I maintained its main request and its first auxiliary request. It submitted a set of 78 claims representing a second auxiliary request, and made the second auxiliary request presented at the oral proceedings before the Opposition Division its third auxiliary request.

Of the independent Claims 1, 10, 19, 28, 29, 41, 60 and 77 of the second auxiliary request, Claims 1, 10, 19, 28, and 29 were all directed to a liquid radiation-curable release matrix material for coating an inked substrate and/or embedding and securing therein a

plurality of coated and inked optical fibres in a desired configuration. Furthermore Claim 29 corresponded to Claim 1 of the third auxiliary request, Claim 41 was directed to an optical fibre ribbon assembly, Claim 60 to a process for preparing an optical fibre ribbon, and Claim 77 to a process for adjusting the adhesive bond of a cured, radiation-curable matrix material, to coated and inked glass optical fibres to which said cured matrix material is bonded.

Claims 2 to 9, 11 to 18, 20 to 27, 30 to 40, 42 to 59, 61 to 76, and 78 were dependent claims.

- VI. The Parties were informed of the provisional view of the Board by its communication dated 6 June 2003.
- VII. With its interlocutory decision dated 2 October 2003, the Board refused the main request on the grounds of lack of novelty of the subject-matter of Claim 1 thereof in view of Comparative Example 3 of D6. It also came to the conclusion that the question of the allowability of the disclaimer incorporated in Claim 1 of the first auxiliary request could not be decided until the decision of the Enlarged Board of Appeal in the case G 1/03 was known.
- VIII. The Parties were summoned on 12 May 2004 to oral proceedings scheduled to take place on 28 October 2004.
- IX. The arguments which had been presented by Appellant I in its written submissions dated 12 April 2001 and 5 November 2001 in respect of its auxiliary requests could be summarized as follows:

(i) Concerning the first auxiliary request:

(i.1) The overlap between comparative Example 3 of D6 and the invention claimed in granted claim 1 was accidental since there was no indication that the composition of comparative Example 3 of D6 had any properties which would have made it useful as a matrix material having strippability.

(i.2) Thus, the amendment made in Claim 1 was admissible.

(ii) Concerning the second auxiliary request:

The claims thereof related to an invention which was neither anticipated nor rendered obvious by the prior art documents in the opposition proceedings.

(iii) The third auxiliary request corresponded to the request found allowable by the Opposition Division.

(iv) Concerning all the auxiliary requests:

(iv.1) D1 did not address the problem of break out failure. It dealt with a different problem, i.e. how to reduce the friction coefficient between fiber bundles.

(iv.2) D12 did not refer to aliphatic polyether based silicone urethane coating as defined in the patent in suit.

(iv.3) On the basis of the information contained in the Cabelite and Desolite products data sheets (cf. D9a and

D9b), the skilled person would not be led to consider that the Cabelite material might be useful in the compositions of D1.

X. The arguments which have been presented in its written submission dated 2 November 2001 by Appellant II in respect of the auxiliary requests submitted by Appellant I could be summarized as follows:

(i) Concerning the first auxiliary request:

(i.1) The amendment in Claim 1 was not based on D6 or on the application as filed.

(i.2) Document D6 belonged to the same field as the contested patent.

(i.3) Thus, Claim 1 contravened Article 123(2) EPC.

(ii) Concerning the second auxiliary request:

(ii.1) The claims were drafted as independent claims but related to the same subject-matter. The claims lacked conciseness contrary to Article 84 EPC.

(ii.2) Claim 29 at least lacked inventive step for the following reasons:

(ii.2.1) Document D1 clearly suggested using silicone modified polyether polyol in the manufacture of an aliphatic silicone modified polyether urethane acrylate.

(ii.2.2) The only objective problem to be solved vis-à-vis D1 was the improvement of break out properties.

(ii.2.3) It was however known from document D12 that matrix materials could be made from a UV-curable silicon acrylate and that silicon acrylate improved the break out properties.

(ii.2.4) It was further known that the commercial product Cabelite 950-700, which was based on an aliphatic polyether silicone urethane acrylate, exhibited good breakout properties.

(ii.2.5) Thus, the skilled person would have chosen within the teaching of D1, a silicone modified polyether urethane acrylate based on an aliphatic isocyanate to solve the technical problem.

(ii.2.6) The same reasoning would apply to D6, since this document also mentioned the use of polyether siloxane in the manufacture of the urethane oligomer.

(ii.3) The subject-matter of Claims 1 to 9, and 19 to 28 was obvious in the light of a combination of D1 and D6.

(iii) Concerning the third auxiliary request of Appellant I (which corresponded to the request allowed by the Opposition Division):

This request lacked inventive step for the same reasons as given for Claim 29 of the second auxiliary request.

XI. Oral proceedings were held on 29 October 2004 in the absence of Opponent I (Respondent).

At the beginning of the oral proceedings the Appellant I submitted a new request referred to as Auxiliary Request Ia consisting of a set of 34 claims.

Independent Claim 1 thereof corresponded to Claim 1 as granted, except for the mention of the following proviso at the end of the claim: "with the proviso that when component (b) is tricyclodecane dimethanol diacrylate, component (c) is not isobornyl acrylate."

Claims 2 to 34 corresponded to Claims 2 to 34 of the first auxiliary request submitted at the oral proceedings of 23 November 2000.

The arguments presented by the Parties at the oral proceedings concerning the allowability under Article 123(2) EPC of the disclaimer (proviso) incorporated in Claim 1 the auxiliary request Ia can be summarized as follows:

(i) By Appellant I:

(i.1) The disclaimer was used to restore novelty by delimiting Claim 1 against Comparative Example 3 of D6.

(i.2) Document D6 was concerned with matrix materials but it did not relate to the problem of improving their strippability and break out properties, which was the aim of the patent in suit.

(i.3) Furthermore, the anticipation was a comparative example.

(i.4) Thus, the skilled person would not have considered it when working on the invention. This comparative example was of no relevance for inventive step.

(i.6) Thus, Comparative Example 3 represented an accidental anticipation.

(i.7) The disclaimer excluded specific components (b) and (c) disclosed in comparative Example 3 of D6. It was hence clear what was protected and what was not protected.

(i.8) Even if the disclaimer would appear to be broader than Comparative Example 3, it represented a good balance between clarity and distance from the prior art and did not amount to an arbitrary reshaping of the claim.

(i.9) Consequently the disclaimer met the requirements set in the decision G 01/03 (OJ EPO 2004, 413) for an allowable disclaimer against an anticipation under Article 54(2)EPC.

(ii) By Appellant II:

(ii.1) The disclaimer was too broad since it contained no reference to the components of Comparative Example 3 corresponding to components (a) and (d) according to the patent in suit.

(ii.2) Document D6 belonged to the same technical field as the patent in suit and the composition of Comparative Example 3 was used as matrix material.

(ii.3) Even if it was true that D6 did not deal with the problem of strippability and break out, the materials disclosed in D6 like the material according to the patent in suit would have necessarily to fulfil other well known requirements in order to be used as matrix materials.

(ii.4) As indicated under point 2.2.2 of the Reasons of the decision G 1/03, the lack of a common problem was not decisive when assessing as to whether an anticipation should be regarded as accidental, since the more advanced a technology was, the more the problem might be formulated specifically for an invention in the field.

(ii.5) Thus, Comparative Example 3 of D6 could not represent an accidental anticipation.

After the announcement by the Board that the disclaimer incorporated in Claim 1 of auxiliary request Ia could not be considered as fulfilling the requirements of Article 123(2) EPC, Appellant I withdrew its auxiliary request I and made the third auxiliary request submitted with the Statement of the Grounds of Appeal and corresponding to the request considered as allowable by the Opposition Division its second auxiliary request. Consequently, the second auxiliary request filed with the Statement of Grounds of appeal became then its third auxiliary request.

Following preliminary observations under Article 123(2) EPC from the Board concerning the second auxiliary request, Appellant I submitted an amended version thereof, which differs from the request considered as allowable by the Opposition Division, in that Claims 31 to 32 thereof have been deleted.

The novelty of the subject-matter of the second auxiliary request was not challenged by Appellant II and the discussion was focussed on the question of the assessment of inventive step. The arguments submitted by the Parties in that respect can be summarized as follows:

(a) By Appellant II:

(a.1) Document D1 represented the closest prior art. D1 related to matrix materials made of polyether urethane acrylate. Starting from D1, the technical problem to be solved by the patent in suit was to provide matrix materials having good stripping and break out properties.

(a.2) Document D12 clearly taught that silicone acrylate improved the strippability of the matrix material.

(a.3) Document D12 further dealt with matrix material embedding ink-coloured coated optical fibers.

(a.4) The aim of document D12 was clearly to allow the identification of the individual optical fibers when the matrix material was stripped. Thus, D12 also dealt with the problem of break out.

(a.5) Since D1 further disclosed the use of silicone modified polyether polyol and of aliphatic polyisocyanate as components for the polyether urethane acrylate matrix material, the subject-matter of the patent in suit was obvious in view of the combination of D1 with D12.

(a.6) According to a second approach, starting from D1, the technical problem underlying the patent in suit could be split out in two different unrelated problems i.e. (i) improving the release properties of the matrix material, and (ii) improving the stability of the matrix material.

(a.7) The solution of the first partial problem was obvious in view of D12, and the skilled person would have used silicon modified urethane acrylate.

(a.8) It belonged to the technical general knowledge that aliphatic urethane acrylate had a better stability than aromatic urethane acrylate. This was illustrated by the document: Norman Allen "Photopolymerisation and Photoimaging Science and Technology", Elsevier Science Publishers Ltd (1989), pages 250-255 (referred below as D13), submitted during the oral proceedings.

(a.9) Thus, it would have been further obvious to use an aliphatic polyisocyanate in the compositions of D1.

(b) By Appellant I:

(b.1) Document D12 did not refer to the use of ink for distinguishing the individual optical fibers.

(b.2) Document D12 merely related to the use of silicone acrylates. It did not refer to urethane silicone acrylate, let alone to polyether silicone urethane acrylate, and even less to aliphatic polyether silicone urethane acrylate.

(b.3) Thus, even if one would combine D1 with D12, several selections would be required to come to the invention according to the patent in suit.

(b.4) Document D13 was late filed and should not be admitted into the proceedings.

(b.5) Furthermore it was not possible to consider, as done by Appellant II, that the problem of strippability and break out and the problem of stability were unrelated.

XII. The Appellant I requested that the decision under appeal be set aside, and the patent be maintained on the basis of the auxiliary request Ia consisting of claims 1 to 34 or in the alternative on the basis of the second auxiliary request consisting of claims 1 to 30, each as submitted at the oral proceedings, or in the alternative on the basis of the third auxiliary request consisting of claims 1 to 78, filed with the statement of the grounds of appeal on 12 April 2001.

The Appellant II requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent made no request.

Reasons for the Decision

1. The appeals are admissible.

Auxiliary request Ia

2. *Wording of the claims*

- 2.1 It is noted by the Board that an objection under Article 100(c) EPC has neither been raised against the granted patent by the Opponents, nor dealt with in the appealed decision.

- 2.2 This has as a consequence that the assessment of the allowability of Claim 1 under Article 123(2) EPC must be limited to that of the amendments made during the opposition and/or opposition appeal proceedings (G 10/91, OJ EPO 1993, 420).

- 2.3 Claim 1 differs from Claim 1 as granted in that the proviso that when component (b) is tricyclodecane dimethanol diacrylate, component (c) is not isobornyl acrylate, has been incorporated in Claim 1.

- 2.4 In that respect, it is firstly clear, in view of the arguments presented by the Appellant I, that this proviso is intended to exclude overlapping disclosure in document D6 (i.e. Comparative Example 3 thereof), which belongs to the state of the art according to Article 54(2) EPC. Consequently, this proviso amounts to a negative feature excluding specifically defined

embodiments from the scope of Claim 1, i.e. to a disclaimer.

2.5 It is further clear that this disclaimer has no support in the application as originally filed.

2.6 Thus, the question of the allowability of Claim 1 under Article 123(2) EPC boils down to the question as to whether the disclaimer introduced therein meets the requirements for an allowable disclaimer set in the decision G 1/03.

2.7 In particular, it must be decided whether this disclaimer restores novelty by delimiting the claim against an accidental anticipation under Article 54(2) EPC, taking into account, as stated in G 1/03, that an anticipation is accidental if it is so unrelated to and remote from the claimed invention that the person skilled in the art would never have taken it into consideration when making the invention.

2.7.1 Comparative Example 3 of D6 discloses a liquid radiation curable composition comprising:

45 g of Polymer A-2 (an aliphatic polyether based urethane acrylate), i.e. a compound falling under the definition of the component (a) according to Claim 1 of the main request,

25 g of tricyclodecane dimethanol diacrylate, i.e. a compound falling under the definition of component (b) according to Claim 1 of the main request;

12 g of isobornyl acrylate, i.e. a compound falling under the definition of component (c) according to Claim 1 of the main request, and

3 g of 1-hydroxycyclohexyl phenyl ketone, i.e. a compound falling under the definition of component (d) according to Claim 1 of the main request.

2.7.2 It must therefore be concluded that Comparative Example 3 of D6 discloses a liquid radiation curable composition comprising:

52,94 wt% of component (a),
29,41 wt% of component (b),
14,12 wt% of component (c) and
3,53 wt% of component (d) the percentages being based on the sums of (a), (b), (c) and (d); and
that this composition falls under the scope of the composition defined in granted Claim 1.

2.7.3 Since the disclaimer incorporated in Claim 1 of the auxiliary request Ia excludes the combination of component (b) being tricyclodecane dimethanol diacrylate with component (c) being isobornyl acrylate, there can be no doubt that the disclaimer indeed restores the novelty of the claimed subject-matter over the Comparative Example 3 of D6.

2.7.4 It remains thus to be decided whether Comparative Example 3 of D6 represents an accidental anticipation in the sense of the decision G 1/03.

2.7.5 In that respect, the Board firstly notes that document D6 refers to the technical field of matrix for optical

fibers (cf. D6, page 1, line 17 to page 2, line 19), and it cannot be denied that the compositions disclosed in Comparative Example 3 of D6, although not fulfilling the high quality standard set out in D6 in terms of temperature dependency of the Young's modulus (cf. page 3, lines 1 to 4) could nevertheless be used for matrix compositions with less stringent requirements in that respect.

2.7.6 Furthermore, it cannot be denied that the aim of the Comparative Examples of D6 is indeed precisely to bring to light the improvements achieved in matrix materials for optical fibers by the compositions prepared according to D6 in comparison with those of the prior art at the time of D6.

2.7.7 Thus, the composition of Comparative Example 3 of D6 turns out to be known for the same use as in the patent in suit, i.e. for making matrix materials for optical fibers, so that the mere fact that this Example is labelled as comparative cannot alter the fact that it belongs, like the "inventive" part of document D6, to the same technical field as the patent in suit.

2.7.8 This implies that the matrix material according to the patent in suit and that according to Comparative Example 3 of D6 have to fulfil many requirements in order to have balanced properties which make them useful as a matrix material for optical fibers, and that, when focussing on improving specific properties (i.e. break out) of such matrix material, the person skilled in the art cannot ignore the other well-known requirements, and, hence, prior art matrix compositions fulfilling these requirements.

2.7.9 This has for a consequence, that the fact that D6 is totally silent on the specific problem of break out, cannot render the anticipating disclosure (i.e. Comparative Example 3) belonging to the same technical field as the claimed invention so remote or unrelated that the person skilled in the art would **never** have taken it into consideration when working on the invention.

2.7.10 It thus follows from the above that Comparative Example 3 of D6 does not represent an accidental anticipation in the sense of the decision G 1/03, and that therefore the disclaimer incorporated in Claim 1 is not allowable under Article 123(2) EPC.

2.8 Since Claim 1 of the auxiliary request Ia does not meet the requirements of Article 123(2) EPC, this request as a whole must be refused.

Auxiliary request II

3. Admissibility of document D13 into the proceedings

3.1 As stated in decision T 117/86 (OJ EPO 1989, 401) facts and evidence in support of an opposition which are presented after the nine-month period has expired are out of time and late, and may or may not be admitted into the proceedings as a matter of discretion under Article 114(2) EPC.

3.2 Since the grant of the European Patent EP 0 407 004 was announced on the 14 August 1996, and, since as indicated above in paragraph XI (a.8), document D13 was

submitted by the Appellant at the oral proceedings of 28 October 2004, it thus follows that document D13 must be regarded as late-filed.

- 3.3 According to the decision T 1002/92 (OJ EPO 1995, 605, point 3.4 of the reasons) late filed evidence should only be admitted at the appeal stage, if it can be considered at first sight to be highly likely to prejudice the maintenance of the patent.
- 3.4 While document D13 has been presented by Appellant II as illustrating aspects of general knowledge before the priority date of the patent in suit, the question of what belonged to the general knowledge of the skilled person at a specific date is a fact like any other. And like any other, it may fall inside or outside the factual framework of the proceedings up to the point that the document is sought to be introduced and may be relevant or not to the questions in issue. It is thus also a matter for the exercise of the Board's discretion as to whether such late-filed material should be admitted to the proceedings, in particular in relation to the criteria set in decision T 1002/92.
- 3.5 In this context, the Board observes that the late filed document D13 which refers to the thermal stability of radiation-cured coatings, and which states that aliphatic urethane acrylates crosslinked with trimethylol propane triacrylate exhibit a better stability than aromatic urethane acrylate crosslinked by the same multifunctional monomer, does not deal with aliphatic **polyether** urethane acrylates let alone with silicone modified aliphatic polyether urethane acrylates which are an essential element of the

subject-matter of the second auxiliary request. Thus, the Board comes to the conclusion that document D13 does not meet the criteria set in T 1002/92 for the admission of late filed documents.

3.6 Consequently, document D13 is not admitted into the proceedings (Article 114(2) EPC).

4. *Wording of the claims*

4.1 Claims 1 to 30 correspond to Claims 1 to 30 of the set of Claims 1 to 32 of the second auxiliary request considered as allowable by the Opposition Division.

4.2 No objection under Articles 123(2), 123(3) and 84 EPC has been raised by the Appellant II or by the Respondent in respect of the amendments made in these claims 1 to 30 in the course of the opposition and/or opposition appeal proceedings, and the Board is also satisfied that the requirements of these articles are met by all the claims in respect of the amendments made.

5. *Novelty*

5.1 As indicated above in Section XI, the novelty of the subject-matter of the second auxiliary request was not challenged by Appellant II.

5.2 The Board is also satisfied that the requirements of Article 54 EPC are met by all the claims.

6. *Problem and solution*

- 6.1 The patent in suit relates to radiation curable compositions useful as a matrix material for optical fibers.
- 6.2 Such compositions are known from document D1, which the Board in common with the Parties and the Opposition Division, regards as the closest state of the art.
- 6.3 Document D1 relates to a curable bundling material for optical fibers and to bundled optical fibers in which the coated optical fibers are held together by the cured bundling material. The object of D1 is to provide a curable bundling material for optical fiber which satisfies all the following characteristics:
- (i) the resin is rapidly curable and provides good productivity;
 - (ii) the cured material has a sufficient strength and flexibility.
 - (iii) the cured material exhibits only small variations in its properties over a wide range of temperature.
 - (iv) the cured material exhibits only small changes in its properties upon lapse of time and thus possesses a long-term reliability.
 - (v) the cured material has a good resistance against chemicals such as acids, alkalis or the like.
 - (vi) the cured material has only a low moisture and water absorptivity; and
 - (vii) the cured material has a smooth surface with a small friction coefficient, this last one being is particularly important for the curable bundling material for optical fiber (page 3, line 5 to page 4, line 10).

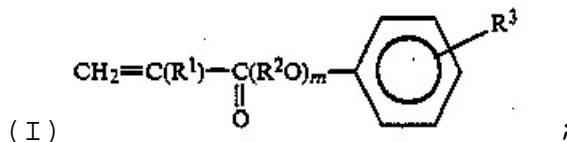
6.4 According to D1 this curable bundling material for optical fiber comprises:

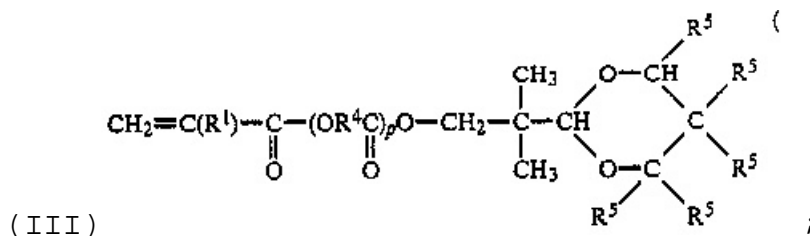
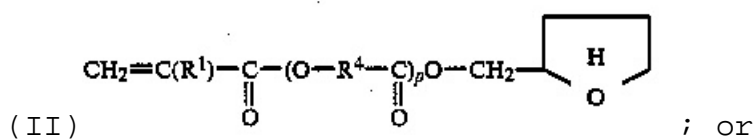
(a) polyether polyurethanes of one or more kinds having an ethylenically unsaturated group and containing 40-85% by weight of a tetramethyleneoxy structure in the entire structure thereof,

(b) an ethylenically unsaturated monomer, and

(c) a photopolymerization initiator; and which cured material has a coefficient of dynamic friction with polyethylene of not more than 0.4 (page 4, line 19 to page 5, line 3; page 9, lines 5 to 18).

Mono-functional vinyl monomers and polyfunctional vinyl monomers used as ethylenically unsaturated monomer include 2-hydroxyethyl (meth)acrylate, 2-hydroxypropyl(meth)acrylate, tetrahydrofurfuryl (meth)acrylate, butoxyethyl (meth)acrylate, ethyldiethylene glycol (meth)acrylate, 2-ethylhexyl (meth)acrylate, cyclohexyl (meth)acrylate, phenoxyethyl (meth)acrylate, polyethylene glycol (meth)acrylate, polypropylene glycol (meth)acrylate, methyltriethylene glycol (meth)acrylate, isobornyl (meth)acrylate, N-vinylpyrrolidone, N-vinylcaprolactam, diacetone (meth)acrylamide, isobutoxymethyl (meth)acrylamide, N,N-dimethyl (meth)acrylamide, t-octyl (meth)acrylamide, dimethylaminoethyl (meth)acrylate, diethylaminoethyl (meth)acrylate, (meth)acryloyl morpholine, dicyclopentenyl (meth)acrylate, tricyclodecanyl (meth)acrylate, the compound represented by the following formulae





trimethylolpropane tri(meth)acrylate, pentaerythritol tri(meth)acrylate, ethylene glycol di(meth)acrylate, tetraethylene glycol di(meth)acrylate, polyethylene glycol di(meth)acrylate, 1,4-butanediol di(meth)acrylate, 1,6-hexanediol di(meth)acrylate, neopentyl glycol di(meth)acrylate, trimethylolpropane trioxyethyl (meth)acrylate, tricyclodecane dimethanol di(meth)acrylate, dicyclopentadiene di(meth)acrylate, dicyclopentane di(meth)acrylate, tris-(2-hydroxyethyl)isocyanurate tri(meth)acrylate, tris-(2-hydroxyethyl)isocyanurate di(meth)acrylate, epoxy(meth)acrylate formed by adding (meth)acrylate to bisphenol A diglycidylether, and the like (page 7, line 1 to page 8, line 14).

6.5 According to D1, the polyether polyurethane having a tetramethyleneoxy structure which is contained in the component (a) can be prepared according to the following processes:

(i) reacting a specific ether type diol with a diisocyanate to obtain an intermediate compound, the functional group of which is then reacted with a compound having an ethylenically unsaturated group;

(ii) reacting a diisocyanate with a compound having an ethylenically unsaturated group to obtain an intermediate compound, the functional group of which is then reacted with a specific ether type diol;
(iii) reacting a diisocyanate, a specific ether type diol and a compound having an ethylenically unsaturated group simultaneously; and
(iv) reacting a specific ether type diol with a compound having an ethylenically unsaturated group and diisocyanate groups (page 9, line 23 to page 10, line 18).

6.6 The diisocyanates used in the above processes include for example, 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, 1,3-xylene diisocyanate, 1,4-xylene diisocyanate, 1,5-naphthalene diisocyanate, m-phenylene diisocyanate, p-phenylene diisocyanate, 3,3'-dimethyl-4,4'-diphenylmethane diisocyanate, 4,4'-diphenylmethane diisocyanate, 3,3'-dimethylphenylene diisocyanate, 4,4'-biphenylene diisocyanate, hexamethylene diisocyanate, isophorodiisocyanate, and hydrogenated diphenylmethanediisocyanate (page 12, lines 15 to 22).

6.7 In the above processes (i) to (iii), a polyol other than bifunctional one may be used for a diol, inasmuch as the product may not be gelled. The polyols other than bifunctional ones include addition compounds of glycerol and propylene oxide, glycerol, 1,2,3-pentanetriol, 1,2,3-butanetriol, **tri(2-hydroxy-polyoxypropyl) polysiloxane**, polycaprolactonetriol, polycaprolactonetetraol, liquid polybutadiene having more than 2 hydroxyl groups in a molecule or a hydrogenated product thereof (page 14, lines 6 to 17).

6.8 Starting from D1, the technical problem may be seen in the provision of radiation curable matrix materials for inked optical fibers not leading to the removal of the ink from the coated fibers when the matrix material is stripped (i.e. good break out), and exhibiting moisture resistance, solvent resistance, ease of stripping, long term thermal, oxidative and hydrolytic stability, non yellowing properties, and resistance to failure during cabling (cf. patent in suit, page 4, lines 1 to 5).

6.9 According to the patent in suit, this problem is solved by using a curable matrix material comprising an aliphatic polyether-based silicon modified urethane acrylate as defined in Claim 1.

6.10 In view of the comparison between Examples 1, 2 and 3 of the patent in suit with Comparative Example 3 (poor break out), it is credible to the Board that the technical problem is effectively solved by the claimed measures.

7. *Inventive step*

7.1 It remains to be decided whether the solution of the technical problem was obvious to a person skilled in the art having regard to the relevant prior art.

7.2 Although D1 mentions that a polyether having a silicone chain might be used in the processes (i) to (iii) for the manufacture of the unsaturated polyether urethane component, and that an aliphatic diisocyanate might be used in the manufacture of unsaturated polyether urethane (cf. points 6.5, 6.6, and 6.7 above), it is evident (cf. point 6.3 above) that document D1 contains

no indication as to whether an unsaturated polyether urethane component based on this specific combination of starting components would allow, when mixed with components such as compounds (b) and (c) as defined in the patent in suit, the manufacture of matrix materials having improved break out properties without impairing the other requested properties.

7.3 Nevertheless, at the oral proceedings, the Appellant II has further relied on the combination of document D1 with document D12 in order to challenge the inventive step of the subject-matter of Claim 1.

7.4 Document D12 relates to a cable element comprising a multiplicity of optical fibers embedded in a matrix material. According to D12 the individual optical fibers are coated with a coloured layer in order to facilitate their identification when the matrix material is stripped from the fibers to permit splicing (page 2, lines 3 to 22; page 3, lines 21 to 29).

7.5 While it is true, as submitted by the Appellant II, that document D12 discloses that the stripping might be improved by using a UV-curable silicon acrylate matrix material (page 3, line 35 to page 4, line 5), and it could be accepted that the coloured coatings applied in D12 on the optical fibers might also encompass coloured inks, it cannot, however, be accepted that document D12 gives any specific information on the silicon acrylate matrix material to be used or that it is other than totally silent on the problem of break out.

7.6 Consequently, even if the skilled person would have combined the teaching of D1 with that of D12 concerning

the use of silicone acrylate matrix material, it would still have needed to carry out the following successive steps in order to come to the claimed invention:

(i) firstly selecting an **aliphatic polyisocyanate** among the polyisocyanates mentioned in D1 (cf. point 6.6 above) for making the polyether polyurethane silicone acrylate;

(ii) secondly selecting among the unsaturated monomers of D1 (cf. point 6.4 above) components (b) and (c) as defined in Claim 1 of the patent in suit, and

(iii) thirdly combining this **aliphatic polyether polyurethane silicone acrylate** with the selected components (b) and (c) in the required amounts as defined in the Claim 1 of the contested patent.

7.7 In this connection, while the skilled person **could** presumably have selected among the radiation curable matrix compositions disclosed in D1 compositions corresponding to the final step (iii) above, it is immediately evident that it **would** not have carried out these selecting steps for the purpose of solving the technical problem underlying the patent in suit, since neither D1 nor D12 provides guidance as how to choose the appropriate starting components of the curable silicon acrylate composition for any purpose, let alone for improving the break out properties of the obtained matrix material.

7.8 This conclusion cannot be altered by the further argument of Appellant II that the technical problem underlying the patent should be split into two partial

and unrelated problems, i.e. the improvement of the release properties of the matrix material solved by the use of a silicone component and the problem of increasing the stability of the matrix material solved by the use of an aliphatic polyisocyanate, since this argument presupposes that the choice of the polyisocyanate has no influence on the release properties of the matrix material, that the incorporation of a silicone component puts no bar on the stability of the matrix, and, moreover, that there is no interaction between these two components on these two properties. Such evidence has, however, not been provided by Appellant II.

7.9 Thus, the Board can only come to the conclusion that neither D1 itself nor its combination with D12 can suggest the solution proposed in the patent in suit.

7.10 Although, at the oral proceedings, Appellant II no longer relied on its line of arguments based on the prior use of the products Cabelite 950-700 or Desolite 3036-114E in radiation curable compositions for coating optical fibers, this reference would not have been, in the Board's view, of any assistance to the solution of the technical problem for the following reasons:

7.10.1 The technical leaflet of Desolite 3036-114E (cf. document D9b) indicates that this product is a very soft, low modulus buffer coating composition intended for use on glass optical fibers, and, that due to its soft composition, it must be **overcoated** with a hard secondary buffer.

7.10.2 Taking into account that Cabelite 950-700 and Desolite 3036-114E are, according to Appellant II, the same product (cf. declaration of Mr Abel of 21 September 2000), this implies that these products would not be normally used as matrix material. Consequently, at least for this reason, the skilled person would be led away from the use of these components in a matrix composition.

7.10.3 Furthermore, the technical leaflet of Cabelite 950-700 (cf. document D9a) and that of Desolite 3036-114E (D9b) are totally silent on the break out properties of these products if they were used in the manufacture of matrix materials.

7.10.4 In the Board's view, such a property is, furthermore, not an intrinsic property of the products, which according to the decision G 1/92 (OJ EPO 1993, 277) should be considered to have been made available to the public by the mere delivery of said material to a customer.

7.10.5 Consequently, the skilled person would not have derived from the materials Cabelite and Desolite any clue as to their possible break out characteristics (T 472/92, OJ EPO 1998, 161; Reasons 7.3.4 to 7.3.7), and therefore any hint to the solution of the technical problem as proposed by the patent in suit.

7.11 The remaining documents D2, D3, D4, D5 and D6 do not refer at all to the problem of improving the break out properties of matrix material for optical fibers. Hence, none of these documents would offer to the skilled person a hint to the solution of the technical problem.

7.12 Thus, it follows from the above that the subject-matter of Claim 1, and by the same token, that of dependent Claims 2 to 12 involves an inventive step over the cited prior art (Article 56 EPC). The same conclusion applies *a fortiori* to the subject-matter of Claims 13 to 23 which are directed to an optical fiber ribbon comprising the matrix material of Claims 1 to 12, and to Claims 24 to 30, which relate to a process for manufacturing an optical fiber ribbon by using a matrix material according to Claims 1 to 12.

7.13 Consequently, the second auxiliary request of the Appellant I is allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The auxiliary request Ia is refused.
3. The case is remitted to the first instance with the order to maintain the patent on the basis of the second auxiliary request consisting of claims 1 to 30 filed at the oral proceedings, and after any necessary consequential amendment of the description.

The Registrar:

The Chairman:

E. Görgmaier

R. Young