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Datasheet for the decision of 11 September 2012

Case Number: T 2260/09 - 3.4.02

Application Number: 00400187.1

Publication Number: 1024382

IPC: G02B6/44

Language of the proceedings: EN

Title of invention:
Flexible thermoplastic polyolefin elastomers for buffering transmission elements in a telecommunications cable

Applicant:
Draka Comteq B.V.

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step (all requests: no)

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Case Number: T 2260/09 - 3.4.02

D E C I S I O N
of the Technical Board of Appeal 3.4.02
of 11 September 2012

Appellant: (Applicant)	Draka Comteq B.V. De Boelelaan 7 1083 HJ Amsterdam (PAYS-BAS)
Representative:	Algemeen Octrooi- en Merkenbureau P.O. Box 645 5600 AP Eindhoven (PAYS-BAS)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted 2 July 2009 refusing European patent application No. 00400187.1 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: A. G. Klein
Members: F. J. Narganes-Quijano
B. Müller

Summary of Facts and Submissions

I. The appellant (applicant) lodged an appeal against the decision of the examining division to refuse European patent application No. 00400187.1 (publication No. 1024382).

In its decision the examining division referred *inter alia* to the following documents:

D2: US-A-4687294
D3: EP-A-0864896
D7: US-A-4844604
D9: EP-A-0890860
D10: US-A-4909593
A1: WO-A-9832780
A2: EP-A-0398564,

and held that the subject-matter of claim 1 of each of the main and the first to third auxiliary requests did not involve an inventive step (Article 56 EPC 1973) in view of the prior art on file.

The wording of claim 1 of the main request reads as follows:

"A telecommunications cable element (10) comprising:
- a buffer tube (14) made from a thermoplastic polyolefin elastomer material and
- at least one optical fiber (12) disposed in the buffer tube (14),

characterized in that said material has a modulus of elasticity below 500 MPa at room temperature and a modulus of elasticity below 1500 MPa at -40°C and an elongation to break below 500% at room temperature."

The wording of claim 1 of the first auxiliary request differs from that of claim 1 of the main request in that the expression "at least one optical fiber (12) disposed in the buffer tube (14)" is replaced by the expression "at least one coated optical fiber (12) disposed in the buffer tube (14), wherein the inner diameter of said buffer tube (14) is larger than the outer diameter of said at least one coated optical fiber".

The wording of claim 1 of the second auxiliary request differs from that of claim 1 of the main request in that the expression "an elongation to break below 500%" is replaced by the expression "an elongation to break below 300%".

The wording of claim 1 of the third auxiliary request differs from that of claim 1 of the second auxiliary request in that the claim further reads "wherein the thermoplastic polyolefin elastomer material has a melt flow index above about 3".

II. With the statement setting out the grounds of appeal the appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the main request or one of the first to third auxiliary requests underlying the decision under appeal.

III. Oral proceedings were appointed by the Board. In a communication annexed to the summons to attend the oral proceedings the Board gave a preliminary assessment of the appellant's case on appeal and, more particularly, expressed its preliminary opinion that the subject-matter of claim 1 of all the requests on file did not involve an inventive step.

In particular, as regards claim 1 of the main request, the Board commented as follows:

"Document D9 pertains to the same technical field as the present application, i.e. to telecommunications optical fibre cables (page 2, line 5 *et seq.*). The document discloses the use of thermoplastic polyolefin materials for producing components of the optical cables, and in particular for producing buffer tubes encompassing the optical fibres (abstract together with page 4, lines 31 and 32 and the examples, in particular tube 12 in Figure 6 and tubes 106 to 112 in Figure 7). In addition, the preferred thermoplastic polyolefin materials are made of polyethylene-propylene copolymers (abstract and page 4, lines 31 to 37, together with the examples) and in view of their composition and properties (page 3, line 48 to page 4, line 7, and page 4, lines 38 to 44) they constitute elastomeric materials within the generic meaning of the term.

Claim 1 is directed to an optical cable as that disclosed in document D9, and the claim requires that the thermoplastic polyolefin elastomer material of the buffer tube has

(a) a modulus of elasticity below 500 MPa at room temperature and below 1500 MPa at -40°C, and

(b) an elongation to break below 500% at room temperature.

Document [D9] does not disclose the value ranges of the parameters defined in the claimed subject-matter.

According to the disclosure of the invention and to the submissions of the appellant (appeal grounds, page 3, fourth and fifth paragraphs), the technical effect of the claimed ranges of the modulus of elasticity and of the elongation to break of the buffer tube material is

that, within the wide range of temperatures of operation to which the telecommunication cable may be exposed (description of the application, page 3, lines 6 to 8, and page 7, lines 20 to 27), the buffer tube is easily strippable from the optical fibres, in particular without requiring special tools and without damaging the optical fibres encapsulated therein (page 3, lines 12 to 15, together with page 2, lines 2 to 6, and page 6, line 14 to page 7, line 2).

Accordingly, if one admits that the two claimed features (a) and (b) mentioned above are novel over the explicit and implicit disclosure of document D9, then the skilled person trying to strip a buffer tube made of the generic materials disclosed in the document in order to gain access to the optical fibres disposed within the tube of the optical cable would immediately notice difficulties in stripping the buffer tube. More particularly, a relatively high value of the elongation to break, in particular above the claimed value of 500%, would cause the buffer tube to elongate considerably without breaking when one tries to mechanically strip the tube, with the risk that the optical fibres become strained (description, page 6, lines 26 and 27), and a relatively high value of the modulus of elasticity, in particular above the claimed value of 500 MPa, would require a high pressure on the buffer tube in order to pinch off or separate the buffer tube, with the consequent risk of damaging the optical fibres (description, page 6, lines 23 to 25).

In these circumstances, the skilled person confronted with the problem of the relatively high elongation of the buffer tube required for breaking the tube and of the relatively high pressure required to pinch off the tube would consider endowing the material with the

appropriate mechanical properties (for instance by selecting the appropriate elastomers within the broad family of thermoplastic polyolefin elastomers disclosed in document D9 and/or selecting the appropriate additives (see document D9, page 4, lines 33 to 37 and 53 to 55, and page 5, lines 1 to 3, and compare with page 6, lines 3 to 13 of the application) and/or selecting the appropriate production method of the elastomer material) so that the problem is solved.

This obvious approach would lead the skilled person to an optical cable having a buffer tube of a material that can be easily pinched off and easily stripped and consequently having intrinsically a relatively low modulus of elasticity and a relatively low elongation to break at the temperatures of operation of the cable, whereby the easier the tube can be pinched off and stripped, the lower the values of the modulus of elasticity and of the elongation to break would be.

In view of these considerations, the Board is of the preliminary opinion that it would be obvious for the skilled person confronted with the problem mentioned above to arrive at an optical cable intrinsically satisfying the claimed conditions.

The Board also notes the following points [...]:

- One of the two specific examples of thermoplastic polyolefin elastomer materials disclosed in document D9, i.e. HDPE, has an elongation to break of 300% (page 7, lines 11 and 12 and Table 3) and therefore within the claimed range.
- The obvious procedure mentioned above would not only be applied by the skilled person at the common temperature of operation of the optical cable, i.e. at room temperature, but would also be

extended to cover other operation temperature ranges of interest under the particular circumstances, such as low temperatures of the order of -40°C commonly considered in the prior art (see for instance document D2, column 4, lines 3 to 15, document D3, abstract together with column 2, lines 31 to 35, column 3, line 51 to column 4, line 7, and column 6, lines 2 to 10 relating to a similar optical cable tube structure; see also document D7, abstract, column 10, lines 28 to 42 and Table 1), in order to maintain the characteristics of the cable, and in particular the technical effect mentioned above, within the temperature range of operation of the optical cable. It is also noted that in any case the modulus of elasticity of the materials resulting from the approach followed above does not appear to change between room temperature and a temperature of -40°C to an extent sufficient to surpass the claimed upper value of 1500 MPa at -40°C (see document D3, column 6, lines 25 to 31, and the present application, page 7, lines 10 to 27).

- The fact of selecting the parameters defined in the claim in order to define the invention and the scope of protection sought does not alter the assessment above, it being also noted that in any case it is known that characteristics such as strippability and tearibility of a material correlate with the elasticity and the elongation to break of the material (see for instance document A1, page 1, lines 15 to 17, and document A2, column 9, lines 32 to 39, together with column 13, line 32 *et seq.*, in particular column 14, lines 10 to 13).

- No special technical effect or improvement appears to be associated with the specific upper values of the modulus of elasticity at different temperatures and of the elongation to break defined in claim 1, and in this respect the mere fact of selecting, as claimed, appropriate upper limit values for the parameters that would achieve, to a predetermined extent, the technical effect mentioned above cannot endow the claimed subject-matter with an inventive step because, as already noted above [...], the higher the degree of achievement of the technical effect under consideration, the lower the values of the modulus of elasticity and the elongation to break of the material.

The same conclusion above can also be reached when starting with the disclosure of document D10. This document discloses a communications optical cable comprising a plurality of optical fibres within an envelope (envelope 4 in the Figure) made of a thermoplastic polyolefin elastomer material (column 2, lines 1 to 17). The material of the envelope is said to be soft (column 2, lines 9 and 10), but the envelope can be filled with a filling compound (column 2, lines 19 to 21) and encompasses the fibres in a loose configuration and, in addition, appears to be sufficiently rigid and self-supporting, so that the envelope can be considered to constitute a tube. The document specifies that the material of the tube "can be easily removed without tools" (column 1, lines 50 to 52) and more specifically "with bare fingers" (column 1, lines 57 to 61 and column 2, lines 9 and 10) and, to the extent that the subject-matter of claim 1 might be novel over the implicit disclosure of the document, it would be obvious to further improve the mentioned

characteristic - for instance by selecting the appropriate materials within the broad family of thermoplastic polyolefin elastomer materials disclosed in the document - so as to arrive at an optical cable that would intrinsically satisfy the claimed conditions for reasons similar to those given above with regard to document D9."

As regards claim 1 of the first auxiliary request, the Board commented, *inter alia*, as follows:

"In the optical cable disclosed in document D9 the inner diameter of the buffer tube is larger than the outer diameter of the optical fiber(s) (Figures 6 and 7, together with page 7, lines 47 to 51 and page 8, lines 7 to 11), and the buffer tube contains optical fibre ribbons (page 8, line 10) that are generally made of a coated bundle of optical fibres. Similar considerations apply to the disclosure of document D10 (see Figure and column 2, lines 19 to 22). Consequently, the additional feature defined in claim 1 does not appear to endow the claimed subject-matter with an inventive step for the same reasons as those given [above] with respect to claim 1 of the main request."

As regards claim 1 of the second auxiliary request, the Board commented as follows:

"Claim 1 of the second auxiliary request differs from claim 1 of the main request in that the upper value of the elongation to break is of 300% instead of 500%. In view of the considerations [above] with regard to the disclosure of each of documents D9 and D10, however, it would be obvious to further improve the technical effect under consideration to an extent such that the

material would intrinsically exhibit an elongation to break lower than 300%. Therefore, the subject-matter of claim 1 of the second auxiliary request does not appear to involve an inventive step for reasons similar to those given [above] with regard to claim 1 of the main request."

As regards claim 1 of the third auxiliary request, the Board commented as follows:

"When compared with claim 1 of the second auxiliary request, claim 1 of the third auxiliary request further requires that the thermoplastic polyolefin elastomer material has a melt flow index above about 3. However, document D9 already teaches the technical relevance of the melt flow index of the material (page 3, line 7 to page 4, line 7) and teaches the use of thermoplastic polyolefin elastomer materials having a melt flow index above about 3 (page 4, lines 1 to 3, and page 4, line 31 to page 5, line 6, together with the examples in Table 1). Consequently, the claimed subject-matter does not appear to involve an inventive step over the disclosure of document D9 for the same reasons as those given [above] with respect to claim 1 of the second auxiliary request."

IV. In reply to the summons to oral proceedings, the appellant informed the Board by letter dated 29.06.2012 that he would not attend the oral proceedings.

V. Oral proceedings were held before the Board on 11 September 2012. As previously announced, the appellant was neither present nor represented at the oral proceedings. At the end of the oral proceedings the Board announced its decision reported in the order below.

VI. During the written proceedings, no substantive submission was submitted by the appellant in response to the preliminary opinion of the Board given in the communication annexed to the summons to oral proceedings. The arguments in the statement of grounds of appeal in support of the appellant's requests pre-date, and have no bearing on the issues subsequently raised by the Board in the aforementioned communication.

Reasons for the Decision

1. The appeal is admissible.

2. In the communication annexed to the summons to oral proceedings the Board explained in detail (see point III above) why in its preliminary opinion the subject-matter of claim 1 of the main and the first to third auxiliary requests does not appear to involve an inventive step (Article 56 EPC 1973). In the course of the proceedings the appellant made no substantive submissions in reply to the detailed objections raised by the Board in the aforementioned communication. In particular, the appellant chose neither to attend the oral proceedings nor to take a written position on the matters raised by the Board. The appellant has therefore not availed itself of the opportunity to reply to the preliminary assessment of the case given by the Board in the aforementioned communication.

After consideration of the assessment advanced in the communication, and in the absence of any attempt by the appellant to refute or overcome the objections raised

by the Board with regard to the claim requests on file, the Board saw no reason during the oral proceedings to depart from the preliminary opinion expressed in the communication, which therefore becomes final. Accordingly, noting that the appellant has had, and has failed to use, the opportunity to present comments on the objections raised by the Board in its communication (Article 113(1) EPC 1973), the Board concluded during the oral proceedings that the main and the first to third auxiliary requests do not comply with the requirements of Article 56 EPC 1973, and that consequently the requests were not allowable.

The appeal must therefore be dismissed for the reasons already communicated to the appellant and reproduced in point III above (Rule 66(2)(g) EPC 1973).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Kiehl A. G. Klein

Decision electronically authenticated