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**Datasheet for the decision
of 7 December 2021**

Case Number: T 1649/16 - 3.2.05

Application Number: 06765256.0

Publication Number: 1945439

IPC: B29C63/46, C08G65/40

Language of the proceedings: EN

Title of invention:

Polyether and its use for lining

Patent Proprietor:

Victrex Manufacturing Limited

Opponents:

Evonik Operations GmbH
Solvay Specialty Polymers USA, LLC

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step (no)



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Case Number: T 1649/16 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 7 December 2021

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
3 June 2016 concerning maintenance of the
European Patent No. 1945439 in amended form.**

Composition of the Board:

Chairman	P. Lanz
Members:	M. Holz
	C. Brandt

Summary of Facts and Submissions

- I. Opponent 1 filed an appeal against the interlocutory decision of the opposition division that European patent No. 1 945 439 ("the patent"), as amended with the fourth auxiliary request filed during the oral proceedings before the opposition division on 3 May 2016, and the invention to which it related were found to meet the requirements of the EPC.
- II. The appellant (opponent 1) requested that the decision under appeal be set aside and the patent be revoked. As an auxiliary measure, the appellant requested oral proceedings (see point 1 of the statement of grounds of appeal).
- The respondent (patent proprietor) requested that the decision to maintain the patent in amended form be upheld by the board (see reply to the appeal dated 25 November 2016). The board understood this as a request for the appeal to be dismissed. The respondent further requested that the board come to its decision in the appeal based on the written file as it stood, and expressly did not request oral proceedings.
- III. Opponent 2 was a party as of right to the appeal proceedings in accordance with Article 107, 2nd sentence, EPC, but did not file any submissions or requests during the appeal proceedings.
- IV. Among the documents cited in the opposition proceedings, documents D2 (US 5,135,698) and D5 (JP 04-073128) are relevant to this decision.

In the following, references to passages of document D5 are to be understood as referring to its English translation submitted by opponent 1 along with the notice of opposition dated 9 April 2013.

- V. Claim 1 of the fourth auxiliary request on which the decision under appeal is based reads:

A method of fitting a component in a receiver, the method comprising:

a) compressing a selected component having a shape and size to produce a compressed component, wherein said selected component comprises a polymeric material and said polymeric material comprises a first polymer having a glass transition temperature (T_g) of at least 100°C and wherein with said selected component at a temperature which is at least 20°C less than the T_g of said first polymer, said selected component is subjected to a compression means to compress the component and produce said compressed component; or (a) selecting a compressed component compressed according to step (a) which comprises a polymeric material wherein said polymeric material comprises a first polymer having a glass transition temperature (T_g) of at least 100°C;*

wherein said first polymer is selected from polyetheretherketone, polyetherketone, polyetherketoneetherketoneketone and polyetherketoneketone;

wherein either step (a) or step (a) is in combination with the following steps:*

(b) arranging the compressed component in position within the receiver; and

(c) subjecting the compressed component to a temperature at or above the T_g of the first polymer whereby the compressed component expands back towards

the shape and size of the selected component to fit the receiver;
wherein between steps (a) or (a) and (b) the compressed component is maintained as a compressed component due to intrinsic properties of said first polymer by maintaining the temperature of the compressed component below the Tg of the first polymer;*
wherein between step (a) and (b) or step (a) and (b), no tension or compression force is applied to the compressed component to restrict it from expanding; and wherein the polymeric material includes 70-100wt% of said first polymer, 0-30wt% of a second polymer; 0-20% of a filler means and 0-10% of other additives.*

VI. The parties' arguments, in as far as they are relevant to this decision, may be summarised as follows:

(i) Appellant

The appellant took the view that the fourth auxiliary request forming the basis of the decision under appeal *inter alia* did not meet the requirements of Article 52(1) EPC in combination with Article 56 EPC (see point 2.3 of the statement of grounds of appeal). More specifically, the appellant argued that document D5 described all the features of claim 1 with the exception of the feature that the first polymer was selected from polyetheretherketone, polyetherketone, polyetherketoneetherketoneketone and polyetherketoneketone. In contrast, document D5 described the use of polyphenylene sulphide (PPS). However, document D5 also mentioned that PPS could partially be replaced by polyetheretherketone (PEEK) (see page 7, lines 2-3). Even though, in document D5, smaller amounts of PEEK were used than in claim 1 of the patent, the skilled person nevertheless learned

from document D5 that PEEK could in principle be used. The skilled person was therefore motivated to completely replace PPS with PEEK, especially since no reason was apparent why a minimum amount of at least 70wt% PEEK was required in claim 1. The person skilled in the art would thus have arrived at the subject-matter of claim 1 solely through the teaching of document D5.

Moreover, document D2 described a process for lining a pipeline made of steel for corrosion protection. According to Figure 1 and claim 1, the lining material was drawn into the pipeline and, during this step, the lining material was cooled with a cooling liquid to reduce the outside diameter of the liner to less than the inside diameter of the pipeline. Once the lining material had been drawn into the pipeline, the cooling was discontinued, thereby allowing the liner to expand and conform to the inside diameter of the pipeline. According to column 5, line 60, any suitable plastic material could be used for the liner. Table 1 in column 6 explicitly mentioned polyetheretherketone (PEEK). Document D2 not only described that PEEK might be used as "lining material", but also gave an explicit reference to the use of these materials in a method according to claim 1.

(ii) Respondent

In the appeal proceedings, the respondent did not expressly submit any arguments to counter the appellant's objections, but relied upon the arguments filed at first instance and those set out in the written decision of the opposition division (see reply to the appeal dated 25 November 2016).

Reasons for the Decision

1. Inventive step (Article 56 EPC)

1.1 In point 61 of the reasons for the decision, the opposition division took the view that the difference between the subject-matter of claim 1 and that of example 1 of document D5 lay in the particular polymer that was inserted into the pipe, which in claim 1 was specified to be PEEK, PEK (polyetherketone), PEKEKK (polyetherketoneetherketoneketone) or PEKK. According to the opposition division, the objective technical problem to be solved was to provide an alternative polymer for the method of lining a pipe as described in document D5.

This view was not contested by the parties to the appeal proceedings. The board therefore did not see any reason to deviate from this formulation of the objective technical problem.

1.2 Further according to the reasons for the decision under appeal (see point 64), document D5 taught the skilled person to use PPS and allowed a certain degree of a further polymer to be present, including PEEK (see page 7, lines 2-3 of document D5), as long as the quantity of this polymer did not affect the essential characteristics for usage (see page 6, last paragraph of document D5). Document D5 also taught the skilled person to use not less than 70 mole%, preferably not less than 90 mole%, of PPS as the polymer (see page 5, second paragraph). Yet the quantity of PEEK, PEK, PEKEKK and PEKK required to be present in the method of claim 1 was at least 70 wt%.

According to the cited passage of the reasons for the decision, it was further clear from document D2 that PEEK could be used to line a pipe, but document D2 was silent about its suitability for use in a method as described essentially in example 1 of document D5.

- 1.3 The board agrees that document D5 discloses the use of a PPS (polyphenylene sulphide) resin for lining a pipe. Moreover, according to the paragraph bridging pages 6 and 7, "*... a polymer such as the following may be mixed and used with the PPS at a proportion within a range of not compromising the characteristics required for usage. ...*", further explicitly mentioning polyetheretherketone (see page 7, lines 2-3). Based on this text passage of document D5, the skilled person was thus prompted to add PEEK to the PPS resin.

However, the cited text passage does not explicitly indicate any specific values or limits for the proportion in which PEEK is to be admixed to the PPS. The indication that the proportion should be "*within a range of not compromising the characteristics required for usage*" may therefore be understood as an invitation to try various proportions to examine whether the "*characteristics required for usage*" would be compromised or would still be met. As no upper limit is given in this text passage, it is not apparent why the skilled person would not have considered a proportion of PEEK of 70wt% or more as defined in the contested claim 1.

As also argued by the appellant, the skilled person would have found further encouragement to try higher contents of PEEK in document D2, which discloses the use of PEEK for lining a pipe (see document D2,

column 4, line 54 to column 5, line 15; Figures 1-3; table 1).

In this respect, the board does not share the opposition division's view that document D5 would have taught the skilled person to use not less than 70 mole% of PPS as the polymer. The text passage on page 5, first sentence of second paragraph, of document D5, to which the reasons for the decision refer, reads:

"The PPS used in the present invention is such that not less than 70 mole % and especially preferably not less than 90 mole % of an A portion in a structural unit represented by (-A-S-) is p-phenylene. [...]"

This citation mentions a range for the A portion in the PPS but does not impose any limits as to the proportion in which a further polymer (as described later in document D5, namely in the paragraph bridging pages 6 and 7) is to be mixed and used with the PPS. More specifically, the skilled person would not have immediately understood this text passage on page 5, second paragraph as requiring that a proportion of PPS in the polymer mixture disclosed on pages 6 and 7 for the pipe lining should be 70 mole% or higher.

Consequently, the cited text passage does not discourage the skilled person from adding PEEK at a proportion of 70 wt% or more of the polymeric material as required by claim 1. To the contrary, in view of the above, starting from document D5, the skilled person would have investigated whether the "*characteristics required for usage*" (cited in the paragraph bridging pages 6 and 7 of document D5) would be compromised with a proportion of PEEK in this range.

Such a course of action would have led the skilled person in an obvious manner to a method falling within the scope of claim 1 in which PEEK represented the "first polymer" defined in this claim.

1.4 The subject-matter of claim 1 of the fourth auxiliary request forming the basis of the decision under appeal is therefore not based on an inventive step (Article 56 EPC).

2. Conclusion

2.1 Since the subject-matter of claim 1 of the fourth auxiliary request forming the basis of the decision under appeal is not based on an inventive step, the patent must be revoked.

2.2 In view of the parties' requests, the board took the decision without holding oral proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



N. Schneider

P. Lanz

Decision electronically authenticated