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Datasheet for the decision of 24 April 2018

Case Number: T 1194/15 - 3.3.09

Application Number: 08705924.2

Publication Number: 2109533

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Language of the proceedings: EN

Title of invention:
CURED IN PLACE PIPE LINER

Patent Proprietor:
Lubrizol Advanced Materials, Inc.

Opponent:
BASF SE

Headword:

Relevant legal provisions:
EPC Art. 56, 83, 123(2)
RPBA Art. 13

Keyword:
Main request: added subject-matter (no), sufficiency of disclosure (yes), inventive step (yes)

Decisions cited:
T 2619/11, T 0608/07

Catchword:

Europäisches Patentamt
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Beschwerdekammern

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Case Number: T 1194/15 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 24 April 2018

Appellant: (Opponent)	BASF SE 67056 Ludwigshafen (DE)
Representative:	Herzog, Fiesser & Partner Patentanwälte PartG mbB Isartorplatz 1 80331 München (DE)
Respondent: (Patent Proprietor)	Lubrizol Advanced Materials, Inc. 9911 Brecksville Road Cleveland, OH 44141-3247 (US)
Representative:	dompatent von Kreisler Selting Werner - Partnerschaft von Patent- und Rechtsanwälten mbB Deichmannhaus am Dom Bahnhofsvorplatz 1 50667 Köln (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 1 April 2015 concerning maintenance of European patent No. 2109533 in amended form**

Composition of the Board:

Chairman	W. Sieber
Members:	N. Perakis
	E. Kossonakou

Summary of Facts and Submissions

I. The present appeal lies from the interlocutory decision of the opposition division that European patent No. 2 109 533 as amended met the requirements of the EPC.

II. In its notice of opposition the opponent requested that the patent be revoked in its entirety on the basis of Article 100(a) (lack of novelty and lack of inventive step), Article 100(b) and Article 100(c) EPC.

The documents cited in opposition included the following:

D1: US 2005/0194718 A1;

D2: EP 1 092 909 A1;

D3: US 2004/0236035 A1;

Annex B1: DSC diagram (heat flow vs temperature) of the polyester polyurethane Elastollan EC90A10.

III. The opposition division held that the claims filed as the main request by letter of 9 February 2015 met the requirements of the EPC.

Claim 1 of that request reads as follows:

"1. A cured in place liner for a passageway or pipe comprising:
(a) a resin absorbent material layer;
(b) a thermoset resin absorbed into said resin absorbent material layer; and

(c) a polyester thermoplastic polyurethane polymer layer coated on at least one side of said resin absorbent material layer;

wherein said thermoplastic polyurethane polymer has a DSC 2nd heat endotherm peak temperature of greater than 160 °C, and a melt flow index of 40 g/10 min or less at 210 °C/3.8 kg, and
wherein said polyester thermoplastic polyurethane polymer has a Shore A hardness of from 85A to 98A."

With regard to Articles 100(c) and 123 EPC, the opposition division held that the subject-matter of claim 1 had been disclosed in the application as filed and that its amendment did not create any new subject-matter in the dependent claims.

With regard to Article 83 EPC, the opposition division held that the invention underlying claim 1 was sufficiently disclosed. Determining the temperature characteristics of polymers by way of DSC was a common technique in the art, and the DSC 2nd heat endotherm peak temperature was the essential way to achieve standardised results for the thermal behaviour of polymers. The measuring method for DSC was disclosed in the patent as being ASTM D3418-03. Regarding the experimental evidence of Annex B1, it might be true that the polymer Elastollan EC90A10 did not have a DSC 2nd heat endotherm peak temperature according to claim 1. However, this did not mean that all claimed polymers did not fulfil this requirement. Furthermore, Elastollan EC90A10 did not have the claimed melt flow index and Shore A hardness, and it was not shown that it was one of the polymers of claim 1.

The opposition division held that D1 did not disclose a polyester thermoplastic polyurethane polymer which had a DSC 2nd heat endotherm peak temperature of greater than 160°C. On this basis, it concluded that the subject-matter of claim 1 was novel (Article 54 EPC).

With regard to Article 56 EPC, the opposition division held that D1, which compared to D2 had more features in common with claim 1, was the closest prior art. The skilled person starting from D1 and aiming to obtain a polyester thermoplastic polyurethane polymer with a better heat resistance against exothermic reactions generated upon curing the thermoset resin would not find any motivation in the prior-art documents to purposively choose a polyester thermoplastic polyurethane polymer having the claimed DSC 2nd heat endotherm peak temperature. It thus concluded that the claimed subject-matter involved an inventive step.

IV. Notice of appeal was filed by the opponent (in the following: the appellant), which requested that the opposition division's interlocutory decision be set aside and that the patent be revoked in its entirety. The appellant reiterated arguments on the opposition grounds of added subject-matter, insufficiency of disclosure and lack of inventive step.

V. By letter of 21 December 2015 the patent proprietor (in the following: the respondent) filed observations on the appeal, accompanied by a main request and eleven auxiliary requests. It requested that the patent be maintained on the basis of either the main request or one of auxiliary requests 1 to 11.

VI. On 9 February 2018 the board issued a communication in preparation for the oral proceedings.

VII. By letter of 8 March 2018 the respondent filed a main request and auxiliary requests 1 to 11, replacing the previous requests. It requested that the patent be maintained on the basis of either the main request or one of auxiliary requests 1 to 11.

Claim 1 of the main request, the only request relevant to this decision, is identical to claim 1 of the main request found allowable by the opposition division (see point III above).

The respondent also filed the following documents:

D14: ASTM D3418-03 (Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry), pages 1 and 4; and

Annex B2: DSC diagram (heat flow vs temperature) of the polyester polyurethane Estane®58437.

VIII. Oral proceedings were held before the board on 24 April 2018 as scheduled.

IX. The relevant arguments put forward by the appellant in its written submissions and during the oral proceedings may be summarised as follows:

- The main request was late-filed and should not be admitted into the proceedings. The same applied to the late-filed evidence submitted with Annex B2.

- The main request did not fulfil the requirements of Article 123(2) EPC because the subject-matter of dependent claims 2-9 extended beyond the content of

the application as filed. The features referred to in dependent claims 2-9 had not been disclosed in the application as filed in the context of the subject-matter of amended claim 1.

- The invention underlying the claimed subject-matter did not fulfil the requirements of Article 83 EPC. The DSC method might be a standard method for determining the 2nd heat endotherm peak temperature, but it was not suitable for characterising the polymeric materials used in the claimed invention. Annex B1 showed that broad signals were obtained which did not define any clear peak. Since the patent in suit did not disclose how the peak temperature would be measured and how accurate the measurement would be, determination of the peak temperature was arbitrary. The inaccuracy of the measurement was corroborated by the DSC diagram of Annex B2, which concerned Estane®58437, whose DSC 2nd heat endotherm peak temperature lay between 167.65°C and 179.39°C and thus varied within this range. The arbitrariness of establishing the peak maximum was corroborated by the submissions of the respondent (see letter of 9 February 2015: table on page 9), according to which the DSC 2nd heat endotherm peak temperature of Estane®58437 was 176°C, although Annex B2 showed that it varied within a range. Consequently, the skilled person did not know whether he was working within or outside the scope of the claimed invention.

- The subject-matter of claim 1 of the main request lacked an inventive step. The skilled person starting from D1, which disclosed the Estane® polyester thermoplastic polyurethane products and

their use in cured-in-place liners for passageways or pipes, would obviously have used the specific polymer Estane®58447 disclosed in example 1 of D3. As shown in the respondent's letter of 9 February 2015, Estane®58447 had the required DSC 2nd heat endotherm peak temperature, melt flow index and Shore A hardness. The skilled person would thus have arrived at the subject-matter of claim 1 without the exercise of inventive skill. With regard to the alleged effect of improved stability, this had not been technically substantiated. With regard to the lower limits of (i) 160°C for the DSC 2nd heat endotherm peak temperature and (ii) 40 g/10 min for the melt flow index, they had not been shown to have any technical significance and were considered to have been chosen arbitrarily.

X. The relevant arguments put forward by the respondent in its written submissions and during the oral proceedings may be summarised as follows:

- The main request submitted by letter of 8 March 2018 should be admitted into the proceedings because it had been filed as a direct reply to the objections raised in the board's preliminary opinion. The amendments concerned dependent claims and were not too technically complicated to be dealt with during the oral proceedings before the board.

- Annex 2 also submitted by letter of 8 March 2018 should be admitted into the proceedings because it did not deal with any new technical issue but related to what a DSC 2nd heat endotherm peak

temperature looked like in reality and how it was typically measured.

- The subject-matter of the claims of the main request fulfilled the requirements of Article 123(2) EPC. It was true that claim 1 of this request derived from the combination of claims 1, 2 and 3 as filed together with the feature concerning the melt flow index as disclosed in general terms in the application as filed (paragraph [0018]). This limitation of the subject-matter of claim 1 did not, however, lead to dependent claims with subject-matter extending beyond the content of the application as filed. In reality, the subject-matter of the dependent claims was directly and unambiguously derivable from the application as filed. The appellant had analysed the subject-matter of the dependent claims as if it had been directed to a philologist or logician and not to a technical audience (T 2619/11).

- The invention underlying the claimed subject-matter fulfilled the requirements of Article 83 EPC. In particular, the patent in suit provided the skilled person with the guidance necessary to measure the DSC 2^{nd} heat endotherm peak temperature of thermoplastic polyurethane polymers. Paragraph [0017] disclosed the standard method according to ASTM D3418-03, which is cited in the patent in suit and filed as D14. As shown therein (figure 2), the peak maximum could be determined by the skilled person without undue burden by drawing the tangents at the peak sides. Furthermore, Annexes B1 and B2 - Annex B1 was submitted by the appellant - showed that the DSC 2^{nd} heat endotherm peak temperature of above 160°C could be determined for polyester

thermoplastic polyurethane polymers. Even if the signals which defined the peak in Annex B1 were broad, this appeared to result from the different heating rate used by the appellant when carrying out the DSC measurement: it had used a heating rate of 20°C/min, whereas the patent disclosed 10°C/min (paragraph [0017]). Anyway, the signals which defined the peaks in DSC diagrams were almost never ideal in shape and symmetry. The appellant, which had challenged the consistency of the measurement and which bore the burden of proof, had not submitted any evidence to substantiate its assertions. With regard to the allegedly ambiguous result of the measurement method, this would only concern the boundary of the claimed range, namely 160°C. The appellant had provided no evidence that such an ambiguity existed. The results concerning the polymer Estane®58437 were consistent both in Annex B2 and in the respondent's letter of 9 February 2015. But even if ambiguity did exist, it would relate only to the boundary of the claimed range, which according to T 608/07 would not be an issue under insufficiency of disclosure.

- The subject-matter of claim 1 of the main request involved an inventive step. D2, which disclosed lining tubes for use in repairing pipelines and referred to the problem of pinhole formation during the in-place curing of pipeline lining tubes (paragraph [0028]), should be considered to represent the closest prior art. It disclosed that the polyester thermoplastic polyurethane polymer layer of the lining tube should have a hardness between 65-75 JIS-A (identical to the Shore A hardness of claim 1) in order to prevent pinhole formation during curing. Thus, D2 taught away from

the claimed Shore A hardness of 85A-98A. The skilled person starting from D2 and aiming to provide a cured-in-place liner with better heat resistance against exothermic reactions generated upon curing would not have found any motivation in the art to use the polyester thermoplastic polyurethane polymers claimed. Even if such a polymer was disclosed in D3, this document related to a different problem, namely the provision of polyester thermoplastic polyurethane polymers which could not self-cross-link in water at temperatures below 85°C (paragraph [0014]). Therefore the alleged combination of D2 with D3 was based on hindsight.

XI. The appellant requested that the decision under appeal be set aside and that European patent No. 2 109 533 be revoked in its entirety.

XII. The respondent requested that the patent be maintained on the basis of either the main request or one of auxiliary requests 1 to 11, all requests as submitted by letter of 8 March 2018.

Reasons for the Decision

1. Admission of the main request

The appellant objected to the admission of the main request submitted by letter of 8 March 2018 into the proceedings because it was late-filed. The board does not agree. The filing of this request was a direct response to the board's communication, which had raised issues under Article 123(2) EPC in relation to the

subject-matter of some of the dependent claims. As the main request overcame the raised objections and as the amendments were not too complicated to be dealt with without adjournment of the oral proceedings, the board decided to admit the new main request into the proceedings on the basis of Article 13 RPBA.

2. Admission of Annex B2

Annex B2 was filed by the respondent by letter of 8 March 2018. It was filed as a response to the appellant's objection that the DSC 2nd heat endotherm peak temperature was not a suitable parameter for characterising the polymeric materials according to the claimed invention and that the skilled person was not able to measure a peak temperature in the DSC diagram. Furthermore, Annex B2 did not raise any technical issue that could not be dealt with during the oral proceedings before the board. Therefore the board decided to admit Annex B2 into the proceedings on the basis of Article 13 RPBA.

3. Added subject-matter - Article 123(2) EPC

3.1 The appellant raised an objection under Article 123(2) EPC in respect of the subject-matter of dependent claims 2-9 of the main request. According to the appellant, the features referred to in dependent claims 2-9 had not been disclosed in the application as filed in combination with the subject-matter of amended claim 1.

3.2 The board does not agree. The subject-matter of claim 1 of the main request is a combination of claims 1, 2 (DSC 2nd heat endotherm peak temperature of greater than 160°C) and 3 (Shore A hardness of from 85A to 98A)

as filed together with the feature of the melt flow index of 40 g/10 min or less at 210°C/3.8 kg (see application as filed, paragraph [0018]). However, the feature whereby the polyester thermoplastic polyurethane polymer has a DSC 2nd heat endotherm peak temperature greater than 160°C is disclosed not only in claim 2 as filed but also in paragraph [0017] of the application as filed, where it constitutes a general disclosure which applies not only to specific embodiments but, rather, to the invention in general. The feature whereby the polyester thermoplastic polyurethane polymer has a Shore A hardness of from 85A to 98A is even disclosed in the final sentence of paragraph [0007] of the application as filed as an essential feature of the invention ("The TPU also must have a Shore A hardness of from about 85A to about 98A."). The feature whereby the polyester thermoplastic polyurethane polymer has a melt flow index of 40 g/10 min or less at 210°C/3.8 kg is disclosed in paragraph [0018] of the application as filed in combination with the above-mentioned Shore A hardness.

Hence, claim 1 of the main request corresponds to claim 1 as filed, with essential and/or generally disclosed features incorporated. These features are disclosed in the application as filed as a general disclosure applicable to all embodiments of the invention, i.e. in such a manner that they equally apply to the embodiments of the dependent claims.

3.3 This finding is confirmed by the example of the application as filed (and the patent in suit), which discloses an embodiment combining the embodiments of the dependent claims and thus provides a clear pointer to the combinations of the features found in the subject-matter of claims 2-9 of the main request.

3.4 The approach adopted by the appellant appears to be very formalistic, without taking into account the type of audience to which the patent is directed and what such an audience can directly and unambiguously derive from the information presented in the entire application as filed. In this respect reference is made to T 2619/11 (Catchword and Reasons 2.6), in which the board criticised a similar approach and noted that:

"[the f]ocus of the decision [is] disproportionally directed to the structure of the claims as filed to the detriment of what is really disclosed to the skilled person by the documents as filed as directed to a technical audience rather than a philologist or logician, for which audience an attempt to derive information from the structure of dependent claims leads to an artificial result".

3.5 On the basis of the above it is concluded that the fact that claims 2-9 retain (directly or indirectly) dependency on claim 1 has no implication in terms of Article 123(2) EPC.

4. Sufficiency of disclosure

4.1 The appellant's only objection as to insufficient disclosure relates to the DSC 2nd heat endotherm peak temperature of the thermoplastic polyurethane polymer. According to the appellant, the patent does not disclose how an accurate DSC measurement is to be carried out, enabling the skilled person to know whether he is working inside or outside the scope of the claimed invention.

4.2 The board does not agree. Paragraph [0017] of the patent in suit discloses that:

"The temperature performance properties are measured using a Different (sic) Scanning Calorimetry (DSC) using scan conditions from -100°C to 230°C in heat/ cool/heat mode at 10°C/min. ASTM D-3418-03 standard describes the DSC test. The 2nd heat melt endotherm peak temperature is used to correct for any variances in the sample".

Thus the patent in suit provides the skilled person with clear information on the method to be used in order to measure the parameter at issue.

Furthermore, the respondent referred to figure 2 of D14 (ASTM D3418-03), which would teach the skilled person how to determine the temperature corresponding to the maximum of the peak by drawing the tangents at the sides of the peak, where the intersection of the tangents provides the sought maximum. Therefore the skilled person would know how to measure the peak temperature on a DSC diagram and thus would avoid any arbitrary determination.

4.3 In view of the above, the skilled person would also be able to determine the peak temperature in the DSC curve of Annex B1, submitted by the appellant, and the DSC curve of Annex B2, submitted by the respondent, without undue burden and without arbitrariness.

It might be true that it was difficult in the case of the particular polymer used in the DSC measurement of Annex B1 to unambiguously determine the peak temperature, because the signals were broad without any clear peak. However, as pointed out by the respondent

in writing and at the oral proceedings, although the peak was not an ideal *"text book"* peak, a peak could nevertheless be derived from the cure; and the DSC 2nd heat endotherm peak temperature was clearly above 160°C.

Furthermore, the respondent stressed during the oral proceedings that the DSC measurement applied in Annex B1 used a heating/cooling rate of 20°K/min (equal to 20°C/min), which was different from that disclosed in the patent in suit (paragraph [0017]), namely 10°C/min. Thus Annex B1 could not be regarded as evidence that the skilled person was not able to measure the specific parameter of the claimed invention. The appellant, which bears the burden of proof, did not file any further evidence to shift the burden of proof to the respondent.

4.4 The board is also not convinced that the measuring method of ASTM D3418-03 does not yield consistent and reliable results. In this context, the appellant referred to alleged discrepancies in the respondent's submissions as to the DSC 2nd heat endotherm peak temperature of the polymer Estane®58437. According to the respondent's letter of 9 February 2015 (table on page 9), the DSC 2nd heat endotherm peak temperature of Estane®58437 is 176°C, whereas the curve in Annex B2 shows peaks at 167.65°C and 179.39°C. There is no inconsistency in these results. A peak temperature determination on the basis of D14, within normal measuring inaccuracy, yields a value at least close to 176°C. The argument that in Annex B2 the temperature measurement has a precision to two decimal places, whereas that of the respondent's letter of 9 February 2015 shows no such precision, appears not to be relevant in this context.

4.5 The appellant's assertion that there is an ambiguity associated with the value of said parameter is not convincing either. In both Annexes B1 and B2 the peak temperature has a value greater than 160°C, and there can be no doubt that the claimed requirement is met. But even if there were an ambiguity due to the method used for determining the peak temperature, it appears that it is confined to the lower end of the claimed range, namely 160°C. However, the appellant has not shown that this deprives the person skilled in the art of the promise of the invention (see T 608/07, Reasons 2.5.2).

4.6 To conclude, the invention underlying the claimed subject-matter is disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

5. Inventive step

5.1 Closest prior art

5.1.1 The patent in suit concerns cured-in-place liners for pipes or various other passageways and their use to repair such pipes or passageways (paragraph [0001]). The liner is placed in the pipe to be repaired by either the drag-in method or the inversion method, using steam to force the liner against the inside surface of the pipe (paragraphs [0003] and [0024]). It has to have a suitably low stiffness so that it can easily be inserted into said pipe or passageway, particularly by the inversion method (paragraph [0018]). Of particular importance is that any polymer sheet/coating used as part of the liner is able to withstand the temperatures occurring during steam

installation and steam curing (paragraphs [0003]-[0006]). Accordingly, the formation of holes in the liner, which is commonly referred to as "blow through" in the art, can be avoided (paragraph [0008]). An integral part of this is that this polymer sheet/coating is resistant to any thermoset material used (paragraph [0003]), since lack of resistance leads to degradation in the quality/thickness of the polymer sheet/coating and increases its susceptibility to the formation of holes at the elevated temperatures applied when curing the liner.

5.1.2 Both D1 and D2 lie in the technical field of the patent in suit, namely repairing pipes or passageways with cured-in-place liners which are sufficiently flexible to be reversed into the pipe or passageway and which successfully adhere to the internal surface of the pipe or passageway (D1: paragraphs [0005], [0044] and [0060]; D2: paragraphs [0001], [0012] and [0028]). In both documents the liner structure is similar to that of claim 1 of the main request and comprises a resin absorbent material layer, a thermoset resin absorbed into said resin absorbent material layer and a thermoplastic polyurethane polymer coating layer (D1: paragraphs [0024], [0027], [0056] and [0061] to [0063]; D2: paragraphs [0007], [0013], [0028] and [0029]).

However, only D2 addresses the problem of pinhole formation in the liner during in-place curing of the thermoset resin (paragraph [0028]). D1 refers in general terms to improved temperature resistance of the polyurethane layers in liners (paragraph [0093]) without specifically relating this property to the "blow through" problem during curing. Furthermore, in paragraph [0065] it discloses that the (thermosetting) resin used is preferably a low exothermic resin, i.e.

one which releases little heat upon curing, but does not disclose any impact of the heat released upon curing on the "blow through" problem of the thermoplastic polyurethane polymer.

Since D2 aims to solve technical problems which come closer to the technical problem of the patent in suit, and since it relates to a similar cured-in-place liner, it is considered to represent the closest prior art.

5.1.3 The cured-in-place liner of claim 1 of the main request differs from that of D2 in that it comprises a polyester thermoplastic polyurethane polymer with a DSC 2nd heat endotherm peak temperature of greater than 160°C, a melt flow index of 40 g/10 min or less at 210°C/3.8 kg and a Shore A hardness of from 85A to 98A. In D2 the polyester thermoplastic polyurethane polymer is defined only by a hardness of 65-75 (JIS-A) (see paragraph [0028]). As demonstrated during the opposition proceedings, JIS-A hardness is identical to Shore A hardness referred to in claim 1.

5.2 Technical problem and solution

The respondent has not provided any technical evidence to show an improvement over the cured-in-place liner of D2. Thus the technical problem underlying the subject-matter of claim 1 of the main request in view of D2 is merely how to provide an alternative cured-in-place liner, i.e. a liner with a polymer which withstands the temperatures used during steam installation and steam curing and which is resistant to the thermoset material employed, so that the formation of holes in the liner (blow through) is avoided. The technical evidence submitted with the respondent's letter of 9 February 2015 shows that the claimed (alternative)

cured-in-place liners with Estane®58437 and Estane®58447 as polyester thermoplastic polyurethane polymers, i.e. liners with polymers fulfilling the three requirements of claim 1 of the main request, withstand the temperatures used during steam installation and steam curing and are resistant to a typical thermoset material. It is therefore acknowledged that the technical problem has been successfully solved.

5.3 Obviousness

5.3.1 The skilled person starting from the cured-in-place liners of D2 and looking for alternative liners which withstand the temperatures used during steam installation and steam curing and are resistant to the thermoset material employed in the liner would not find in D2 or any other prior-art document the motivation to modify the polyester thermoplastic polyurethane polymers of D2 so that they satisfy the requirements of claim 1.

5.3.2 As regards D2 itself, this document in fact teaches away from the claimed subject-matter. Reference is made to lines 22-28 of column 4, which read as follows:

"*Also, when the hardness of the elastomer layer 104 is 65-75 (JIS-A), it has been found possible to prevent occurrence of pin holes during the hardening of adhesive agent (such as epoxy resin) layer which will be impregnated through thread-knitted layer 103 between the elastomer layer 104 and the internal wall of the pipeline*".

The respondent went against the teaching of D2 and showed that the technical problems of D2 can also be

solved with polymers having a higher Shore A hardness than that of D2, namely between 85A and 98A, provided that the polyester thermoplastic polyurethane polymer has at the same time a melt flow index and a DSC 2nd heat endotherm peak temperature as required by claim 1.

5.3.3 The board does not deny that such polyester thermoplastic polyurethane polymers were known in the art. D3 discloses Estane®58447 with a Shore A hardness of 90A (paragraph [0032]), a DSC 2nd heat endotherm peak temperature of 176°C and a melt flow index of 10-25 g/10 min or less at 210°C/3.8 kg (respondent's letter of 9 February 2015: page 9, table). However, in view of this high hardness the skilled person would not consider it as an appropriate alternative polymer to replace the polyester thermoplastic polyurethane polymer of D2. Furthermore D3, which exclusively concerns thermoplastic polyurethane polymers (see claims 1-8), does not provide any motivation for this replacement. D3 does not disclose that such polymers are suitable for a cured-in-place liner for pipes or passageways, let alone that they withstand the temperatures used during steam installation and steam curing and that they are resistant to the thermoset material employed in the liner. Thus the replacement of the polyester thermoplastic polyurethane polymer in the cured-in-place liner of D2 by the polyester thermoplastic polyurethane polymer of D3 would clearly be based on an *ex post facto* analysis.

5.4 In summary, the subject-matter of claim 1 is not obvious in view of the prior art. Thus this claim is patentable.

6. Dependent claims 2 to 9

The above considerations apply *a fortiori* to dependent claims 2 to 9, which directly or indirectly relate to claim 1 and correspond to specific embodiments of it. Thus they too are patentable.

7. Method claims 10 and 11

Claims 10 and 11 relate to a method for lining a cavity of a passageway or pipe comprising introducing a liner according to any of claims 1 to 9 into said cavity. For the reasons given for the product claims, the method claims too are patentable.

8. Adapted description

The description of the patent in suit had been adapted during the oral proceedings held before the opposition division on 10 March 2015. Apart from a mere clerical amendment on page 5 (deletion of "granted claims" at the end of column 8), no further amendment was considered necessary. Thereupon the respondent submitted a duly amended page 5 of the patent specification at the oral proceedings before the board. The appellant raised no objections.

9. As the main request is patentable, assessment of the patentability of the auxiliary requests becomes redundant.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the following documents:

   - claims 1 to 11 filed as main request on 8 March 2018 and
   - description:
     page 3 of the patent specification,
     pages 2 and 4 as filed on 10 March 2015 before the opposition division, and
     page 5 as filed during the oral proceedings before the board on 24 April 2018.

The Registrar: The Chairman:

M. Cañueto Carbajo W. Sieber

Decision electronically authenticated