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Datasheet for the decision of 2 September 2010

Case Number: T 0021/08 - 3.2.07

Application Number: 99931716.7

Publication Number: 1093401

IPC: B05D 1/34

Language of the proceedings: EN

Title of invention:
Method of separate application of resin and hardener

Patentees:
Akzo Nobel N.V., et al

Opponent:
Dynea ASA

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step: no; inventive step must be present over any feasible starting point"

Decisions cited:
T 0606/89, T 0570/91, T 0487/95, T 0710/97, T 0967/97, T 1285/01

Catchword:
See point 1.2.3

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0021/08 - 3.2.07

D E C I S I O N
of the Technical Board of Appeal 3.2.07
of 2 September 2010

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 6 November 2007 revoking European patent No. 1093401 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: H. Meinders
Members: P. O'Reilly
E. Dufrasne

Summary of Facts and Submissions

I. Opposition was filed against European patent No. 1 093 401 as a whole based on Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(c) EPC (added subject-matter).

The opposition division decided to revoke the patent for lack of inventive step in the subject-matter of claim 1 of each of the then main and first auxiliary requests.

II. The appellant (patent proprietor) filed an appeal against that decision.

III. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the main request or of the auxiliary request both filed with letter dated 14 March 2008 or, in the alternative, on the basis of the second or the third auxiliary request, both filed during the oral proceedings.

The respondent (opponent) requested that the appeal be dismissed. In the oral proceedings before the Board it no longer maintained the ground under Article 100(c) EPC.

IV. Claim 1 of the **main request** reads as follows (amendments when compared to claim 1 of the patent as granted are depicted in bold or struck through by the Board):

A method of separate application of resin and hardener components of an amino resin gluing system onto a substrate, characteri~~s~~**z**ed in that the hardener comprises a volatile acid and is either free from filler or comprises a filler in an amount of less than 20% by weight, wherein the components of the gluing system are applied in the form of strands ~~or by means of spraying, or any combination thereof,~~ in optional order of application.

Claim 1 of the **first auxiliary request** reads as follows (amendments when compared to claim 1 of the **main** request are depicted in bold by the Board):

A method of separate application of resin and hardener components of an amino resin gluing system onto a **wooden** substrate, characterized in that the hardener comprises a volatile acid and is either free from filler or comprises a filler in an amount of less than 20% by weight, wherein the components of the gluing system are applied in the form of strands in optional order of application.

Claim 1 of the **second auxiliary request** reads as follows (amendments when compared to claim 1 of the **first** auxiliary request are depicted in bold or struck through by the Board):

A method of separate application of resin and hardener components of an amino resin gluing system onto a wooden substrate, characterized in that the hardener comprises a volatile acid and is either free from filler or comprises a filler in an amount of less than ~~20%~~ **10%** by weight, wherein the components of the gluing

system are applied in the form of strands in optional order of application.

Claim 1 of the **third auxiliary request** reads as follows (amendments when compared to claim 1 of the **second** auxiliary request are depicted in bold or struck through by the Board):

A method of separate application of resin and hardener components of an amino resin gluing system onto a wooden substrate, characterized in that the hardener comprises ~~a volatile~~ **formic** acid and is either free from filler or comprises a filler in an amount of less than 10% by weight, wherein the components of the gluing system are applied in the form of strands in optional order of application.

V. The documents cited in the present decision are the following:

E3: Instruction Sheet No. NR.23d, CIBA-GEIGY Plastics, March 1986
E6: Instruction Sheet No. GB.1d, CIBA-GEIGY Plastics, July 1988
E13: DE-A-2 416 032
E17: EP-A-0 362 742
E18: WO-A-97/29161
E31: GB-A-435 041
E33: Test report

VI. The arguments of the appellant may be summarised as follows:

(i) The subject-matter of claim 1 of the main request involves an inventive step.

The opposition division erred in choosing E13 as the closest prior art document. E18 must be considered to be the closest prior art document and the subject-matter of claim 1 involves an inventive step over the teaching of this document.

E13 is unsuitable to be considered as the closest prior art since it is not concerned with an acid hardener/amino resin gluing system. The only gluing systems mentioned in E13 are resorcinol and resorcinol-phenol/formaldehyde gluing systems. There is a major difference between the gluing systems disclosed on the one hand in E13, and on the other hand in the patent in suit and E18. Also, the method disclosed in E18 is close enough to that of the patent in suit to easily qualify as the closest prior art.

The subject-matter of claim 1 is distinguished over the method disclosed in E18 in that the hardener contains a volatile acid and less than 20% by weight of filler and in that the two glue components are applied in the form of strands. It is correct that amongst the acid hardeners disclosed in E18 there are some that are volatile, but the document does not mention this property of the disclosed acids, nor that it could have any significance.

E13 does propose applying a two-component glue in the form of strands. The skilled person would not, however, use the teaching of this document because he knows from E17 that the system disclosed in E13 is disadvantageous

(see column 1, lines 22 to 32 of E17). There is thus a prejudice for the skilled person against using the teachings of E13. This prejudice has been overcome in the case of the patent in suit by the inventive realisation that by reducing the amount of filler it is possible to apply successfully the two-component glue in the form of strands.

Even if, for the sake of argument, E13 were considered to be the closest prior art the skilled person still would not arrive at the invention, when starting from the method disclosed in this document. The problem to be solved starting from this method is to provide an alternative two-component glue. The skilled person would not have considered applying the teaching of E31 to the method disclosed in E13 since E31 is an old document and it would not be "on the table" so to speak. The skilled person would rather take the more obvious line of applying the teaching of E18 to the method disclosed in E13. However, E18 teaches to provide a hardener with 20% or more filler so that the skilled person still would not have arrived at the subject-matter of claim 1. Moreover, it is explained in E17 that the method disclosed in E13 has disadvantages so that there was a prejudice against applying the teaching of E13.

The table on page 5 of the patent in suit shows that the reduction of the amount of filler in the acid hardener leads to an improvement in the delamination properties.

Also the results of the comparative tests set out in E33 are relevant. The weight percentages of the

phosphoric and formic acids differ because the pH values were maintained approximately the same in both cases.

(ii) The subject-matter of claim 1 of the first auxiliary request involves an inventive step.

The arguments already set out with respect to claim 1 of the main request also apply to claim 1 of this request.

(iii)The subject-matter of claim 1 of the second auxiliary request involves an inventive step.

The limitation of the amount of filler in the hardener to less than 10% means that there is a clear gap between the maximum amount of filler according to claim 1 and the minimum amount of filler disclosed in E18. This overcomes the argument that it has not been shown that there is a special effect which is not present at 20% of filler but is present just below 20%.

(iv) The subject-matter of claim 1 of the third auxiliary request involves an inventive step.

In accordance with this request the volatile acid used in the method of claim 1 has been limited to formic acid. E31, which lists some acid hardeners, does not disclose formic acid. The respondent has referred to E18 as disclosing this acid. There is, however, no reason why a skilled person who has applied the teachings of E31 (not involving formic acid) to the method disclosed in E13 would then go to E18 and choose a different acid. The argument of the respondent

amounts to mosaicing of the documents, which is not allowed.

E3 and E6 are not relevant since in both of these documents the described method applies the different components of the two-component glue to different substrates. This is different to the method of the patent in suit wherein the two components are applied to the same substrate.

VII. The arguments of the respondent may be summarised as follows:

(i) At least starting from E13 as the closest prior art document the subject-matter of claim 1 lacks an inventive step.

The method of claim 1 is distinguished over the teaching of this document by the nature of the components of the two-component glue as specified in the claim, i.e. that it is an amino resin and that a volatile acid is used as hardener with the hardener having less than 20% filler. The problem to be solved by these features is to find an alternative two-component glue to that disclosed in E13.

This problem is solved in E31 which discloses a two-component glue which may include an amino resin, e.g. formaldehyde urea (see page 2, lines 45 to 49), and a volatile acid, e.g. hydrochloric, phosphoric, acetic or oxalic acids (see page 1, lines 48 to 53), of which hydrochloric and acetic acids correspond to those mentioned in the patent in suit. It is only mentioned that a filler can be incorporated as an addition (see

page 1, lines 60 to 63), which implies that a filler need not be incorporated, i.e. the hardener may be free from filler.

The skilled person will thus arrive at the subject-matter of claim 1 in an obvious manner.

The remarks in E17 regarding disadvantages of the method disclosed in E13 cannot be considered as proof of a general technical prejudice, which requires more than a remark in a single document.

The table on page 5 of the patent in suit may show that the reduction of the amount of filler in the acid hardener at some point leads to an improvement in the delamination properties. The table, however, shows that at 15% filler content an improvement has occurred compared with 30% filler content (comparative example). As no intermediate values are available, it is not possible to derive from the table at which specific percentage the improvement occurred. It could have occurred already at 25% filler content, i.e. outside the claimed range.

Also the results of the comparative tests set out in E33 are not relevant. The weight percentages of the phosphoric and formic acids that are being compared are not the same so that the test conditions are different for the test example and the comparative example, with the result that no conclusion can be drawn.

(ii) The subject-matter of claim 1 of the first auxiliary request does not involve an inventive step.

The arguments already set out with respect to claim 1 of the main request also apply to claim 1 of this request.

(iii)The subject-matter of claim 1 of the second auxiliary request does not involve an inventive step.

As already explained with respect to claim 1 of the main request E13 does not require that filler is present in the acid hardener as its presence is merely indicated as being optional. In any case it has not been shown that the improvement which may be present at the claimed amount of 10% filler was not already present at, for example, 25%.

(iv) The subject-matter of claim 1 of the third auxiliary request does not involve an inventive step.

The extra feature of this claim compared to claim 1 of the main request is that the acid is formic acid. The subject-matter of claim 1 of the second auxiliary request has been shown to be obvious so that the problem to be solved by the extra feature of this claim is merely to provide an alternative volatile acid.

It is already known from E18 that formic acid is an alternative acid to some of those disclosed in E31. It is known as well from E3 and E6 to use formic acid as a hardener. It was therefore obvious for the skilled person to use formic acid as an alternative. It has already been shown that the test results (E33) supplied by the appellant are flawed because the test conditions were not the same for the examples with formic acid and the comparative examples with phosphoric acid. This

means that there has not been shown to be any surprising effect. In any case such an effect would be a bonus effect resulting from the provision of an obvious measure.

The appellant has suggested that this argument is based on mosaicing of disclosures. This is not the case as there was a reason for the skilled person to go to E31 and then to E18.

Reasons for the Decision

Main request

1. *Inventive step*

1.1 The respondent presented arguments with respect to a lack of inventive step starting from each of E13, E18 and E31. For the present decision it is only necessary to consider the argumentation which starts from E13 which was also the document used by the opposition division as a starting point in its decision reasoning.

1.2 The main argument of the appellant was that E13 was not the closest prior art document. The appellant considered that E18 the closest prior art document.

1.2.1 E13 is directed to a method of applying a two-component glue to a wooden substrate in which the components are applied successively. The document indicates that the method may be advantageously applied to a resorcinol based glue (see page 2, last paragraph), but there is no indication in the document that it is limited to

this particular two-component glue, which is given as an example. Claim 1 of the document merely indicates the application steps, and the particular components of the glue are first mentioned in dependent claim 3. Also, the description on page 4 which explains the advantages of the invention simply mentions a resin and hardener system ("Harz und Härter") without reference to a particular two-component glue.

1.2.2 E18 is directed to a two-component glue with a particular composition (see claim 1 of the document) which corresponds to that set out in claim 1 of the patent in suit. The document mentions that the components may be applied separately on the same surface of a wooden substrate (see page 7, lines 28 to 32). It does not, however, give any information regarding how the components may be applied.

1.2.3 The appellant argued that E18, not E13, was to be taken as the closest prior art document when considering the question of inventive step.

The Board concurs in this respect with the conclusions arrived at in T 967/97 (not published in OJ EPO, point 3.2 of the reasons), which was referred to by the respondent. If the skilled person has a choice of several workable routes, i.e. routes starting from different documents, which might lead to the invention, the rationale of the problem-solution approach required that the invention be assessed relative to all these possible routes, before an inventive step could be acknowledged. Conversely this means that if the invention was obvious to the skilled person in respect

of at least one of these routes, then an inventive step was lacking.

For the Board this means that in a situation, as in the present case, there is no need to discuss which document is "closer" or "closest" to the invention, the only question is whether E13 is a feasible starting point.

1.2.4 The Board is of the opinion that this applies to E13, since it concerns - corresponding to the method of claim 1 - a method of separate application of the resin and the hardener of a glue system to the substrate, in the form of strands. The fact that the hardener contains no or only a limited amount of filler may have an effect on the blending of the resin and hardener, as argued by the appellant. This cannot, however, result in disqualification of E13 as a feasible starting point, since the claimed method only relates to the application of the resin and hardener to a substrate, not their blending, and it does not comprise any further steps which would make it a gluing method in which blending is a requirement.

The Board is further of the opinion that the skilled person considering the method of E13 would also consider with which two-component glue the improved method could be performed in addition to the one example given therein. It would be clear to the skilled person that the example of the resorcinol based glue was not limiting for the application method and that thus a general method of applying two-component glue compositions was being described. The skilled person is thus incited to start from E13 and to consider which

other glue compositions could benefit from being applied by the method disclosed therein.

1.2.5 The appellant argued that the skilled person would start from E18 and look for a suitable method of applying the two-component glue disclosed therein. The Board agrees with the appellant that the skilled person could start from E18. However, in view of the considerations set out above that does not distract from the fact that the subject-matter of the claim should also involve an inventive step starting from E13. If the skilled person considering E13 were to look for suitable compositions to use with the method disclosed therein then the existence of a further document - E18 - has no effect on that fact.

1.2.6 In support of its arguments relating to the choice of the closest prior art document the appellant relied upon Case Law of the Boards of Appeal, 5th Edition 2006, sections I.D.3.5 and 3.6, and also referred to the decisions T 606/89, T 710/97, T 570/91, T 487/95 and T 1285/01 (none published in OJ EPO).

The Board is of the opinion that none of the cited decisions is applicable in the present case, for the following reasons.

The subject-matter of claim 1 is a method of separate application of a resin and a hardener of an amino resin gluing system onto a substrate, with features relating to the method (applying each component in the form of strands) and features relating to the amino acid gluing system (hardener comprising volatile acid and no filler or a filler only to a certain amount).

T 606/89 relates to a claim for a chemical compound with a desired specific use, with the result for the deciding board that in choosing the closest prior art from among the known compounds consideration should be given to the particular properties of the compound which render it suitable for the desired use. This does not apply to present claim 1, which is a method claim.

The same applies to decisions T 570/91 and T 487/95, which also concern product claims.

In decision T 1285/01 the deciding board referred to earlier case law establishing in its opinion the principle that for a claim to a process of use of a compound for its particular characteristics in the production of a specific compound, the prior art to be considered should relate to a production process which also uses this compound for those characteristics. That board applied these principles to a claim for an improved process for producing a compound, by means of a particular apparatus. It considered that the relevant prior art processes should in that case also involve that apparatus.

In the present case, however, the claim is not directed to a production process, or to a process for producing bonded substrates using a particular glue system, but merely to a method of applying two compounds to a substrate.

In decision T 710/97 it is stated that the assessment of inventive step should start from a situation as close as possible in reality to that encountered by the

inventor, but also that in cases where there are alternative starting points, the problem-solution approach should be repeated for each of them, which is what the present Board will do in respect of what it considers to be a feasible starting point, namely E13 (see below).

1.2.7 The appellant has argued that there is a prejudice against using the teaching of E13 because it is stated in E17 (see column 1, lines 22 to 32) that the method disclosed in E13 has a disadvantage. However, as pointed out by the respondent, it takes more than just as single negative comment to create a prejudice. The respondent mentioned the Case Law of the Boards of Appeal, 6th Edition 2010 (see section I.D.9.2) as showing that a single negative reference is not enough to establish a general technical prejudice. The Board agrees with that case law so that it concludes that the negative remarks in E17 are not alone sufficient to establish the existence of a prejudice. Firstly, E17 has no special value as a general reference, such as a handbook, being only a particular patent application. Further, E17 only mentions a single disadvantage which may or may not be important so that the skilled person would not see this as a general teaching not to use the method disclosed in E13 at all.

1.2.8 The Board is therefore satisfied that E13 is a starting point from which the skilled person would start and would consider with which two-component glues the method disclosed therein could be applied.

1.3 The distinguishing features of the method of claim 1 over the one disclosed in of E13 are that the glue is

an amino resin gluing system wherein the hardener comprises a volatile acid and is either free from filler or comprises a filler in an amount less than 20% by weight.

With respect to the possible presence or not of a filler E13 is silent. Therefore, no conclusions can be drawn as to whether it is either free from filler or comprises a filler in an amount less than 20% by weight.

1.4 The description of the patent includes a table on page 5 showing the effect of the filler content in the hardener on the delamination of substrates under certain test conditions. The amounts of filler are 0%, 5%, 15% and 30% (comparative) and the corresponding delamination results are 0.0%, 2.0%, 6.1% and 24.0% (comparative) respectively. The Board concludes from these results that somewhere between 15% and 30% filler an improvement occurs. The Board also considers that no conclusion can be drawn as to where this improvement occurs within this range and that in particular it could already have occurred at percentages above 20% filler, i.e. outside the claimed range. The arguments of the appellant that are based on an improvement in the delamination results in the presence of less than 20% filler are thus not supported by the evidence.

1.5 The appellant also supplied test results (E33) which compare phosphoric and formic acids as comprised in the hardener. As the respondent pointed out in the oral proceedings, the weight percentages of acid in the two two-component glues differed by a significant amount. The appellant explained that this was because the pH was maintained approximately the same. The appellant

did not, however, explain why the pH should be the relevant criterion instead of the weight percentage.

Already for this reason these test results cannot be accepted as having being shown to be true comparative tests.

It is therefore not necessary to consider the possible relevance, if any, of the test results for the question of inventive step.

1.6 The Board concludes therefore that it has not been demonstrated that the teaching of the patent leads to an improvement over the prior art method known from E13.

1.7 The appellant suggested during the oral proceedings that the problem to be solved, when starting from E13, was to provide an alternative two-component glue. The respondent agreed with this problem. This was also the problem considered by the opposition division. The Board agrees that this is the problem to be solved.

1.8 The respondent (and the opposition division) considered that the skilled person would find a solution to this problem in E31.

1.8.1 E31 describes a two-component glue which includes an amino resin, i.e. formaldehyde urea (which is also specified in the patent in suit), and an acid hardener. The list of acid hardeners given in E31 (see page 1, lines 48 to 54) includes hydrochloric acid and acetic acid, which are both listed in the patent in suit as being suitable volatile acids (see paragraph [0025]). It is further stated in E31 (see page 1, lines 60 to 63)

that "Further additions, such as for example … fillers of the most varied kinds can be incorporated with the adhesives." The teaching of E31 in this respect is therefore that a filler **can** be added but need not be, i.e. the hardener may be free from filler in accordance with one of the two alternatives in claim 1 of the request under consideration.

With regard to the method of applying the two-component glue disclosed in E31, "brushing on" (see page 1, line 71) and "spraying" (see page 1, line 90) are mentioned. In E13, when methods of applying the glue are discussed, spraying is considered and it is explained why this method is disadvantageous (see page 3, last paragraph). It is then explained why the successive application of the components in the form of strands is advantageous (see page 4, last paragraph). The skilled person is therefore particularly incited to consider the alternative two-component glue known from E31 as being suitable for being applied by the method known from E13 since he knows that this application method is an improvement on that disclosed in E31.

1.8.2 The skilled person therefore in applying the teaching of E31 to solve the objective problem would arrive at a method in accordance with claim 1.

1.9 Therefore, the subject-matter of claim 1 of the main request does not involve an inventive step in the sense of Article 56 EPC.

First auxiliary request

2. *Inventive step*

2.1 Claim 1 of this request differs from that of the main request in that the substrate is stated to be wooden. Since, however, the substrates dealt with in both E13 and E31 are wooden this additional feature does not affect the finding with respect to inventive step.

2.2 Therefore, the subject-matter of claim 1 of the first auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

Second auxiliary request

3. *Inventive step*

3.1 Claim 1 of this request differs from that of the first auxiliary request in that the filler is indicated to be in an amount of less than 10% by weight in place of less than 20% by weight.

This change does not, however, affect the argumentation which led to rejection of the main request. As explained with respect to the main request (see point 1.5.1 above) E31 already indicates that the presence of a filler is optional so that a change in the maximum amount has no effect on this teaching.

3.2 Therefore, the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

Third auxiliary request

4. *Inventive step*

4.1 Claim 1 of this request differs from that of the second auxiliary request in that the requirement that the hardener comprises "a volatile acid" is replaced by a requirement that the hardener comprises "formic acid".

As explained above with respect to the main request (see point 1.5.1 above) E31 lists suitable acid hardeners (see page 1, lines 48 to 54). This list includes phosphoric, acetic and oxalic acids.

E18 is also directed to a two-component glue comprising an amino resin and an acid hardener. On page 3, lines 27 to 29 suitable acid hardeners are listed. As pointed out by the Board during the oral proceedings the list includes phosphoric acid, acetic acid and oxalic acid, as well as propionic acid and formic acid. Acetic, oxalic acid, propionic and formic acids are all aliphatic acids. The skilled person knowing the acids listed in E31 would realise from E18 that the acids mentioned there are also suitable for the two-component glue known from E31 since in both cases the two-component glue comprises an amino resin and an acid, or acid producing, hardener. As also pointed out by the Board in the oral proceedings, in the list of suitable acids in E18 formic acid is picked out as being the most suitable, ahead of phosphoric, acetic and oxalic acids (mentioned in E31). The skilled person would therefore expect particularly good results using formic acid as the acid hardener in the two-component glue known from E31.

As pointed out by the respondent in the oral proceedings this view is also supported by the

teachings of E3 and E6 which indicate the use of formic acid as the acid hardener in a two-component glue. The appellant argued that the teachings of E3 and E6 applied to situations where both components of the glue were applied each to a differing substrate and not to the same substrate as required by claim 1 of this request. The appellant did not show why the application of the two components to separate substrates (which are then brought together) would affect the choice of acid hardener compared with when the resin and hardener are applied to the same substrate, with another substrate then being applied to this first substrate.

4.2 Therefore, the subject-matter of claim 1 of the third auxiliary request does not involve an inventive step in the sense of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Nachtigall H. Meinders