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**Datasheet for the decision
of 8 March 2016**

Case Number: T 1563/13 - 3.3.09

Application Number: 01915994.6

Publication Number: 1268700

IPC: C09J161/28

Language of the proceedings: EN

Title of invention:

Adhesive system comprising etherified amino resins

Patent Proprietors:

Akzo Nobel Coatings International B.V.
Casco Adhesives AB

Opponent:

Dynea Oy

Headword:

Relevant legal provisions:

EPC Art. 123(2), 83, 54, 56
RPBA Art. 12(4), 13(1)

Keyword:

Admissibility of appeal (yes)
Transfer of opponent status (no)
Added subject-matter (no)
Sufficiency of disclosure (yes)
Inventive step (yes)
Late-filed documents - admitted (no)

Decisions cited:

T 1002/92, T 0956/03, T 1050/09

Catchword:



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Case Number: T 1563/13 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 8 March 2016

Appellant:

(Opponent)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted on
17 May 2013 maintaining European patent No.
1268700 in amended form.**

Composition of the Board:

Chairman W. Sieber
Members: J. Jardón Álvarez
 E. Kossonakou

Summary of Facts and Submissions

- I. This decision concerns the appeal filed by the opponent against the interlocutory decision of the opposition division that European patent No. 1 268 700, as amended, met the requirements of the EPC.
- II. The opponent had requested revocation of the patent in its entirety on the grounds of Article 100(a) (lack of novelty and inventive step) and (b) EPC. The ground for opposition under Article 100 (c) EPC was raised after the nine month time limit set out in Article 99(1) EPC.

The documents cited during the opposition proceedings included:

D1: EP 0 427 058 A2;

D2: S.H. Iman *et al.*, "Wood Adhesive from Crosslinked Poly(Vinyl Alcohol) and Partially Gelatinized Starch: Preparation and Properties", *Starch/Stärke*, 51(6), 1999, pages 225 to 229;

D3: EP 0 368 215 A1;

D4: US 5 434 216 A;

D6: WO 99/67028 A1;

D7: US 3 301 809 A;

D10: US 4 521 561 A;

D11: US 5 545 684 A;

D16: Declaration by Mr B. Nasil-Bakir, signed
3 December 2012 (two pages); and

D17: Supplementary Gluing Tests filed by the patent
proprietor with letter of 21 December 2012 (two
pages).

III. The opposition division maintained the patent in amended
form on the basis of a set of 46 claims filed as the
main request on 30 January 2013 during the oral
proceedings. Independent claims 1 and 2 read as follows:

"1. An adhesive system characterised in that it
comprises, (a) a resin component comprising an
etherified amino resin, the amount of the resin
component in the adhesive system being 40-85 weight %
based on the solids of the adhesive system, (b) a
polymer prepared from one or more ethylenically
unsaturated monomers, the amount of the polymer in the
adhesive system is 10-50 weight %, based on the solids
of the adhesive system, (c) a curing agent, and
(d) a polyvinyl alcohol."

"2. A hardener composition for gluing systems of the
amino resin type, characterised in that it comprises,
(b) a polymer prepared from one or more ethylenically
unsaturated monomers, said polymer containing post-
cross-linking groups, the amount of the polymer in the
hardener composition is 25-70 weight %, based on the
solids of the hardener composition, (c) a carboxylic
acid and (d) a polyvinyl alcohol."

Claims 3 to 41 were dependent claims.

Claims 42 and 43 related to the use of the adhesive system and the hardener composition of claims 1 and 2, respectively.

Claims 44 to 46 related to methods of application of the adhesive system according to claim 1.

IV. The opposition division admitted the late-filed ground for opposition under Article 100(c) EPC into the proceedings and decided that:

- Claim 1 did not contain added subject-matter and also satisfied the requirements of Article 123(3) EPC;
- the invention was sufficiently disclosed;
- the subject-matter of claim 2 was novel over the disclosure of D2; and
- the claimed subject-matter involved an inventive step.

Concerning inventive step the opposition division saw the problem to be solved over the closest prior-art document, D6, in the provision of an alternative adhesive system. The skilled person would not have arrived at the solution of claim 1 in an obvious manner. In this context documents D4 and D7 were considered.

V. The opponent (in the following: the appellant) lodged an appeal against this decision and filed the statement setting out the grounds of appeal on 26 September 2013 requesting that the decision under appeal be set aside and that the patent be revoked. The statement of grounds of appeal included the following documents:

- D26: Surface Coatings, Volume I, Raw Materials and their Usage, second edition 1983, Chapman and Hall, pages 87-98;
- D27: Surface Coatings, Volume I, Raw Materials and their Usage, third edition 1993, Chapman & Hall, pages 134-145;
- D28: WO 99/48991 A1;
- D29: Brochure: "Dispersions for the adhesives industry", Air Products and Chemicals, Inc., 2004, 5 pages;
- D30: JP 3-239777 and its translation into English;
- D31: EP 0 501 174 A1; and
- D32: L. Qiao et al., "Improvement of the water resistance of poly(vinyl acetate) emulsion wood adhesive" in Pigment & Resin Technology, Volume 29(3), 2000, pages 152-158.

VI. In its reply filed on 19 March 2014, the patent proprietors (in the following: the respondents) requested that the appeal be dismissed (main request), or, alternatively, that the patent be maintained in amended form based on the claims according to auxiliary requests 1 to 4 submitted therewith. They also requested that documents D26 to D32 not be admitted into the proceedings and filed the following further evidence:

D33 : US 3 523 051 A; and

D34: Supplementary Gluing Tests (two pages).

- VII. In a communication dated 9 October 2015, the board indicated the points to be discussed during the oral proceedings scheduled for 8 March 2016.
- VIII. By letter of 29 January 2016, the respondents elaborated on their arguments.
- IX. By letter of 8 February 2016, the appellant requested to transfer the opposition and the appeal from Dynea Oy to Dynea AS. The appellant also filed further arguments and the following evidence:
- D35: Experimental report headed "Answer to supplementary gluing tests D34" (2 pages), non-dated;
- D36: Declaration of Mr Siltala dated 28 August 2015 (two pages) relating to the changes in the Dynea Group;
- D37: Print of the website <http://www.dynea.com/products/engineered-wood-solutions> (6 pages);
- D38: Copy of Transfer Agreement by and between Dynea Oy and Dynea AS dated 11 March 2013 (9 pages, redacted copy);
- D39: Email correspondence between Dynea and Wacker concerning DPN 15 (4 pages); and
- D39A: Two datasheets concerning Vinnapas[®]-Dispersion DPN 15 dated November 1993 and January 1981.
- X. By letter of 24 February 2016, the respondents requested that the appeal be rejected as inadmissible and, as further auxiliary requests, that the transfer of the opposition from Dynea Oy to Dynea AS be considered inadmissible and that D35, D39 and D39A be rejected as

late filed and *prima facie* not relevant. They also filed the following documents:

D40a: Excerpt from the web site of Metadynea Austria GmbH (<http://www.metadynea.com/at/products-and-services/chemistry/melamine-urea-formaldehyde/>); and

D40b: Excerpt from the web site of Metadynea Austria GmbH (<http://www.metadynea.com/at/products-and-services/wood-based-panels/>).

XI. On 8 March 2016 oral proceedings were held before the board. During the oral proceedings the board decided that the request for the transfer of the status of the opponent from Dynea Oy to Dynea AS could not be granted. The proceedings continued with Dynea Oy as the appellant.

XII. The arguments of the appellant, insofar as they are relevant for the present decision, may be summarised as follows:

- The subject-matter of amended claim 1 comprised added subject-matter. There was no direct and unambiguous disclosure for the combination of the range concerning the amount of the resin component and the range concerning the amount of polymer of the claimed adhesive system.
- The priority was not validly claimed, the reason being essentially the same used in relation to added subject-matter. The fact that the amendments were not supported implied that the priority documents did not directly and unambiguously disclose the subject-matter of the claims.

- The invention as claimed was not sufficiently disclosed. In its view, none of the examples related to the claimed subject-matter and the skilled person would have to start a search programme for at least three variables (PVA, PVAc, and PVAc-X), in order to find out whether any of these choices would result in an effect according to the claim.

- The subject-matter of claim 1 lacked novelty in view of the disclosures of D3 and D30 and the subject-matter of claim 2 in view of the disclosure of D28.

- The subject-matter of claim 1 lacked inventive step starting from D6 as the closest prior-art document, in combination with the common general knowledge of the skilled person as shown in any of D4, D7 or D10. Alternatively, starting from D3 as closest prior art in combination with D4, D10, D11 or D7. Furthermore, the subject-matter of claim 2 lacked inventive step starting from D6 as closest prior art in combination with D7 or D4, alternatively, starting from D1.

XIII. The arguments of the respondents may be summarised as follows:

- The appeal was filed by a party not entitled to do so and no longer a party to the proceedings. Consequently, it was inadmissible.

- The transfer of the status of the opponent was not valid, since neither a universal succession of the opponent nor a transfer of the opponent's business solely to Dynea AS had been evidenced.

- Documents D27 to D32, D35, D39 and D39A should not be admitted into the proceedings because they were late filed and *prima facie* not relevant.

- The respondents relied on the reasoning of the opposition division concerning the issues of added subject-matter, right to priority and sufficiency of disclosure.

- The subject-matter of claim 1 was novel, it being distinguished from D3 by requiring an etherified amino resin in combination with polyvinyl alcohol. Document D30 disclosed a furfuryl alcohol modified amino resin, such resin not being an etherified amino resin as required by claim 1. The subject-matter of claim 2 was novel over D28 because there was no information in D28 that the trademark product DPN 15 used therein contained post-cross-linking groups. The evidence D39 and D39A was contradictory as the German version defined the polymer as containing reactive groups while the English version lacked such a definition. Moreover the data sheets showed that the two products were different concerning the solid content, the viscosity, the pH, and the density. No information could be deduced from such specifications about the product used in D28.

- Document D6 represented the closest prior-art document indeed, the examples in the patent in suit showed less delamination when using an adhesive system as claimed in claim 1. There was no hint in the prior art that by using an etherified amino resin the strength of the joint could be improved when curing at low temperature.

- Similar considerations applied to the hardener of claim 2. The use of a polymer prepared from ethylenically unsaturated monomers and containing post-cross-linking groups also solved the problem of improving the strength of the joint when curing at low temperatures and there was no hint to such improvement in any of the cited documents.

XIV. The appellant requested that:

- the decision under appeal be set aside and that the European patent No. 1 268 700 be revoked;
- a transfer of the status of opponent and appellant from Dynea Oy to Dynea AS be registered;
- either both D34 and D35 be admitted into the proceedings or both excluded.

XV. The respondents requested that:

- the appeal be rejected as inadmissible; or
- the requested registration of the transfer of the opponent and appellant status be rejected as inadmissible;
- the appeal be dismissed (main request); or
- the patent be maintained according to any of auxiliary requests 1 to 4, all requests filed with the reply to the statement of grounds of appeal dated 17 March 2014;
- documents D27 to D32, D39 and D39A not be admitted into the appeal proceedings or else that the case be remitted to the opposition division and the appellant be made to carry all the resulting costs.

Reasons for the Decision

1. Admissibility of the appeal

1.1 The respondents requested that the appeal be considered inadmissible because it had been filed by a party not entitled to do so. When filing the notice of appeal on 5 July 2013, the opponent Dynea Oy was no longer in a position to file the appeal, because it had already transferred its status as opponent to Dynea AS, as shown by the transfer agreement D38, dated 11 March 2013.

1.2 It is well established that oppositions, while they may not be freely transferred, can be transferred in certain circumstances from one natural or legal person to another, either together with those assets of a business in the interest of which the opposition was commenced or in the framework of universal succession.

As regards the date of effective transfer of the opponent status, the jurisprudence of the boards of appeal clearly suggests that a transfer can only be acknowledged as from the date when adequate evidence is provided. Until such evidence has been provided, the previous party retains its rights (e.g. T 956/03, point 4 of the reasons with reference to case law; see also Case Law of the Boards of Appeal of the EPO, 7th edition, 2013, Chapter IV.C.2.2.6).

1.3 In the present case, the appeal was filed on 5 July 2013 in the name of Dynea Oy, i.e. the party which was the opponent in opposition proceedings. At that date no request for transfer had been filed and, therefore, the opponent Dynea Oy was entitled to file the appeal. The request for transfer was only filed on 8 February 2016, i.e. well after the filing date of the appeal.

The fact that the transfer agreement D38 bears a date of 11 March 2013 is, in view of what is said in point 1.2 above, irrelevant. In the present case, the effective date of transfer of opponent status, if such a transfer is allowable, can only be 8 February 2016.

- 1.4 The respondents relied on the following passage from the Case Law of the Boards of Appeal of the EPO, 7th edition, 2013, page 837:

"[In T 956/03] the board considered the question of the time limit for filing evidence of a transfer. According to the board, the case law showed a definite balance in favour of the view that a transfer could only be acknowledged from, at the earliest, the date when adequate evidence to prove the transfer had been filed. This was desirable in the interest of legal certainty and, within that principle, to ensure that the identity of an opposing party was known. If the transfer took place before the appeal period expired, then the entitlement of the transferee to replace the opponent had to be established by filing the necessary evidence before the appeal period expired." (emphasis added by the respondents)

They concluded from that reference to T 956/03 that the entitlement of transfer from Dynea Oy to Dynea AS would have had to be established by filing the necessary evidence **before** the appeal period expired. Since this did not happen in the present case, they concluded that the appeal was filed by a person not being a party to the proceedings.

However, the case underlying T 956/03 relates to a situation completely different from the present one. In

contrast to the present case, that appeal had already been filed by a party claiming to be the successor in law of the previous opponent. In that particular situation it was held necessary to establish, by filing the necessary evidence, the entitlement of the transferee to replace the opponent before the appeal period expired. In the present case, the appeal was filed in the name of the "old" opponent. A transfer of the opponent status could have been acknowledged only from the date when adequate evidence was provided.

1.5 In view of the above it is evident that the appeal has been filed by an entitled party. Thus, the appeal is admissible.

2. *Transfer of opposition status*

2.1 As set out above, the opponent status, while it may not be freely transferred, can be transferred in certain circumstances from one natural or legal person to another, either together with those assets of a business in the interest of which the opposition was commenced or in the framework of universal succession.

2.2 The appellant requested by letter dated 8 February 2016, to transfer the status of the opponent from Dynea Oy to Dynea AS, because the relevant business, in whose interest the opposition had been instituted, was divested into Dynea AS. As set out in paragraph [0002], the patent in suit relates to adhesive systems suitable for use in wood-based constructions for outdoor use, which corresponded to the business of Dynea AS.

In support of this request the appellant filed:

- a declaration of Mr Siltala, procurator on behalf of Dynea Oy, who confirmed that the opposition belongs to the business of Dynea AS (D36);
- a printout of the website of Dynea AS in order to show that adhesive systems suitable for use in wood-based construction for outdoor use was the business of Dynea AS (D37); and
- a copy of a transfer agreement documenting the transfer of the business (D38).

2.3 However, this evidence does not prove that in fact the relevant business assets have been transferred in their entirety from Dynea Oy to Dynea AS.

2.3.1 As explained in point 3 of D36, the changes in the Dynea group, which will result in the liquidation of Dynea Oy, lead to its division into three different companies, namely:

- Dynea AS, with a focus on the business of adhesives for construction applications;
- Metadynea Austria GmbH, part of Metadynea LLC, with a focus on adhesives for wood based panels, such as particle boards, dry processed fiber boards and plywood; and
- Prefere Resins with a focus on phenolic resins.

2.3.2 It appears, however, that the business segments of Dynea AS and Metadynea Austria GmbH overlap. The excerpts from the website of Metadynea Austria GmbH (D40a and D40b) show that the activities of this company also concern the preparation of formaldehyde-based

resins and wood-based applications using such resins, for both indoor and outdoor use. Thus, Metadynea Austria GmbH advertises on its website the same kind of products as Dynea AS. Thus, doubts arise as to whether the subject-matter of the opposition exclusively falls within the business field of Dynea AS.

2.3.3 Nor can D38 provide the necessary evidence.

In point B) under the heading "Recitals" it is stated:

"The Parties wish to agree on the terms and conditions applicable to the transfer of certain patents, know-how, and process technology by Dynea Oy to Dynea AS as set forth in the Transfer Agreement."

The remaining part of D38 does not further specify these **certain** patents, know-how and process technology. Although it is stated in section 1 (Definitions) that patent(s) are further specified in Schedule 1 and process technology in Schedule 2, these schedules are not provided with D38. Also the assignment of patents (section 2.1), know-how (section 2.2) and process technology (section 2.3) remains rather general. In particular, D38 is silent on the transfer of the status of opponent in proceedings concerning the patent in suit.

2.3.4 Lastly, the argument of the appellant that the patent is limited to the adhesive systems for outdoor use, which corresponds to the core business of Dynea AS, is not convincing. The technical solutions addressed in paragraph [0005] of the patent specifications are not limited to outdoor use but apply to all kind of products. Moreover, there appears to be no clear

distinction between indoor and outdoor uses, both applications overlap to a certain extent.

2.4 It is evident from the above that there is no sufficient evidence that a transfer of the relevant business assets in their entirety took place, let alone a transfer of the opponent status in relation to the patent in suit. As a consequence, the request for transfer of the status of opponent is to be refused.

2.5 During the oral proceedings before the board, the appellant stated that the process of liquidation of Dynea Oy was ongoing and that the company had not been dissolved yet, which, incidentally, is also apparent from D36. Under these circumstances, the proceedings were continued with Dynea Oy as the appellant.

MAIN REQUEST (claims upheld by the opposition division)

3. *Amendments*

3.1 Claim 1 (see point III above) results from the combination of granted claims 1, 4 and 7. Compared to granted claim 1, it specifies the amount of the resin component as being 40-85 weight% and the amount of polymer as being 10-50 weight%, in both cases based on the solids of the adhesive system.

3.2 The appellant objected to this amendment and argued that the claimed subject-matter now extended beyond the content of the application as filed, essentially because there was no direct and unambiguous disclosure for the combination of both preferred ranges. In each case, they were selected from lists of three possible ranges. Moreover, claim 3 as filed could also not support the amendment because this claim included specific amounts

of the curing agent and the polyvinyl alcohol, two features which had not been incorporated into claim 1.

3.3 The board agrees with the appellant that claim 3 as filed does not support the amendment. However, the amendment is indeed supported by the specification as filed for the following reasons:

3.3.1 It is undisputed that the claimed ranges are disclosed individually in the application as filed as preferred values for the amount of resin and the amount of polymer to be used in the adhesive system. Thus, on page 2, lines 28 to 30 it is stated that:

"The total amount of the resin component in the adhesive system is suitably 10-90 weight %, preferably 40-85 weight % and most preferably 50-80 weight %, based on the solids of the adhesive system.";

and on page 3, lines 33 to 35 it is stated that:

"The amount of the polymer in the adhesive system is suitably 5-60 weight %, preferably 10-50 weight % and most preferably 15-30 weight %, based on the solids of the adhesive system".

3.3.2 In principle, a combination of embodiments is possible when it is apparent to the skilled person that they relate to two independent preferred aspects of the invention which can thus be combined (see T 1050/09, point 3 of the reasons).

3.3.3 This is indeed the case here. The amounts of resin component and of polymer in the adhesive system are independent of each other as even admitted by the

appellant itself in its statement of grounds of appeal. In particular, it is said:

"Such technical link and the imposition of corresponding restrictions between and on properties does not exist for the present case. ... Because a restriction of one component of the adhesive system does not inherently or directly impose a corresponding restriction on any of the other components. Essentially, **the components and the relative amounts may be selected independently.**" (see point 35 of the statement of grounds of appeal, emphasis by the board).

3.3.4 Additionally, it is noted that the selected ranges have both the same (second) level of preference in the corresponding "lists". Furthermore, the application as filed included two examples, namely examples 1 and 7, falling within the scope of amended claim 1, further indicating that the now claimed subject-matter was one of the preferred embodiments in the application as filed.

3.4 For these reasons, the amendment made to claim 1 fulfils the requirements of Article 123(2) EPC.

4. *Priority*

4.1 The patent claims a priority date of 20 March 2000 from EP 00850048 and US 190553P, both documents being apparently identical. The description and claims of the two priority documents and the present patent are to a great extent identical. The only difference is the mandatory presence of polyvinyl alcohol in claim 1 of the patent, compared to its optional presence in the priority documents (see claim 1). The mandatory presence of polyvinyl alcohol, however, is an embodiment also

disclosed in the priority documents (cf. claim 13 of both documents).

- 4.2 The appellant argued that the priority would not be validly claimed because in its view claim 1 included added subject-matter not present in the application as filed, namely the combination of the amounts for the resin component and the polymer.
- 4.3 Since, however, the board found that the combination of the amounts for the resin component and the polymer was not objectionable under Article 123(2) EPC, logically the same objection raised against the validity of the priority claim cannot succeed either but must fail for the reasons given above in respect of the amendments. The patent is therefore entitled to the priority date of 20 March 2000.

5. *Sufficiency of disclosure*

- 5.1 Claim 1 is directed to an adhesive system comprising (a) a specified amount of an etherified amino resin, (b) a specified amount of a polymer prepared from one or more ethylenically unsaturated monomers, (c) a curing agent and (d) a polyvinyl alcohol.

Claim 2 is directed to a hardener composition comprising (b) a specified amount of a polymer prepared from one or more ethylenically unsaturated monomers containing post-cross-linking groups, (c) a carboxylic acid and (d) a polyvinyl alcohol.

It might be worth pointing out at this juncture that the definition of the polymer (b) and the curing agent (c) in claim 2 is more specific than in claim 1.

- 5.2 The patent specification gives information as to suitable resins, polymers, curing agents, and the amounts to be used (see paragraphs [0008] to [0027]). Adhesive systems and hardener compositions as claimed can therefore be prepared by the skilled person with this information.
- 5.3 Moreover the patent specification includes examples of an adhesive system as claimed in claim 1 and of a hardener composition as claimed in claim 2. Contrary to the opinion of the opposition division and the appellant, examples 1 and 7 represent embodiments of an adhesive system as claimed in claim 1 and examples 1 and 2 of a hardener composition according to claim 2 for the following reasons:
- 5.3.1 Although the tables in the patent specification do not specify the amount of resin component and polymer in weight% based on the solids of the adhesive system as required by the claims, the corresponding values have been (re)calculated by the respondents with the information in the patent (see D16, table).
- 5.3.2 Thus, the adhesive system of example 1 comprises 65 wt% of etherified melamine-formaldehyde, based on the solids of the adhesive system (feature (a) of claim 1), 20 wt% of polyvinyl acetate polymer containing post-cross-linking groups, based on the solids of the adhesive system (feature (b) of claim 1), formic acid as curing agent (feature (c) of claim 1) and polyvinyl alcohol (feature (d) of claim 1). The adhesive system of example 7 contains the same components as example 1 except that a polyvinyl acetate polymer without post cross-linking groups is used. Consequently, both examples are adhesive systems according to claim 1.

5.3.3 The hardener used in examples 1 and 2 includes 58 wt% of polyvinyl acetate polymer containing post-cross-linking groups, based on the solids of the hardener composition (feature (b) of claim 2), formic acid (a carboxylic acid as required by feature (c) of claim 2) and polyvinyl alcohol (feature (d) of claim 2). Thus, both hardener compositions are according to claim 2.

5.4 Notwithstanding the above, the appellant considered the patent insufficiently disclosed because in its view:

- i) It was not credible that all the compositions covered by the claim would result in an adhesive system with good adhesive properties at low temperature. The skilled person would have to start a search programme in order to find out whether a given adhesive would provide strong glue joint when cured at room temperature. In fact in some of the examples of the specification a high percentage of delamination occurred.
- ii) It was unknown how much polyvinyl alcohol in total was present in the hardener compositions used in the examples of the patent where polyvinyl acetate dispersions were used as polymer (b). As apparent from paragraph [0024] of the patent specification polyvinyl alcohol is already present in a polyvinyl acetate dispersion. However, the claim did not specify the extra addition of polyvinyl alcohol.

5.5 Concerning i) the appellant did not show that the examples of the patent could not be reproduced or that an embodiment of the invention could not be carried out. There is no evidence on file that an adhesive system according to claim 1 or a hardener composition according to claim 2 cannot be prepared by the skilled person.

Concerning the doubts of the appellant as to whether or not the effects of the invention are achieved by all claimed adhesives, this objection relates rather to inventive step than to sufficiency of disclosure (i.e. whether the technical problem is solved over the whole scope of the claim).

- 5.6 Concerning ii) the board notes that the subject-matter of claims 1 and 2 is entirely clear as regards the mandatory presence of polyvinyl alcohol. Whether the polyvinyl alcohol is introduced via polymer (b) and/or independently added is irrelevant for the claims as long as polyvinyl alcohol is present. Paragraph [0024] is not in contradiction with claim 1. It merely explains that if polyvinyl alcohol is already present in the polyvinyl acetate dispersion used, an extra addition of polyvinyl alcohol further improves the water resistance and glue joint strength of the finished products.

As to the question of whether the weight percentages for the polyvinyl alcohol in examples 1, 2, 7 and 8 (5%) and examples 3 to 6 (0%) refer to the total polyvinyl alcohol content (as stated by the respondents) or to polyvinyl alcohol added to the amount already present in the polyvinyl acetate dispersion (as alleged by the appellant), this is at best a clarity issue.

Nevertheless, the board notes that the examples do not state that the indicated amounts mean additional polyvinyl alcohol. Thus, a skilled person would rather assume that these data are given for the total amount, which is corroborated by the respondents' uncontested statement at the oral proceedings that also water-born polyvinyl acetate dispersions without polyvinyl alcohol were available on the market. In any case, the only examples relied upon in the discussion of inventive step were examples 1, 2, 7 and 8, which contain polyvinyl

alcohol, be it the total amount or additional amount that is indicated.

5.7 For these reasons the board is satisfied that the requirements of sufficiency of disclosure are met.

6. *Novelty*

6.1 Claim 1

Claim 1 is directed to an adhesive system comprising:

- (a) a resin component comprising an etherified amino resin, the amount of the resin component in the adhesive system being 40-85 weight % based on the solids of the adhesive system,
- (b) a polymer prepared from one or more ethylenically unsaturated monomers, the amount of the polymer in the adhesive system is 10-50 weight %, based on the solids of the adhesive system,
- (c) a curing agent, and
- (d) a polyvinyl alcohol.

6.2 The novelty of the subject-matter of claim 1 was contested by the appellant in view of the disclosures of D3 and D30.

6.3 Document D3

6.3.1 Claim 1 of D3 is directed to a heat curable synthetic resin mixture for coating wood-based materials comprising (A) from 5 to 50 wt% of an etherified melamine/formaldehyde condensation product, (B) from 5 to 60 wt% of an aqueous cross-linkable copolymer of predominantly alkyl acrylates and/or methacrylates, and (C) from 10 to 50 wt% of urea. In example 3, overlay

papers were impregnated with two such resin mixtures, including formic acid as curing agent, and dried so that the overlay papers had a solid resin coat of from 48 to 52% by weight. The impregnated papers were given a top coat and then glued to a commercial particle board using an adhesive based on polyvinyl acetate (white glue).

- 6.3.2 Thus, at best, one could say that example 3 of D3 describes two adhesive systems. The first adhesive system, which is used to impregnate the overlay papers and then cured, includes features (a) to (c) of claim 1 but not a polyvinyl alcohol as required by feature (d) of claim 1.

In the following step, the overlay papers comprising the cured resins are glued with a second adhesive system to the particle board. Apart from the fact that D3 is completely silent as to the (possible) presence of polyvinyl alcohol in the second adhesive based on polyvinyl acetate, the second curing system does not, in any case, contain component (a), namely an etherified amino resin.

- 6.3.3 The appellant argued that example 3 of D3 was novelty destroying for the subject-matter of claim 1 in view of the combination of the two adhesive systems of example 3 of D3, and the inherent presence of polyvinyl alcohol in an adhesive based on polyvinyl acetate (as disclosed for instance in paragraph [0024] of the patent).

- 6.3.4 The board disagrees. Disregarding the issue of the (possible) presence of polyvinyl alcohol in an adhesive based on polyvinyl acetate, example 3 discloses two distinct adhesive systems which do not interact with each other. The first adhesive composition is already cured when the second adhesive system is employed. In

other words, the melamine-formaldehyde based adhesive system used for impregnating the overlay papers is no longer reactive after heating/curing. The gluing of the overlay papers to the particle board is effected only by the polyvinyl acetate-based adhesive which does not have, as set out above, all the features required by claim 1.

6.3.5 Thus, the disclosure of D3 does not anticipate the subject-matter of claim 1.

6.4 Document D30

6.4.1 D30 discloses on page 1, lines 7 to 15 an adhesive composition comprising (A) a condensation resin of an amino compound selected from urea, melamine, or guanamine, and formaldehyde, (B) a polyalcohol or polyalcohol polymer, and (C) a synthetic resin emulsion. The condensation resin may be partly modified with phenol, resorcinol, furfuryl alcohol or polyvinyl alcohol (see page 1, lines 18 to 20). The composition may also include a thickener such as polyvinyl alcohol (see page 5, line 8).

Embodiment 9 on page 9, lines 29 to 41, discloses an adhesive system comprising a mixture of urea formaldehyde resin and melamine formaldehyde resin with ethylene glycol and a copolymer of butadiene, styrene and acrylic acid.

6.4.2 The appellant's novelty objection is based on the assumption that a resin partly modified with phenol, resorcinol, furfuryl alcohol or polyvinyl alcohol as disclosed in D30 is an etherified amino resin as required by feature (a) of claim 1.

However, this argument is not convincing. The word "modified" does not necessarily mean that the amino resin is etherified. As pointed out by the respondents, the prior art also uses the word modified in a broader sense to refer to, for instance, a blend of an amino resin and furfuryl alcohol to provide resins with very good internal plasticity, mold releasability, and permeability (see D33, column 1, lines 36 to 39, and examples).

In fact, an etherification reaction requires heating with excess of alcohol under acidic conditions and concurrent removal of water by azeotropic distillation (see D26, page 89, section 9.2.2, second paragraph). Such conditions are not mentioned in D30. Actually D30 is silent as to the meaning of the term "resin partly modified", and in particular as to whether this term means etherified.

6.4.3 Concerning embodiment 9, this is an embodiment clearly not falling within the scope of claim 1, at least for the following reasons: the amino resin is not modified at all, and no polyvinyl alcohol is used.

6.4.4 For these reasons, the disclosure of D30 does not anticipate the subject-matter of claim 1.

6.5 Claim 2

Claim 2 is directed to a hardener composition comprising:

- (b) a polymer prepared from one or more ethylenically unsaturated monomers, said polymer containing post-cross-linking groups, the amount of the polymer in the hardener composition is 25-70

weight %, based on the solids of the hardener composition,

- (c) a carboxylic acid, and
- (d) a polyvinyl alcohol.

6.6 The novelty of this claim was contested by the appellant in view of the disclosure of D28.

6.7 Document D28

6.7.1 D28 discloses a hardener for use in urea-formaldehyde or urea-melamine-formaldehyde-based adhesives comprising a polyvinyl acetate emulsion together with a metal chloride and an ammonium salt of an organic or inorganic acid (see claim 1). The appellant saw the hardener of example 2 of D29 comprising *inter alia* citric acid and the polyvinyl acetate emulsion DPN 15 as novelty destroying for the subject-matter of claim 2.

6.7.2 In order to be novelty destroying for the subject-matter of claim 2, it would have been necessary to demonstrate that the polyvinyl acetate in the emulsion DPN 15, used in D28, contained post-cross-linking groups as required by feature (b) of claim 2 and that it included polyvinyl alcohol as required by feature (d).

6.7.3 D28 itself is silent about these features. It merely states that the polyvinyl acetate emulsion DPN 15 was from "Wacker Chemie GmbH, Germany" (see in example 1). In order to prove that this emulsion had indeed features (b) and (d) of claim 2, the appellant filed D29, D39 and D39A.

6.7.4 These documents, however, cannot show that the polyvinyl acetate in the emulsion DPN 15 used in D28 contained post-cross-linking groups as required by claim 2:

D29 mentions VinacTM dispersion DPN 15 from Air Products, whereas the emulsion used in D28 was from Wacker Chemie GmbH. Consequently D29 cannot give any information about a Wacker Chemie product.

Although it appears from the e-mail correspondence D39 that the polyvinyl acetate in the emulsion DPN 15 from Wacker Chemie GmbH indeed contains post-cross-linking groups (see page 1, mail dated 5 May 2014, "DPN 15 has been the same product, a homopolymer modified with MMA, as now since before 2000"), the two technical data sheets D39A submitted together with D39 raise doubts on the validity of the statement in D39. The two technical data sheets relate to Vinnapas[®]-Dispersion DPN 15, one being a German version as of November 1993, the other an English version as of January 1981. On the basis of the two documents it appears that the Vinnapas[®]-Dispersion DPN 15 in 1981 differed from the Vinnapas[®]-Dispersion DPN 15 in 1993. Firstly, apart from minor differences in the solid contents and the viscosity, the predominant particle size is completely different: 2 µm in 1981 and about 1 µm in 1993. Secondly, and more important for this decision, while the German version for DPN 15 indicates the presence of "reactive groups" ("52%ige Poly-vinylacetat-Dispersion mit reaktionsfähigen Gruppen"), the English version is lacking such information. A person skilled in the art would expect that a technical data sheet contains all the relevant technical aspects relating to a product, in this case Vinnapas[®]-Dispersion DPN 15, and in particular whether or not the basic polymer component of Vinnapas[®]-Dispersion DPN 15, i.e. the polyvinyl acetate, is modified with reactive groups. Thus, because the English version of D39A does not refer to a modification of the polyvinyl acetate, the skilled person would naturally

assume that the Vinnapas[®]-Dispersion DPN 15 referred to therein was not modified. Therefore, the data sheets give contradictory information regarding DPN 15. Consequently, it cannot be concluded from the evidence on file that the DPN 15 used in D28 was indeed a polymer as required by feature (b) of claim 2.

6.7.5 For these reasons, the subject-matter of claim 2 is novel in view of D28.

7. *Inventive step*

7.1 The invention relates to an adhesive system for gluing wood-based products and to a hardener composition for use in amino resin based gluing systems. It aims to reduce some of the drawbacks of known adhesive systems, such as long curing time at room temperature and weak bonding performance at temperatures below 20°C (see [0002] of the patent specification).

7.2 Closest prior art

7.2.1 It was agreed during the opposition proceedings that document D6 represents the closest prior art (see point 14.1 of the opposition division's decision). It was also used by the appellant as closest prior art for the subject-matter of both claims 1 and 2. Also, the board views D6 as the closest prior art because it is the only document on file dealing with amino resin-based adhesives and hardeners for low temperature curing.

7.2.2 D6 discloses a method of separate application of a gluing system comprising an amino resin and a hardener component onto a substrate. The method is used for the production of glued laminated timber ("gluelam") and laminated timber (see page 1, lines 3 to 9). In the

examples, the resin and the hardener are applied separately in the form of strands and the pressing is made at 20°C during 20 hours at a pressure of 8 bar.

The amino resin used can be any amino resin, such as for example urea-formaldehyde, melamine-urea-formaldehyde, melamine-formaldehyde, melamine-urea-phenol-formaldehyde resin, and furfuryl alcohol modified varieties thereof, the preferred resin being melamine-urea-formaldehyde (see page 2, lines 16 to 19).

The hardener composition allows for faster curing and obtaining high strength (see page 3, lines 1 to 2), and comprises a volatile acid (see page 3, lines 9 to 11). The hardener can also comprise water, thickener, resorcinol, and, optionally, a relatively low amount of filler (see page 3, lines 18 to 20). In examples 1 and 2 polyvinyl alcohol is used as thickener.

7.3 Problem to be solved and its solution

7.3.1 According to the respondents, the problem underlying the patent in suit, in the light of D6, is to find improved adhesive systems which are fast curing at room temperature or even lower temperatures and provide constructions with strong glue joints (see paragraph [0005] of the specification).

7.3.2 This problem is said to be solved by:

- the adhesive system of claim 1 which differs from the adhesive used in D6 essentially by the use of an etherified amino resin in an amount of 40 to 85 wt% instead of an amino resin (feature (a) of claim 1); and by the addition of a polymer prepared from one or more ethylenically

unsaturated monomers in an amount of 10-50 wt% (feature (b)); and

- the hardener composition of claim 2 which differs from the one used in D6 essentially by the presence of a polymer prepared from one or more ethylenically unsaturated monomers containing post-cross-linking groups in an amount of 25-70 wt%, based on the solids of the hardener composition (feature (b)).

7.3.3 The board is satisfied that the above problem has been credibly solved by the claimed adhesives and hardeners.

Although a direct comparison between the adhesives of claim 1 and those of D6 has not been provided, examples 1 and 7 in the patent show that low delamination, similar to that achieved in D6, is obtained by the claimed adhesives, although the pressing time was reduced by a factor of ten, i.e. 2 hours in the patent (see table 5) compared to 20 hours in D6 (see page 7, lines 4 to 5). Additionally, the examples in the patent demonstrate that improved strength of the joint (i.e. less delamination) is achieved when using an etherified amino resin instead of a non-etherified amino resin (compare example 1 against comparative example 2 or example 7 against comparative example 8).

Similar considerations apply for the hardeners of claim 2. The use of a hardener according to claim 2 allows a reduction of the pressing time by a factor of ten. As can be seen from the examples in the patent, the use of a hardener composition containing a polyvinyl acetate polymer with post-cross-linking groups results in less delamination when compared with a hardener composition containing a polyvinyl acetate polymer with

no post-cross-linking groups. Such an improved delamination is obtained not only when the hardener composition is used in combination with an etherified amino resin (see table 5, example 1 vs example 7), but also when it is used in combination with a non-etherified amino resin (see table 5, example 2 vs example 8).

- 7.3.4 The board cannot accept the argument of the appellant that no improvement should be acknowledged because none of the examples in the patent falls within the scope of the present claims. As already discussed in relation to sufficiency of disclosure (see points 5.3 to 5.3.3 above), examples 1 and 7 represent embodiments of an adhesive system of claim 1 and examples 1 and 2 of a hardener composition according to claim 2.

In this context it should be noted that example 2 is a comparative example for the adhesive system of claim 1, because a non-etherified amino resin is used, but an embodiment according to the hardener composition of claim 2. It should also be noted that the best results are obtained when both an etherified amino resin and a polymer containing post-cross-linking groups are used (see table 5, example 1, delamination of only 0.3%).

- 7.4 It remains to be decided whether, starting from D6, it would have been obvious for the skilled person to solve the above problem by the means claimed.

- 7.5 Obviousness. Claim 1

- 7.5.1 Concerning claim 1 the appellant argued that the use of an etherified amino resin instead of an amino resin was not a distinguishing feature because the amino resins of D6 could be modified by reaction with furfuryl alcohol

and such reaction resulted in an etherified version of the amino resin. It is correct that D6 mentions several amino resins, including "furfuryl alcohol modified varieties thereof" (page 2, lines 19 to 20); however, as explained in relation to the novelty of claim 1 over D30 (see point 6.4.2 above), a "modified" amino resin cannot necessarily be equated with an etherified amino resin. Thus, the use of etherified amino resins is a distinguishing feature of the subject-matter of claim 1 over D6.

- 7.5.2 None of the documents cited by the appellant suggests that by replacing an amino resin by an etherified amino resin would result in an improved adhesive system. The only document where an etherified amino resin is used is D3. However, as set out with regard to novelty above, the etherified amino resin is used in D3 in the first adhesive system (not containing polyvinyl alcohol) and is used for impregnating overlay papers which are subsequently cured. There is no hint whatsoever in D3 that the use of the etherified amino resin would lead to improvements in another adhesive system comprising polyvinyl alcohol.

As regards the addition of polymers containing reactive cross-linking groups, D4 and D7 disclose wood adhesives containing such polymers (see D4, column 1, lines 58 to 61 and D7, column 1, lines 11 to 15). However, there is no mention in these documents that they should be used in combination with etherified amino resins, let alone that such a combination would result in an improved adhesive system.

- 7.5.3 In summary, starting from D6 as closest prior art, it would not have been obvious for the skilled person to replace the amino resin by an etherified amino resin and

to add a polymer prepared from one or more ethylenically unsaturated monomers to obtain an improved adhesive system when curing at low temperature. The subject-matter of claim 1 therefore involves an inventive step.

7.6 Obviousness. Claim 2

7.6.1 The appellant also argued that it would have been obvious to add polymers containing reactive groups to the hardener compositions of D6 essentially because such polymers were already known in the prior art (see D3, D4 or D7 discussed above in relation to claim 1).

7.6.2 The board cannot accept this argumentation. There is no motivation for the skilled person to modify the hardener of D6 comprising a volatile acid and a filler by adding a polymer containing reactive cross-linking groups in order to obtain improvements in the adhesive system. It appears that the appellant's objection is based on an ex-post-facto analysis with the knowledge of the invention.

7.6.3 For these reasons, the subject-matter of claim 2 involves an inventive step.

7.7 The appellant further argued that the subject-matter of claims 1 and 2 lacked inventive step when starting from other documents as the closest prior art, such as D3 for the subject-matter of claim 1 and D1 for the subject-matter of claim 2.

The board is not persuaded. The appellant has failed to show why these documents, which do not deal with the object of the invention, namely curing at low temperature, should be considered as starting point. Moreover, as discussed for the objections starting from

D6, these objections rely on the interpretation of the word "modified" as meaning an "etherified" amino resin, and/or on a denying an improvement of the claimed adhesives and hardeners.

7.7.1 These objections are therefore rejected for the same reasons as those when starting from D6.

8. *Admissibility of documents filed during the appeal proceedings*

8.1 The respondents objected to the admissibility of various documents filed in the appeal proceedings, namely D27 to D32, D35, D39 and D39A.

The appellant contested the admissibility of D34.

8.2 The appellant raised in its statement of grounds of appeal two new novelty attacks against the subject-matter of claim 1 (based on D30) and the subject-matter of claim 2 (based on D28). D29 and later filed D39 and D39A supported the latter attack.

8.2.1 In proceedings before the boards of appeal, new facts, evidence and related arguments, which go beyond the "indication of facts, evidence and arguments" presented in the notice of opposition pursuant to Rule 55(c) EPC in support of the grounds of opposition on which the opposition is based, should only very exceptionally be admitted into the proceedings in the appropriate exercise of the board's discretion, if such new material is prima facie highly relevant in the sense that it can reasonably be expected to change the eventual result and is thus highly likely to prejudice maintenance of the European patent (see T 1002/92, headnote II).

8.2.2 After a detailed analysis of D30 and D28 (including D29, D39 and D39A) the board found, however, that these attacks were unfounded, and therefore decided not to admit D28 to D30 (Article 12(4) RPBA) and D39 and D39A (Article 13(1) RPBA) into the proceedings.

8.3 The remaining documents were not used by the parties during the oral proceedings, and so it was not necessary to decide on their admissibility.

AUXILIARY REQUESTS

9. As the main request of the respondents is allowable, there is no need for the board to deal with the auxiliary requests.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated