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**Datasheet for the decision
of 3 March 2010**

Case Number: T 0339/08 - 3.3.03

Application Number: 98960304.8

Publication Number: 1240252

IPC: C08L 101/00

Language of the proceedings: EN

Title of invention:

Thermoplastic compositions comprising crystalline and amorphous polymers

Patentee:

H.B. FULLER LICENSING & FINANCING, INC.

Opponent:

Henkel AG & Co. KGaA

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 84, 123(2)

Relevant legal provisions (EPC 1973):

-

Keyword:

"Main request - novelty - no"

"First auxiliary request - clarity - no"

"First auxiliary request - added subject-matter - yes"

"Second auxiliary request - maintenance in amended form"

Decisions cited:

T 0049/85, T 0101/87, T 0212/91, T 1002/92, T 0793/93,
T 0190/99

Catchword:

-



Case Number: T 0339/08 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 3 March 2010

(Opponent) Henkel AG & Co. KGaA
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Representative: -

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 6 November 2007
and posted 10 December 2007 rejecting the
opposition filed against European patent
No. 1240252 pursuant to Article 102(2) EPC
1973.

Composition of the Board:

Chairman: R. Young
Members: M. C. Gordon
C. Vallet

Summary of Facts and Submissions

I. Mention of the grant of European Patent No. 1 240 252 with the title "Thermoplastic Compositions Comprising Crystalline and Amorphous Polymers" in the name of H. B. Fuller Licensing & Financing, Inc. in respect of European patent application No. 98960304.8, filed on 18 November 1998 as international application No. PCT/US98/24764, published as WO-A2-99/35189 on 15 July 1999, and claiming priority dates of 8 January 1998 from US 60/070,831 and 18 November 1998 from US 09/195,335 was announced on 27 April 2005 (Bulletin 2005/17) on the basis of 18 claims. Claim 1 read as follows:

1. A thermoplastic composition comprising at least one crystalline thermoplastic polymer blended with at least one amorphous thermoplastic polymer and at least one wax, wherein the at least one crystalline thermoplastic polymer and the at least one amorphous thermoplastic polymer are soluble, dispersible and/or swellable in water.

Claims 2-16 were directed to preferred embodiments of the subject matter of claim 1, whereby claims 15 and 16 read as follows:

15. The thermoplastic composition of claim 1, wherein said composition resists blocking at 90% relative humidity and 38°C.
16. The thermoplastic composition of claim 1, wherein said composition resists blocking at room temperature.

Claims 17 and 18 were directed to a remoistenable adhesive and a body fluid impermeable article respectively and read as follows:

17. A remoistenable adhesive comprising:

- a) from 10 wt-% to 90 wt-% of at least one crystalline thermoplastic polymer;
- b) from 10 wt-% to 90 wt-% of at least one amorphous thermoplastic polymer; and
- c) at least one wax, said wax being present in an amount of up to 30 wt-%, wherein the at least one crystalline thermoplastic polymer and the at least one amorphous thermoplastic polymer are soluble, dispersible and/or swellable in water.

18. A body fluid impermeable article comprising a permeable substrate coated with a thermoplastic composition comprising:

- a) from 10 wt-% to 90 wt-% of at least one crystalline thermoplastic polymer;
- b) from 10 wt-% to 90 wt-% of at least one amorphous thermoplastic polymer; and
- c) at least one wax, said wax being present in an amount of up to 30 wt-%, wherein the at least one crystalline thermoplastic polymer and the at least one amorphous thermoplastic polymer are soluble, dispersible and/or swellable in water.

II. A notice of opposition to the patent was filed on 19 January 2006 by Henkel KGaA invoking the grounds of opposition pursuant to Art. 100(a) EPC (lack of novelty, lack of inventive step).

Inter alia the following document was cited in support of the opposition:

D1: EP-A-0 761 795.

III. By a decision announced on 6 November 2007 and issued in writing on 10 December 2007 the opposition division rejected the opposition.

(a) A request by the opponent, made during the oral proceedings before the opposition division, to introduce a new ground of opposition to the procedure (Art 100(b) EPC) was refused.

(b) The subject matter claimed was novel, *inter alia* with respect to the disclosure of D1 since the polymers Grilltex 8 G or Dynacol S 1402, employed in examples X-XIII of D1 were not water soluble, water dispersible or water swellable (hereinafter "water sensitive" - cf paragraph [0024] of the patent in suit).

(c) The closest prior art was D1. The subject matter claimed was distinguished therefrom in that a crystalline water sensitive polymer had to be present in combination with the wax and amorphous water sensitive polymer.

The problem underlying the patent in suit was to provide adhesive compositions exhibiting, *inter alia* an improved rate of remoistening and at the same time an improved blocking resistance at high humidity (reference being made to all examples and to page 3 lines 9-13 of the patent in suit).

The comparative examples A-D of the patent in suit showed that omitting the amorphous polymer component resulted in deteriorated remoistening properties and that omitting the crystalline polymer resulted in deteriorated blocking resistance values at high humidity. The opponent had not disputed this finding. Consequently the problem set out in the patent in suit had been shown to be solved.

There was no indication in D1 towards a combination of a crystalline water sensitive polymer, an amorphous water sensitive polymer and a wax, let alone any indication that this combination enabled both improved remoistening and improved blocking resistance at high humidity to be obtained.

On the contrary, D1 taught away from such a solution for two reasons:

- D1 taught to add a non-water sensitive polymer, or to use hydrophobic systems in general in order to achieve a high blocking resistance;
- When aiming at improved water sensitivity D1 did not replace the non-water sensitive crystalline polymer by a water sensitive crystalline polymer but taught to add a second water sensitive amorphous polymer.

(d) Consequently the opposition was rejected.

IV. A notice of appeal against the decision was filed by the opponent on 8 February 2008, the prescribed fee being paid on the same day.

V. The statement of grounds of appeal was filed on 9 April 2008, accompanied by 11 new documents:

- D16: US-A-3 888 811
- D17: EP-A-212 135
- D18: Encyclopedia of Polymer Science and Engineering, Vol. 6, Pages 234-245, Wiley-Interscience, 1986
- D18a: Polyethers, Volume XIII, Part I, Gaylord, N. G., (ed), Interscience Publishers 1963, pages 118-123, 172-177, 188, 189
- D19: Ullmann's Encyclopedia of Industrial Chemistry, Fifth Edition, VCH Verlagsgesellschaft mbH, 1992, Volume A21, pages 579-581
- D20: Product Brochure "Aquazol Polymers", Polymer Chemistry Innovations, Inc, © 2007

- D21: Product Datasheet "Carbowax Products",
The Dow Chemical Company © 1995-2003
- D21a: "Technical Data Sheet" Polyethylene glycol
6000 Ph Eur, Merck KGaA, undated
- D22: WO-A-96/08538
- D23: US-A-5 324 812
- D24: Vorlesungsskript (lecture script)
"Technische Kunststoffe - Polyamide",
Prof. Dr.-Ing A. Bledzki drafted by
Dipl.-Ing K. Specht November 1998,
pages 1, 7, 15-17, 26.

The appellant/opponent presented essentially the following arguments:

- (a) D24 referred *inter alia* to polyamides of the tradename "Grilltex" and further discussed that water absorption of various polyamides resulted in a change in volume of the sample. This established that D1 anticipated the features of water sensitive (i.e. water swellable) crystalline polymer (cf section III.(b), above).
- (b) The subject matter claimed lacked novelty with respect to the newly cited D17.
Claim 1 of this document disclosed remoistenable adhesives based on:
- poly(alkyloxazoline) polymer ("PEOX"), which according to paragraph [0042] of the patent in suit were amorphous, water sensitive thermoplastics;

- hydrogenated castor oil or 12-hydroxystearic acid, which according to (paragraph [0045] of the patent in suit were suitable waxes;
- Carbowax 6000, which, as shown by D18, D19 and D21a was a crystalline, water soluble polymer and was mentioned in paragraphs [0027], [0040] and [0045] of the patent in suit as suitable.

The subject matter of the patent in suit also lacked novelty in view of the disclosure of (newly cited) D16. This document disclosed in Table 1, examples 2-4 remoistenable hot melt adhesives which consisted of a mixture of:

- a water sensitive vinyl pyrrolidone/vinylacetate copolymer (PVP/VA), which according to paragraph [0042] of the patent in suit was an amorphous soluble polymer;
- products designated "DOW E 6000", "Dow E 9000" and "Dow E 20,000" which were polyethylene glycol polymers. The number corresponded to the molecular weight, reference being made to column 5, line 14 of D16. These were crystalline water soluble polymers, reference being made to D18 and D21.
- 12-hydroxy stearamide or "Castorwax" the latter stated in D16 col. 5 line 47 to be hydrogenated castor oil, both of these were

listed in paragraph [0045] of the patent in suit as being suitable waxes.

(c) With regard to inventive step a number of approaches were proposed, *inter alia* starting from D17 as the closest state of the art.

This document related to a hot melt adhesive which was required to exhibit remoistenability and block stability, and thus addressed the same problem as the patent in suit.

The only potential difference was at the level of claim 2 of the patent in suit according to which the crystalline polymer was a polyamide.

Accordingly, the objective problem was to develop an adhesive which contained particular water soluble crystalline polymers on the basis of polyamides.

D22, which document was also cited as prior art in the patent in suit, related to remoistenable hot melt adhesives which contained water soluble crystalline polyamide and exhibited improved blocking resistance compared to known products. The skilled person seeking to improve the remoistenability of the adhesives of D17 would consider the teachings of D22 which related to adhesives with similar requirements. The combination of the teachings of D17 and D22 and hence compositions of claim 2 was thus obvious. Reference was also made to the combination of D17 with D23 in this connection.

VI. The rejoinder was filed by the patent proprietor, now the respondent with a letter dated 23 September 2008, accompanied by amended sets of claims forming a main

request and first and second auxiliary requests.

The main request, consisting of 17 claims, had been amended, compared to the patent as granted, in that claim 1 was a combination of claims 1 and 15 of the patent as granted, and thus specified that the composition resisted blocking at 90% relative humidity and 38°C.

Accordingly claim 1 of the main request read as follows:

1. A thermoplastic composition comprising at least one crystalline thermoplastic polymer blended with at least one amorphous thermoplastic polymer and at least one wax, wherein the at least one crystalline thermoplastic polymer and the at least one amorphous thermoplastic polymer are soluble, dispersible and/or swellable in water, and wherein said composition resists blocking at 90% relative humidity and 38°C.

Claims 2-14 corresponded to claims 2-14 of the patent as granted. Claims 15-17 corresponded to claims 16-18 of the patent as granted. Thus (new) claim 15 specified that the composition resisted blocking at room temperature (cf section I, above).

The first auxiliary request, consisting of 18 claims, was based on the claims of the patent as granted, however amended by introducing the feature "from 10 wt-% to 90 wt-%" into claim 1, which thus read as follows:

1. A thermoplastic composition comprising from 10 wt-% to 90 wt-% of at least one crystalline thermoplastic polymer blended with at least one amorphous thermoplastic polymer and at least one wax, wherein the at least one crystalline thermoplastic polymer and the at least one amorphous thermoplastic polymer are soluble, dispersible and/or swellable in water.

Claims 2-18 corresponded to claims 2-18 of the patent as granted.

The second auxiliary request, consisting of 17 claims, restricted the crystalline thermoplastic polymer to polyamide. Accordingly claim 1 of this request read as follows:

1. A thermoplastic composition comprising at least one crystalline thermoplastic polymer being a water-soluble polyamide, a water-dispersible polyamide, or a mixture thereof, said at least one crystalline thermoplastic polymer blended with at least one amorphous thermoplastic polymer and at least one wax, wherein the at least one amorphous thermoplastic polymer is soluble, dispersible and/or swellable in water.

As a consequence claim 2 of the patent as granted had been deleted and the following claims renumbered and the dependencies modified as necessary. Independent claims 16 and 17 (corresponding to granted claims 17 and 18) were correspondingly amended by restricting the crystalline polymer to polyamide and read as follows:

16. A remoistenable adhesive comprising:
- a) from 10 wt-% to 90 wt-% of at least one crystalline thermoplastic polymer being a water-soluble polyamide, a water-dispersible polyamide, or a mixture thereof;
 - b) from 10 wt-% to 90 wt-% of at least one amorphous thermoplastic polymer; and
 - c) at least one wax, said wax being present in an amount of up to 30 wt-%, wherein the at least one amorphous thermoplastic polymer is soluble, dispersible and/or swellable in water.

17. A body fluid impermeable article comprising a permeable substrate coated with a thermoplastic composition comprising:

a) from 10 wt-% to 90 wt-% of at least one crystalline thermoplastic polymer being a water-soluble polyamide, a water-dispersible polyamide, or a mixture thereof;

b) from 10 wt-% to 90 wt-% of at least one amorphous thermoplastic polymer; and

c) at least one wax, said wax being present in an amount of up to 30 wt-%, wherein the at least one amorphous thermoplastic polymer is soluble, dispersible and/or swellable in water.

The respondent/patent proprietor also cited further documents:

D24a: Complete version of D24.

D25: Declaration by Mr. Sharf U. Ahmed.

The arguments advanced can be summarised as follows:

(a) The appellant/opponent had presented an entirely new case on appeal. The 11 newly filed documents, should not be admitted to the procedure. The patent should be maintained in the form as granted. For the case that the Board did admit these documents the three newly filed sets of claims (main request and first and second auxiliary requests) should be admitted to the procedure.

(b) Of the documents filed together with the statement of grounds of appeal D16, D17, D22 and D23 were all patent documents, which had been published a long time ago. Hence it would have been possible and appropriate to file these during the first instance proceedings. Further in view of the preliminary opinion issued by the opposition

division the opponent would have had to have been aware that the documents cited in the opposition procedure did not affect patentability of the claims as granted and should have endeavoured to submit any relevant facts, arguments or evidence as early and completely as possible.

These comments applied similarly to D18, D18a, D19-D21a and D24.

- (c) The subject matter of the main request was distinguished from the disclosure of D1 since this document disclosed that the crystalline polymers were hydrophobic. D24 - which did not even appear to be prior art - did not provide any teaching which would lead to a different conclusion in this respect.

The compositions disclosed in D16 and D17 did not exhibit resistance to blocking under the conditions specified in operative claim 1 of the main request, as was confirmed by declaration D25.

The subject matter of claims 1, 17 and 18 of auxiliary request 1 differed from the disclosure of D1 for the reasons indicated for the main request, and was distinguished from the disclosure of D16 and D17 by the specified amount of crystalline polymer.

The subject matter of the second auxiliary request was distinguished from the disclosure of D1 for the reasons indicated for the main request and was distinguished from the disclosures of D16 and D17 by the restriction of the crystalline polymer to polyamide.

- (d) With regard to inventive step the respondent/patent proprietor argued essentially as follows:

Starting from D1 as the closest prior art: the problem addressed by the patent in suit was to provide a composition exhibiting improved rate of remoistening in addition to exhibiting excellent blocking resistance (with reference to submissions of the appellant/opponent and page 3 lines 9-13 of the patent in suit). D1 taught away from the claimed solution since it required a hydrophobic crystalline polymer in particular to obtain good blocking resistance.

The claimed subject matter was also not rendered obvious by a combination of D1 and D16. D16 aimed to provide water moistenable hot melt adhesives with high blocking resistance and absence of blocking at commercially accepted humidity levels and taught the use of water sensitive PVP/VA copolymers. Although D16 suggested adding a water soluble polyethylene glycol based wax to the composition, it taught away from adding this component in order to provide to provide compositions exhibiting an improved rate of remoistening and **at the same time** improved blocking resistance at high humidity (emphasis of the respondent/patent proprietor).

The patent taught that employing a blend of amorphous and crystalline water sensitive materials resulted in a synergistic improvement in the adhesive performance whereby blocking resistance and humidity resistance were improved by the presence of the crystalline component and

rate of remoistening enhanced by the presence of the amorphous component.

D17 related to remoistenable non-volatile hot melt adhesive compositions with an outstanding balance of non-blocking properties and strength, having at least poly(alkyloxazoline) and a diluent (viscosity modifier) and optionally, *inter alia* a plasticizer, or "fluxing agent" which was added to lower the melt temperature of the composition. Polyethylene glycols could be used both as a plasticizer or diluent, but Carbowax 6000, employed in example 3 of D17, seemed to have the function of a plasticizer. D17 however did not disclose any composition where a crystalline water sensitive polyamide was present in combination with a wax and an amorphous water sensitive polymer.

D17 would not have been combined with D22. Although D22 was directed to a remoistenable adhesive consisting *inter alia* of a water soluble polyamide, it was silent as to the crystallinity of the polyamide. Further D22 taught that hot melt adhesives based on the polymer used in D17 (PEOX) exhibited poor blocking resistance and low thermal stability and hence taught away from the use of such polymers.

VII. The appellant/opponent made a further submission with a letter dated 28 January 2009.

- (a) D24 had been cited to establish that there was a correlation between water absorption and swelling. D16 and D17 had been cited because they were

novelty destroying, and in particular to address the deficiencies that the opposition division had identified with respect to the disclosure of D1, i.e. that this did not relate to the problem of improving blocking resistance. D16 explicitly mentioned an absence of blocking.

D18-D21 merely confirmed the knowledge of the skilled person regarding the properties of certain polymers.

Although D25, cited by the respondent/patent proprietor, might indicate the intentions and aims underlying the patent in suit, it provided no relevant information for consideration of novelty and inventive step.

- (b) The feature that had been introduced into the newly filed main request i.e. the blocking resistance (see section VI, above) was a property of the adhesive which corresponded to the technical problem underlying the patent in suit. It was a circular argument to now say that the achievement of this self-imposed aim was simultaneously a distinguishing feature, in particular since the same problem had been addressed in the cited prior art D16 and D17. New measurement methods applied to known compositions could not - in general - provide support for novelty or inventive step.

D24 taught that the moisture content influenced the sample dimensions i.e. that water uptake resulted in a change in the sample volume, i.e. a swelling. Hence the description of the polyamide Grilltex, read in the context of the disclosure of

D1 enabled the conclusion that this polymer was water swellable and, therefore that D1 anticipated the subject matter of claim 1 of all requests on file.

D17, example 3 adhesive compositions 5 and 6 disclosed compositions with all the components specified in operative claim 1, which compositions were stated to exhibit blocking resistance and consequently were novelty destroying.

Similarly D16 disclosed compositions based on the same components as specified in claim 1 of the main request and also disclosed that these compositions exhibited remoistenability and resistance to blocking, which disclosure anticipated the subject matter of claim 1 of the main request.

- (c) The subject matter of the first auxiliary request did not meet the requirements of Art. 56 EPC.
- (d) The subject matter of the second auxiliary request did not meet the requirements of Art. 56 EPC. Based on D16 and D17 the skilled person in the light of the problem of improving the properties, in order to provide a further adhesive would consult D1. This taught that the properties of the adhesive could be maintained with a change of the constituent polymers. As resistance to blocking and remoistenability were explicitly mentioned, there was a clear teaching to use polyamides. Similarly, starting from D1, which disclosed corresponding compositions, the skilled person

would be guided by D16 and D17 to select different crystalline water sensitive polymers.

VIII. On 4 December 2009 the Board issued a summons to attend oral proceedings.

IX. Together with a letter dated 3 February 2010 the respondent/patent proprietor submitted a further declaration - D26 and supporting documents, designated D27-D30.
D26 reported experiments carried out according to D16 and D17. The author of the declaration had experienced severe difficulties in obtaining the required materials, hence it was necessary to employ equivalents.

(a) The criticisms of the appellant/opponent of the newly filed main request (See section VII.(b), above) were interpreted as an attack pursuant to Art. 84 EPC, which ground was not available since claim 1 was a combination of granted claims 1 and 15.

Claim 1 of the main request was limited to compositions that exhibited resistance to blocking under the defined conditions. The patent contained test methods to determine whether a given composition fulfilled this requirement and also provided examples of compositions that satisfied this criterion.

(b) With regard to novelty of the main request, there was no disclosure in D1 that the crystalline polymers employed were water sensitive since these were explicitly characterised as hydrophobic. The compositions of D17 did not exhibit the

required resistance to blocking, reference being made to D25 and the newly cited declaration D26. The compositions of D16 did not exhibit the required resistance to blocking, reference being made to examples 6 to 9 thereof. Further as explained in D26 certain of the materials employed in D16 were not and had never been commercially available in a form suitable for use in a hot melt composition which suggested that there were errors in D16 and consequently that the disclosure thereof was not enabling. In any case it was inconceivable in view of the data given in D16 that the compositions exhibited blocking resistance.

- (c) The subject matter of the auxiliary requests was distinguished from the disclosure of D1 by the feature of the water sensitivity of the crystalline polymer.

- (d) The subject matter of the auxiliary requests was not rendered obvious by the disclosures of D1, D16 and D17.
D16 and D17 were silent as to the crystallinity of the polymers and did not disclose any composition where a crystalline water sensitive polyamide was present in combination with a wax and an amorphous water sensitive polymer.
D1 provided a disincentive to add a water sensitive crystalline polymer.

X. Oral proceedings were held before the Board on 3 March 2010.

(a) *Documents in the proceedings*

In the course of the proceedings the appellant/opponent withdrew the requests for D20, D21a and D23 to be admitted and indicated that it raised no objections to D25 being admitted to the procedure.

The appellant/opponent further presented the following arguments:

D24 established that polyamides in general were water swellable. "Grilltex", disclosed in the examples of D1 was mentioned in D24. This document contained only generally known background information and consequently the publication date was immaterial.

D22 related to the technical problem of the patent in suit, namely non-blocking adhesives which exhibit such properties under high humidity conditions.

The respondent/patent proprietor maintained the requests for the late-filed documents not to be admitted to the procedure.

The relevance of the late-filed documents was only a minor consideration to be made in deciding whether to admit them to the procedure.

More important was that the case examined at appeal should have the same legal framework as that before the first instance, reference being

made to the summary of case law provided in the "White Book", i.e. "Case Law of the Boards of Appeal", 5th Edition page 393, section 3.1.2 regarding exercise of discretion in admitting late filed material to the appeal procedure.

In the present appeal, however an entirely new case had been constructed.

Further according to decision T 49/85 (13 November 1986, not published in the OJ EPO), T 101/87 (25 January 1990 not published in the OJ EPO) and page 399 of the "White Book" documents submitted for the first time with the statement grounds of appeal were not to be considered as having been filed in due time unless they provided counter evidence for a newly emphasised reason given in the decision under appeal, which condition did not apply in the present case.

Following a break for deliberation the Board announced that D16, D17, D18, D18a, D19, D21 and D25 were admitted to the procedure.

The Board informed the parties that it would defer taking a decision on admission of the other documents filed in the course of the appeal procedure (D22 filed by the appellant/opponent, D26-D30 filed by the respondent/patent proprietor).

(b) *Main request*

Following a preliminary discussion the respondent/patent proprietor withdrew the main request as submitted with the rejoinder to the statement of grounds of appeal (see section VI,

above) and filed an amended main request, consisting of 16 claims and designated "New Main Request". Claim 15 of the previous main request (directed to compositions exhibiting blocking resistance at room temperature) had been deleted and the subsequent claims renumbered. The appellant/opponent did not object to the introduction of this new main request.

The appellant/opponent objected that the feature relating to the blocking resistance was not a property of the composition but merely a result to be achieved. The composition of D16, examples 2 and 3 fell within the compositional requirements of claim 1 of the main request, and also exhibited good blocking resistance. The same objection was raised with respect to D17, Table 3 and D1, Table 13.

The Board observed that:

- the blocking resistance was defined in terms of features not specified in and hence extrinsic to the claims (e.g. substrate, force applied, measurement conditions). Consequently it was not possible to ascertain what restriction this feature imposed on the claimed subject matter;
- although the measurement method described in the patent provided four classifications or gradings of blocking resistance, "resists blocking" was not one of them. Further it was not explained which criteria a

composition had to exhibit in order to be classified as "resists blocking".

The respondent/patent proprietor explained that:

- the patent provided a complete disclosure of how the blocking resistance was to be measured and how the results of the measurements were to be evaluated and graded;
- there was no evidence that different methods would lead to widely differing results and there was no evidence that the compositions of D16 (or D17) even exhibited blocking resistance under the specified conditions.

Following deliberation the Board announced its decision that the main request was refused.

(c) *First auxiliary request*

With respect to Art. 123(2) EPC the respondent/patent proprietor explained that the subject matter of claim 1 of the first auxiliary request was based on the disclosure of the application as filed, page 4, lines 26-30, the percentage of crystalline component in the composition being disclosed on page 4 line 21ff. Although this exact wording was not present, the application as filed provided a disclosure that the invention related to thermoplastic compositions having three components and also taught the preferred ranges for the amounts of these components. Consequently the weight range

given on page 4 was not to be read in isolation but in conjunction with the remainder of the disclosure. In particular from claim 17 and page 3, line 17ff it was clear that the indicated weight percentages related to the entire composition and hence had to add up to 100 wt-%.

It was necessary to consider the claim from the perspective of a mind willing to understand.

The respondent/opponent disputed that there was a basis in the application as filed for this interpretation; the amounts given defined only the relative proportions of the three named components within the composition.

Further, the claim was unclear contrary to Art. 84 EPC since it could be interpreted in two ways:

- either 10-90 wt-% of the entire composition consisted of the three named components, or
- the composition contained 10-90 wt-% of the crystalline component.

The respondent/patent proprietor countered that the intention had been to adhere as closely as possible to the original wording. The claim could clearly be understood such that the range of 10-90 wt-% related to the crystalline polymer. It was offered to amend the claim if required.

After deliberation the Board announced that the first auxiliary request was refused.

(d) *Second auxiliary request - Art. 54 EPC*

The appellant/opponent did not raise objections pursuant to Art. 54 EPC with respect to this request.

(e) *Second auxiliary request - admissibility of documents D22 and D26*

Prior to entering into a discussion of inventive step the question of admission of D22 and D26 to the procedure was discussed.

With respect to D22 the appellant/opponent argued essentially as follows:

- this document was cited in the patent in suit and hence was known to the patent proprietor;
- it related to hot melt adhesives and addressed in particular the properties of blocking resistance and remoistenability and so was highly relevant;
- the opposition division had held the arguments of the opponent relating to the use of polyamides in remoistenable adhesives to be insufficiently substantiated. D22 addressed this.

The respondent/patent proprietor argued essentially as follows:

- since D22 had been cited in the patent in suit it could and should have been cited together with the notice of opposition;
- it was in any case not highly relevant since:
 - although D22 taught to use polyamide, this was taught as an alternative to amorphous polymers but not in combination therewith;
 - it did not disclose a wax;
 - it was silent with respect to the

crystallinity of the polyamide.

With respect to admissibility of the experimental report D26 the respondent/patent proprietor submitted essentially as follows:

- D26 reported compositions according to the teachings of D16 and D17 and showed in particular that the compositions of these documents did not have the properties of the products according to the patent in suit;
- as the named components employed in D17 could not be obtained, chemically identical alternatives had been used;
- "Foral AXE" (used in D26) and "Foral NC" (used in D17 and the patent in suit) were both hydrogenated rosins. These were not identical; it was however not known how these differed;
- the polymers reported in D16 had never been commercially available in pure form, only in solution; this cast doubt on the teaching actually made available by D16.

According to the appellant/opponent the fact that the polymers reported in D16 could only be obtained in solution (as stated in D26) did not necessarily mean that the polymers themselves did not function as hot melt adhesives once recovered from the solution.

After deliberation the Board announced that D22 was admitted to the procedure. D26 was not admitted.

(f) *Second auxiliary request - Inventive step*

The respondent/patent proprietor argued essentially as follows:

- the problem underlying the patent was to obtain adhesives having both good remoistenability and good blocking resistance;
- it had surprisingly been found that these properties could be modified by the use of the two different classes of polymer specified in the claim, the amorphous polymer being associated with the rate of remoistening and the crystalline polyamide being associated with the improvement of blocking resistance;
- contrary to expectations, the properties associated with each of the polymers individually were maintained in the mixture i.e. the properties of the combination was not simply intermediate between those of the two polymers separately;
- this result was not rendered obvious by D1 which taught to employ hydrophobic crystalline polymers, and showed that such materials were necessary to obtain good blocking resistance;
- there was no hint to this in D16 or D17 either. D16 taught that higher concentrations of the crystalline component

improved the moistenability but lowered the blocking resistance thus providing an incentive to reduce as much as possible the content of crystalline component. D17 taught that the plasticizer, i.e. PEG affected the melt temperature but disclosed no link to the blocking resistance. Consequently neither D16 nor D17 taught to add further PEG to improve blocking resistance;

- The skilled person would hesitate to dispense with the water soluble crystalline wax of D16 since this was associated with an improvement in remoistening;
- D22 taught that there was no need for wax or tackifiers and also taught against employing amorphous polymers, in particular compositions with PEOX and PVP, i.e. the base polymers in the compositions of D16 and D17;
- According to the remoistening tests reported in the example of D22 the adhesion strength was measured after a 24 hour aging period. This was not consistent with a rapid rate of remoistening;
- In contrast thereto the examples in the patent employed an aging time measured in seconds, showing much more rapid remoistenability. Comparative examples A and B of the patent in suit (crystalline polymer alone) were analogous to the teaching of D22

and showed good blocking resistance but poor remoistening performance.

- This result was in contradiction to the teaching of D16 which stated that the crystalline component improved moistenability but degraded blocking resistance.

The appellant/opponent argued that:

- the claim was not limited to the three components specified;
- the relationship between the components mentioned in D16 and D17 and those required by the operative claims was not in all cases unambiguous since (for example) the wax was also a crystalline polymer;
- D17 taught PEG as a diluent; this was however a water sensitive crystalline polymer;
- the amorphous component present in D17 was employed in order to improve the remoistening behaviour;
- since D17 was concerned with the problem of avoiding blocking, the focus in efforts to improve this composition would be on the blocking resistance. The skilled person would therefore aim to modify this part of the composition, i.e. replace the water soluble crystalline polymer with a water insoluble one. This was independent of whether the understanding of the different functions of the components in D17 was the

same as in the patent in suit. A suitable alternative was known from D22, i.e. a combination of water soluble crystalline polymer (polyamide) and water insoluble wax. There was no disincentive to combine these documents.

- XI. The appellant/opponent requested that the decision under appeal be set aside and that the European patent No. 1 240 252 be revoked.

The respondent/patent proprietor requested that the decision under appeal be set aside and the patent be maintained in amended form on the basis of the new main request filed during the oral proceedings (claims 1 to 16) or in the alternative, on the basis of the first auxiliary request (claims 1 to 18) or the second auxiliary request (claims 1 to 17) both filed with the letter dated 23 September 2008.

Reasons for the Decision

1. The appeal is admissible.
2. *Documents in the procedure*
 - 2.1 D16 and D17, submitted together with the statement of grounds of appeal (see section V, above) relate to hot-melt adhesives, defined as being "water moistenable" (D16, claim 1) or "remoistenable" (D17, claim 1). The base polymers employed, PVP/VA and poly(alkyloxazoline) respectively, belong to the class identified as water sensitive amorphous polymers in

paragraphs [0019] and [0042] of the patent in suit. D16 refers to an absence of blocking in claim 1 and, *inter alia* in the "Summary of the Invention" at col. 3 lines 8-12 and 55. D17 refers to "non-block characteristics" in the first paragraph and includes according to claim 1 as optional components "non-block" additives.

In both cases the compositions contain polymers and, *inter alia* component(s) identified as a "wax" (D16, claim 1 features B.2 and B.3) or "waxlike materials" (D17 page 5, line 17ff, claim 5).

Thus both D16 and D17 relate to compositions serving the same purpose as those of the patent in suit, which employ components being of the same general classes as specified in the patent in suit and emphasise the same properties as the patent in suit.

Accordingly these documents are *prima facie* highly relevant and were admitted to the procedure (following T 1002/92, OJ EPO 1995, 605).

2.2 D18, D18a, D19 and D21 relate to certain of the products disclosed in D16 and D17 and thus are relevant insofar as they are necessary to understand the teachings thereof.

Consequently these documents were also admitted to the proceedings.

2.3 D22 relates according to the title to "Polyamides as remoistenable adhesives".

This document therefore *prima facie* relates to the same technical field as the patent in suit, and, at least insofar as the second auxiliary request is concerned, employs one of the mandatory components.

Accordingly it is concluded that this document is *prima facie* relevant and consequently hence was admitted to the procedure.

2.4 D24 is, according to its title page, a lecture script ("Vorlesungsskript"). The title page bears the date of "November 1998" which is after the first priority date of the patent in suit and the same month as the second priority date (18 November 1998).

There is no evidence that this lecture was ever delivered, let alone evidence that it had been presented in an unrestricted public forum.

The appellant/opponent relied in particular on the reference to polyamide of the tradename "Grilltex" on page 7 and the reference to "Grillamid" or "Grillpolyamid" in the table on page 26 of D24 as clarifying the nature of the "Grilltex 8 G" product employed in the examples of D1 (see section III (b), above).

The Board however observes that according to D1, page 7 lines 6 and 9 the name "Grilltex", is employed for either polyamides or polyesters produced by EMS-Chemie. Further, the product "Grilltex 8" or "Grilltex 8 G" employed in examples XXI and XII is, according to page 18 line 3 of D1, a polyester, not a polyamide. Thus quite apart from the absence of any evidence that D24 was ever made available to the public, the teachings thereof, contrary to the submissions of the appellant/opponent do not even relate to the products employed in D1.

Thus D24 is not relevant to the present appeal.

It follows that D24a, submitted by the respondent/patent proprietor is also not relevant.

Accordingly neither D24 nor D24a were admitted to the procedure.

- 2.5 D25 is a declaration on behalf of the respondent/patent proprietor containing explanations and arguments relating specifically to D16 and D17 and the submissions in respect thereof made by the appellant/opponent.

This document accordingly has to be seen as *prima facie* relevant and hence was admitted to the proceedings.

- 2.6 D26 is a further declaration on behalf of the respondent/patent proprietor containing experimental evidence.

This relates to attempts to repeat adhesive compositions 5 and 6 of example 3 of 17 and the examples of D16.

It is explained that the materials named in D17 could not be obtained and that chemically equivalent alternatives had been identified and employed, supporting evidence in the form of product data sheets being submitted.

One of the components employed in the stated adhesive compositions of D17 was "Foral NC", which according to footnote 4 of Table 1 thereof is a "Modified rosin from Hercules Chemical". In the experiments reported in D26 this product was replaced by "Foral AXE". At the oral proceedings the respondent/patent proprietor stated that although it was known that these products were not identical, neither their respective constitutions nor how they differed was known (see section X.(e), above). The consequence is that, uncertainties regarding the nature of the other materials employed notwithstanding, the respondent/patent proprietor has failed to

establish that the experiment reported in D26 was a faithful reproduction of the compositions of example 3 of D17 and thus could establish to a standard of "beyond all reasonable doubt" what the properties of the compositions of D17 would be (cf T 793/93, 27 September 1995, not published in the OJ EPO, reasons part 2.1).

Regarding the alleged non-availability of products employed in D16 (see section IX.(b) and X.(e), above) the Board notes that D16 does not rely on commercial names for the polymers employed. Instead it is stated in the introduction to the examples that "A variety of polyvinyl pyrrolidone/vinyl acetate copolymers having various monomer ratios **were prepared...**" (emphasis of the Board). The respondent/patent proprietor has not shown that the indicated polymers could not be prepared e.g. that the information provided in D16 was in some respect deficient.

Consequently the submissions in D26 are not sufficient to prove the submission of the respondent/patent proprietor that the compositions of D16 could not be prepared based on the teachings thereof.

In view of these deficiencies the Board had to conclude that D26 was not relevant and consequently it was not admitted to the procedure.

2.7 In conclusion:

D16, D17, D18, D18a, D19, D21, D22 and D25 were admitted to the procedure.

D24, D24a and D26 were not admitted to the procedure.

2.8 Regarding the submissions of the respondent/patent proprietor at the oral proceedings that maintaining the "legal framework" had a higher priority than considerations of relevance in deciding whether to admit late filed documents (see section X.(a) above), the Board observes that the cited section 3.1.2 of the "White Book" is entitled "Examination as to **relevance** with respect to G 9/91 and G 10/91" (emphasis of the Board). The phrase "legal and factual framework" occurs in this section in the discussion of decision T 212/91 (16 May 1995, not published in the OJ EPO) which decision in section 2 of its reasons in coming to the conclusion not to admit the late-filed evidence gives high or even highest precedence to the aspect of relevance ("possibly, most significantly..."). Thus neither the cited passage of the "White Book" taken alone nor the case law to which it refers supports the contention of the respondent/patent proprietor that maintaining the "legal and factual framework" takes precedence over relevance in deciding on the admissibility of newly filed evidence.

As regards the further submissions referring to T 49/85, T 101/87 and page 399 of the "White Book" where these decision are discussed, the Board observes the following.

In the decision under appeal an attack based on D1 was rejected due to the fact that D1 required a water sensitive polymer and a hydrophobic polymer rather than two water sensitive polymers (see sections III.(b) and (c), above). In reaching this conclusion, the opposition division dismissed the arguments of the opponent that the systems of D1 contained only polymers which could be designated "water sensitive", in

particular with a view to obtaining products with good blocking resistance (see section III.(c), above).

T 49/85 in part 2 of the reasons states that a document filed for the first time with the statement of grounds of appeal is not submitted in due time (Art 114(2) EPC) unless representing effective counter evidence to a newly emphasized reason given in the decision. It is however within the discretion of a Board of appeal pursuant to Art 114(1) EPC to admit such a document into the proceedings in view of its **relevance** (emphasis of this Board).

T 101/87 concerned a case where upon appeal four new documents were cited and as a consequence new evidence and arguments presented which "bore little relation to those filed in the original opposition" and produced in effect an entirely new opposition at the appeal stage. This which was considered to constitute an abuse of the appeal procedure.

This was contrasted with the case that new documents were filed in order to address deficiencies in the argument, e.g. to close a "missing link" in a chain of argument which was considered to be admissible (T 101/87 reasons 2).

The Board is satisfied that the opponent in formulating its appeal and citing new documents acted in accordance with the findings of this case law in that the newly cited documents were directed to overcoming deficiencies in the evidence thus far submitted, identified in the decision under appeal.

The conclusion is that the case law referred to by the patent proprietor does not support its position that

the newly filed documents should not be admitted to the procedure.

3. *New Main request*

3.1 Claim 1 of the new main request is directed to a thermoplastic composition which is characterised *inter alia* in that it resists blocking at 90% relative humidity and 38°C.

3.2 It is not specified in the claim how the blocking is determined, in particular there is no reference to substrates or conditions under which the blocking resistance is to be determined.

Thus claim 1 relies for its definition on features which are not part of the claimed subject matter, i.e. extrinsic features.

As a consequence the nature of the restriction that the feature "resists blocking" imposes on the subject matter of the claim is indeterminate.

3.3 This indeterminacy cannot be resolved by recourse to the description.

Although the procedure for carrying out the measurement of blocking is explained in paragraph [0059] of the patent in suit and four classifications of the extent of blocking are defined, namely "excellent", "good", "pass" and "blocked" it is conspicuous that it is not explained which level must be attained for a composition to be classified as "resists blocking". Thus there is a misalignment between the classifications provided in the description and the terms employed in the claim, the consequence of which is that the description cannot assist in establishing

the nature of the restriction imposed by the feature "resists blocking".

3.4 Accordingly the feature "resists blocking" cannot be invoked as a characterising or distinguishing feature. Thus the only features of the claim that can be employed in assessing the relationship to the prior art are those relating to the composition itself. As a result, any composition having the components specified in the claim would anticipate the subject matter thereof.

3.5 D16 as noted above relates to a water-moistenable hot melt adhesive. The compositions of examples 2-4 of D16 contain:

- PVP/VA copolymer which according to paragraphs [0019] and [0042] of the patent in suit is an amorphous water sensitive thermoplastic material;
- Carbowax 4000, i.e. a poly(ethylene glycol) ("PEG"). According to D21 the grade "Carbowax 4000" corresponds to a PEG with molecular weight 3600-4400. From D19, page 579, rh column it is known that PEGs become partially crystalline solids at a molecular weight of ca 800 and that maximum crystallinity is attained at a molecular weight of 6000 (D19, page 580, first complete paragraph).
These polymers are water soluble as stated in D19 page 580, second complete paragraph. Further the patent in suit discloses that polyethylene oxide, i.e. the class of polymers to which Carbowax belongs (cf D21) can be employed as the

- crystalline water sensitive polymer (paragraph [0040]). Consequently Carbowax 4000 falls within the scope of the second component - crystalline thermoplastic polymer of claim 1;
- Castorwax, which is explained at col. 5 line 51 of D16 to be a hydrogenated castor oil and as being a water insoluble solid wax. This material is also disclosed as a usable wax in the patent in suit (paragraph [0045], line 17, under the name "castor wax").

3.6 Thus D16 discloses compositions having the three components specified in claim 1 of the new main request and for this reason anticipates the subject matter thereof (Art. 54 EPC).

3.7 The new main request is therefore refused.

4. *First auxiliary request*

Claim 1 of the first auxiliary request is directed to:
"A thermoplastic composition comprising from 10 wt-% to 90 wt-% of at least one crystalline thermoplastic polymer blended with at least one amorphous thermoplastic polymer..".

4.1 *Art. 84*

4.1.1 The relationship between the feature "comprising from 10 wt-% to 90 wt-%..." and the remaining features of the claim is open to two interpretations.

Either this feature could be understood, as petitioned by the respondent/patent proprietor at the oral proceedings (see section X.(c), above), as meaning that

the composition contained 10 wt-% to 90 wt-% of the crystalline thermoplastic material.

Alternatively the claim could be interpreted as being directed to a thermoplastic compositions of which 10 wt-% to 90 wt-% is made up of the three named components (crystalline thermoplastic, amorphous plastic and wax) the remainder, i.e. 90 wt-% to 10 wt-% thereof being undefined.

- 4.1.2 The description does not assist in resolving this ambiguity since, as acknowledged by the respondent/patent proprietor at the oral proceedings (see section X.(c), above), the wording employed in the claim is not present in the description.
- 4.1.3 This unclarity can further not be remedied or resolved by reference to page 3, line 17ff of the application as published or claim 17 (application and patent), in contrast to the submissions of the respondent/patent proprietor at the oral proceedings (see section X.(c), above). These passages specify permissible concentration ranges for each of the three components. Claim 1 of the first auxiliary request however contains only a single range.
- 4.1.4 In the course of its submissions the respondent/patent proprietor referred to the need to apply the perspective of a "mind willing to understand". This wording comes from the decision T 190/99, (6 March 2001, not published in the OJ EPO) in which it was held that in interpreting a claim it was necessary to exclude interpretations "which are illogical or which do not make technical sense" (reasons 2.4).
In the present case, however, the respondent/patent

proprietor has not shown that one of the two alternative interpretations of the specified range (10 wt-% to 90 wt-%) is either illogical or technically unrealistic. It has instead only been argued that one of the possible interpretations does not correspond to the intended/desired meaning.

4.1.5 It therefore has to be concluded that claim 1 of the first auxiliary request does not meet the requirements of Art. 84 EPC and for this reason has to be refused.

4.2 *Art. 123(2) EPC*

The application as filed further does not provide a basis for this feature.

4.2.1 Claim 17 and page 3 starting at line 17 of the application (published), invoked by the respondent/patent proprietor disclose remoistenable adhesives and thermoplastic compositions respectively. containing:

- from about 10 wt-% to about 90 wt-% of at least one crystalline water sensitive thermoplastic polymer;
- from about 10 wt-% to about 90 wt-% of at least one amorphous water sensitive thermoplastic polymer;
- 0 to about 30 wt-% (page 3 line 22) or up to about 30 wt-% (claim 17) of at least one wax.

Thus these passages disclose either a two or a three component system. Applying the interpretation petitioned by the respondent/patent proprietor that the amount 10-90 wt-% applied to the content of crystalline

thermoplastic would give rise to an objection pursuant to Art. 123(2) EPC due to the absence of restrictions on the amounts of the amorphous thermoplastic polymer or the wax in operative claim 1, i.e. this claim is of broader scope than the invoked passages of the original application.

4.2.2 The passage commencing at page 4 at line 21, also invoked by the respondent/patent proprietor (see section X.(c), above) discloses:

- that the invention relates to a thermoplastic composition comprising at least one crystalline ingredient and at least one amorphous ingredient the amount of water sensitive ingredients in the composition being at least 50 wt-%, and
- that the crystalline component is present in an amount ranging from about 10 wt-% to about 90 wt-%.

This passage similarly cannot provide a basis for the preferred interpretation of the respondent/patent proprietor. Although the feature "10-90 wt-%" of the crystalline component is disclosed, this is in combination with and subordinate to the requirement that there be at least 50 wt-% water sensitive material in the composition. This latter requirement is however absent from claim 1 of the first auxiliary request meaning that the scope of this claim extends beyond the disclosure of the cited passage of the original application.

Further the explicit disclosure of this passage relates to a two component system. Operative claim 1 however specifies mandatorily a three component system including as third component a wax.

4.2.3 Accordingly, the defects pursuant to Art. 84 EPC notwithstanding, the subject-matter of this claim, when interpreted as petitioned by the respondent/patent proprietor extends beyond the content of the application as filed.

4.3 The first auxiliary request is therefore refused.

5. *Second auxiliary request*

5.1 *Art 54, 84, 123(2) EPC*

The appellant/opponent raised no objections pursuant to these requirements of the EPC. Nor has the Board any objections of its own with respect to these provisions of the EPC.

5.2 *Art. 56 EPC*

5.2.1 *The patent in suit*

The invention relates to remoistenable adhesives for use in packaging, repulpable bags and body-fluid impermeable structures (paragraph [0001]).

Following a survey of known hot melt compositions it is explained in paragraph [0015] that although water soluble polyamides have been identified for use in remoistenable adhesives, this class of compounds undesirably has a high melt point, relatively high molten viscosity and slow speed of remoistening. Attempts to adjust the melt point and viscosity by addition of tackifiers and waxes often resulted in diminished blocking resistance.

Hence there was a need for water sensitive adhesive compositions having:

- low viscosity;
- fast rate of remoistening;
- blocking resistance.

5.2.2 In paragraph [0018], at the beginning of the section of the patent in suit entitled "Summary of the Invention", it is explained that by combining crystalline water sensitive thermoplastic materials (which in the case of the second auxiliary request is restricted to polyamide) with amorphous water sensitive thermoplastic materials the properties of the resulting mixture exhibit a synergistic improvement, viz:

- improved melt processability;
- improved rate of moistenability with respect to a composition based on crystalline water sensitive polymer in addition to
- excellent humidity and blocking resistance.

It is explained in paragraph [0024] that the term "water sensitive" means soluble, dispersible and/or swellable in water, i.e. the definition in operative claim 1.

5.2.3 The first set of examples, reported in Table 1, show two families of comparative examples (A,B and C,D) which contain respectively only the crystalline polymer (NP-2126 polyamide) or only the amorphous component (AQ-1045 polyester).

The rate of remoistening and bondability is measured as explained in paragraph [0059] of the patent in suit by:

- applying the adhesive to a paper substrate;

- after cooling cutting into strips;
- moistening the coated strip and
- immediately pressing onto a second piece of bond paper with medium finger pressure;
- a stop watch is started to measure the length of time that elapses between the point the coated strip is pressed onto the bond paper until it is removed.

The "rate of remoistening" is determined to be the length of time it takes after the strips are pressed together for the adhesive to develop a fibre tearing bond (i.e. upon separation). The percentage of fibre tear is also recorded. The times recorded in the examples for the first fibre tear to occur are up to 60 seconds.

Measurements of fibre tear are also made after allowing the bonded strips to age for 24 hours.

The patent in suit presents the results in a table which is reproduced here:

TABLE 1

Ingredient Trade Name WT-%	A	B	C	D	Example 1	Example 2	Example 3	Example 4
AQ-1045			87	82	44.5	42	27	57
NP-2126	87	82			42.5	40	60	30
Paricin 285	10	10	10	10	10	10	10	10
Paricin 220		5		5		5		
Benzoflex 9-88	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Irganox 1010	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
PROPERTIES								
Rate of Remoistening & Bondability								
Initial -% Fiber Tear/Time After 24 hrs (% FT)	60/50 sec transfer	80/45 sec transfer	100/30 sec 100	100/30 sec 95	100/30 sec 100	100/30 sec 95	100/30 sec 100	100/30 sec 100
Blocking Resistance At room temperature 90% RH/38C	Good Good	Good Good	Blocked Blocked	Good Blocked	Good Good	Good Good	Good	Good
Rate of Set	Fast	Fast	Fast	Fast	Fast	Fast	Fast	Fast
Viscosity @ 163°C (cps)	755	572	2670	1255	1407	1005		

From these results it can be concluded that:

- Comparative compositions A and B containing only the crystalline component exhibit low viscosity (755 and 572 cps @ 165°C) "good" blocking resistance and remoistenability, providing 60 or 80% fibre tear 50 or 60 seconds after application of a substrate to the remoistened adhesive.
- Comparative compositions C and D, containing only the amorphous component exhibit poorer blocking performance, higher viscosity but faster remoistenability rate (100% fibre tear achieved 30 seconds after application) than compositions A and B.
- Inventive examples 1, 2 and 3 containing the same total amount of water sensitive polymer however divided between the crystalline and amorphous polymers exhibit:
 - the same blocking resistance as compositions A and B;
 - the same rate of remoistening as compositions C and D;
 - viscosities intermediate between those reported for compositions A/B and C/D.

On the basis of this data it can be concluded that the technical problem as set out in the patent in suit is solved. In particular it is noted that, with the exception of the viscosity values, the properties exhibited by adhesives containing only one of the polymers (comparative examples) are maintained when the polymers are employed in combination, i.e. are not at some intermediate value.

5.3 *The prior art*

During the opposition proceedings D1 was considered to represent the closest prior art (see section III.(c), above). At the commencement of the appeal proceedings, D17 was cited and proposed as an alternative document representing the closest prior art (see section V.(c), above).

During the oral proceedings before the Board however the appellant/opponent also advanced arguments relying on D16 as the closest prior art (see section X.(f), above).

- 5.3.1 D1 relates to hot melt adhesives based on sulphonated polymers. These polymers are stated to be hydrophilic (D1 page 3 line 22ff). According to the page 9, line 50 of D1 one commercial polymer meeting these requirements is Eastman AQ 14000 which is mentioned in paragraph [0044] of the patent in suit as being a preferred amorphous water sensitive polymer.
- According to page 3 lines 33ff of D1 it had been found that the heat resistance and strength of hot melt adhesives based on sulphonated polymers could be improved by incorporation of either a crystalline wax or polymer, whereby the crystalline polymer was hydrophobic (D1 page 3 line 41 and page 6 line 57).
- According to Example X on page 18 of D1 and the text following the corresponding Table 12, compositions without the hydrophobic polymer (Grilltex polyester) demonstrated blocking while inclusion of the hydrophobic material eliminated blocking.

According to Example XII of D1, the presence of the hydrophobic polymer resulted in a reduction in water sensitivity.

Example XIII of D1 provides a comparison between the adhesives thereof, i.e. a combination of amorphous water sensitive sulphonated polymer and hydrophobic crystalline material with two commercial adhesives, one hydrophobic adhesive ("A") the other water sensitive adhesive ("B").

This evidence shows that the composition B - containing the water sensitive adhesive experienced blocking while the other two examples, containing hydrophobic components experienced either "no" or "slight" blocking.

Although the question of set speed is discussed in D1 which explains at page 3 line 47ff that the crystalline wax materials are necessary to obtain fast set speeds this aspect is not examined in the examples. Instead the examples investigate the temperature at which the bond fails.

Thus the teaching of D1 is that hot melt remoistenable adhesives require a hydrophobic crystalline component in order to provide blocking resistance.

- 5.3.2 D17, invoked in the statement of grounds of appeal as the closest prior art, relates according to claim 1 to a remoistenable hot melt adhesive based on a poly(alkyloxazoline), which is one of the classes of amorphous water sensitive polymers employable according to the patent in suit (paragraphs [0019] and [0042]), a diluent and various optional ingredients including a tackifier.

According to the introductory paragraph of D17 the aim was to provide adhesives with an outstanding balance of non-block characteristics (under high heat and humidity conditions) as well as excellent bond strength.

The bond strength - "remoistening percent tear" - is assessed according to the examples of D17 (page 11 line 6ff) by bonding coated paper under undefined pressure conditions for a period of one hour after which the percentage of surface torn on attempting to separate the sample is determined.

Adhesive compositions 5 and 6 example 3 of D17 relate to compositions containing as common components:

- polyethyloxazoline ("PEOX");
- Carbowax 6000 (i.e. a water sensitive crystalline polymer) and
- a wax (hydrogenated castor oil i.e. Castor Wax, both of these terms being employed in the indicated examples - see also section 3.5 above concerning the nature of these components).

These compositions are reported to exhibit remoistening tear of 100% and 50-80% respectively.

Blocking is reported for both adhesive compositions 5 and 6 as "non-block" at 75% relative humidity, and 22°C (cf D17 page 10 line 10ff) and, respectively, as "slight zip" and "non-block" at 83% relative humidity/22°C. At 60°C, and non-specified humidity both samples are rated as "zip".

5.3.3 D16, invoked as closest prior art at the oral proceedings before the Board (see section X.(f), above) relates according to claim 1 (see also section 3.5, above) to a water moistenable hot melt adhesive based on:

- at least one water sensitive hydrophilic copolymer (PVP/VA)
- at least one water soluble crystalline polymer, (Carbowax 4000) and
- at least one water insoluble wax, e.g. Castor Wax.

D16 aims to provide a water moistenable hot melt adhesive characterised by an absence of blocking in particular at commercially acceptable levels of relative humidity (col 3, lines 42-50). The compositions according to the invention of D16, i.e. examples 1-5 of Table 1 are reported to have "OK" blocking resistance.

The remoistening properties are measured according to D16 in two ways (explained at col. 8, line 5ff)

The first, designated "remoistening speed" involves remoistening a strip, adhering it to a substrate and then determining the amount of time that elapses when the first tear occurs on attempting to separate the substrates (reported time required according to the data in Table I 13-15 seconds).

The second test, designated "remoistening percent tear" involves, as in the case of D17, adhering two strips, but allowing them to stand for 24 hours (instead of only 1 hour) before attempting to separate and determining the extent of fibre tear. All examples of D16 are reported as 100% tear.

5.3.4 From the foregoing it is concluded that the teachings of D16 and D17 are essentially the same since both require as the base polymer an amorphous water sensitive polymer, as a further component PEG, i.e. a crystalline water sensitive polymer. In both cases a

grade is employed which, due to the molecular weight, is a crystalline polymer and a water insoluble wax, i.e. Castor Wax.

5.4 *The closest prior art*

The patent in suit aims to optimise both blocking resistance and rate of remoistening of the adhesives. Although D1 does mention fast set speed as well as blocking resistance, there is no detailed consideration or examination in this document of the rate of remoistening.

The teaching derivable from D16/D17 on the other hand emphasises the aspect of remoistening speed as well as the blocking resistance.

It is therefore concluded that the teachings of D16/D17 are more closely aligned with the technical problem set out in the patent in suit than is the teaching of D1. Accordingly the teaching of D16/D17 represents the closest state of the art.

5.5 *The technical effect compared to the teachings of D16/D17*

The rate of remoistening in the patent in suit and in D16/D17 is measured in terms of the extent of fibre tear observed after applying a remoistened strip to a substrate and removing it.

It is conspicuous that whilst D16 and D17 allow the adhered samples to stand under controlled conditions for 24 or 1 hours respectively before determining the extent of adhesion, the measurement in the patent in suit is carried out after a matter of seconds and the adhesives achieve 100 percent fibre tear at this point.

From this evidence it can be concluded that the compositions of the patent in suit achieve a significantly faster rate of remoistening than that reported for the compositions of D16 or D17.

5.6 *The technical problem, its solution*

In view of this evidence the technical problem with respect to the closest prior art can be formulated as being to provide hot melt remoistenable adhesives providing a significantly faster rate of remoistening than provided by the compositions known from D16 or D17 while maintaining blocking resistance.

This problem was solved according to claim 1 of the second auxiliary request by employing polyamide as the crystalline water sensitive thermoplastic polymer.

5.7 *Obviousness*

5.7.1 The only document in the proceedings to relate to a water sensitive polyamide in connection with remoistenable hot melt adhesives is D22. This discloses that polyamides derived from a polyoxyalkylene diamine of the same general formula as disclosed in paragraphs [0029], [0030], [0034] and [0036] of the patent in suit are particularly preferred.

According to the examples of D22 the adhesives further contain a wax component (Paricin 285 - cf patent in suit paragraph [0045]) and a terpene phenolic tackifier - Nirez V2040 (cf patent in suit paragraph [0050]).

The adhesives are reported to "pass" the humidity blocking test. This test is performed according to page 15 of D22 under conditions of 84% relative humidity for 24 hours or 94% relative humidity for

96 hours at the same temperature as the "blocking test", which - according to D22, page 14 line 21 is carried out at "120°" (*sic*) or "room temperature". It appears that D22 employs the Fahrenheit system, meaning that the figure of "120°" corresponds to 49°C. It is not reported to which temperature "room temperature" corresponds. The adhesives of D22 are reported to have remoistenability classified as either "excellent" or "good", which property is determined in D22 in essentially the same way as in D16 and D17, whereby the samples are allowed to age for 24 hours at 50% relative humidity prior to attempts to separate them. D22 also teaches (page 10, lines 8-12) that polymers conventionally used as remoistenable adhesives, PEOX being mentioned explicitly, tend to be deliquescent, which causes blocking at high humidity and temperature.

5.7.2 D22 therefore does not provide any suggestion that the technical problem of improving the remoistening rate of hot melt adhesives of D16 or D17 could be solved by including in the composition a polyamide as the crystalline component. In particular there is no suggestion in D22 that remoistening rates of the order of seconds rather than hours could be obtained. In any case D22 teaches that adhesives containing amorphous polymers would not exhibit good blocking properties. This teaching would serve as a disincentive to combining the polymers of D22 with the amorphous water sensitive polymers as disclosed in D16 or D17.

5.7.3 It is therefore concluded that it would not be obvious to solve the technical problem underlying the patent in suit by modifying the compositions of D16/D17 by replacing the crystalline polymer thereof (PEG) by a

polyamide as taught in D22.

In this connection it is recalled that according to D1, example XIII, discussed above (section 5.3.1) the presence of two water sensitive components in the adhesive is disadvantageous, resulting in particular in poor blocking resistance. Hence recourse to this document would also not render the claimed subject matter obvious.

5.8 Claim 1 of the second auxiliary request therefore meets the requirements of Art. 56 EPC.

Claims 2-15 are dependent on claim 1 and hence this conclusion applies *mutatis mutandis* to the subject matter thereof.

Claims 16 and 17 correspond, as reported in section VI, above, to claims 17 and 18 of the patent as granted, however restricted to polyamide.

By the same reasoning as applied for claim 1 it is concluded that the subject matter of these claims is not obvious and therefore meets the requirements of Art. 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the second auxiliary request (claims 1 to 17) filed with the letter dated 23 September 2008 and after any necessary consequential amendment of the description.

The Registrar:

The Chairman:

E. Görgmaier

R. Young