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D E C I S I O N
of 4 September 1997

Case Number: T 0395/95 - 3.3.1

Application Number: 86302125.9

Publication Number: 0196844

IPC: C09J 133/06

Language of the proceedings: EN

Title of invention:

Tackifiers and their use in pressure sensitive adhesives

Patentee:

EXXON CHEMICAL PATENTS INC.

Opponent:

Hercules Incorporated

Headword:

Tackifiers/HERCULES INC.

Relevant legal provisions:

EPC Art. 56, 88(3)

Keyword:

"Multiple priorities for one single claim"
"Inventive step (yes; different state of the art for different alternatives covered by one claim)"

Decisions cited:

G 0007/95

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0395/95 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 4 September 1997

Appellant:
(Opponent) Hercules Inc.
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Respondent:
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Representative: Dew, Melvyn John
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 7 March 1995
rejecting the opposition filed against European
patent No. 0 196 844 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: R. K. Spangenberg
Members: P. P. Bracke
S. C. Perryman

Summary of Facts and Submissions

I. This appeal lies from the Opposition Division's decision rejecting an opposition against European patent No. 0 196 844, which was granted with 8 claims on the basis of European patent application No. 86 302 125.9, filed on 21 March 1986 and claiming priority of 25 March 1985 from GB 8507679.

Claims 1, 2 and 5 read:

"1. The use as a tackifier for an aqueous latex of acrylic polymers or copolymers of an aqueous emulsion of a resin having a softening point from 10°C to 120°C being a copolymer of a feed which is predominantly C₅ olefines and diolefins and one or more monovinyl aromatic compounds, said resin containing from 10 to 60 wt% of the monovinyl aromatic compounds."

"2. The use according to Claim 1 in which the resin has a softening point of 10°C to 80°C and contains from 10 to 30 wt% of the monovinyl aromatic compound."

"5. A pressure sensitive adhesive prepared by blending an aqueous latex of from 30 % to 85 % by weight on a dry basis of an acrylic polymer or copolymer and an aqueous emulsion of from 15 % to 70 % by weights on a dry basis of a resin having a softening point from 10°C to 120°C being a copolymer of a feed which is predominantly C₅ olefines and diolefines and one or more monovinyl aromatic compounds said resin containing from 10 to 60 wt% of the monovinyl aromatic compound."

Claims 3 and 4 were dependent upon Claims 1 and 2 and Claims 6 to 8 were dependent upon Claim 5.

II. The Opposition Division found that the invention defined in independent claims 1 and 5 as granted was not entitled to the claimed priority date. Consequently, document

(B) EP-A-0 159 821,

an earlier European patent application of the Respondent, filed on 25 March 1985, designating the same Contracting States as are designated in the present patent, claiming a priority of 28 March 1984 and being published on 30 October 1985, belonged to the state of the art according to Article 54(2) EPC.

The Opposition Division further considered document

(A) Handbook of Pressure-Sensitive Adhesive Technology, edited by Donatas Satas, Van Nostrand Reinhold Company, 1982, pages 324 and 325.

Although the tackifiers defined in claim 1 were known from document (B) to be suitable for tackifying carboxylated styrene butadiene copolymers, in the Opposition Division's view the use of such agents for tackifying aqueous acrylic latices was not suggested, since carboxylated styrene butadiene copolymers were structurally different from aqueous acrylic latices and it could not have been predicted in view of the disclosure of documents (A) and (B), that the tackifying agents known from document (B) would be suitable for tackifying aqueous acrylic latices.

III. During the oral proceedings, which took place on 4 September 1997, the Respondent filed two further sets of claims headed "first auxiliary request" and "second auxiliary request".

IV. The Appellant on appeal put forward for the first time the argument that the claimed subject-matter was not novel over the teaching of document (B), because according to this document styrene butadiene emulsions may contain 0.5 to 5 %w of eg acrylic acid as comonomer. Such resins may thus be considered as acrylic copolymers, in accordance with a definition given in postpublished document

(1) US-A-5 656 698

standing in the name of the Respondent.

Additionally, the Appellant submitted that the disclosure of document (B) had not been fully considered in the decision under appeal, since this document referred to document

(F) US-A-3 966 661,

which, consequently, supplemented the disclosure of document (B).

Moreover, in his opinion the sixth and the twelfth composition in Table II of document

(G) GB-A-2 097 410,

were novelty destroying for the claimed subject-matter.

In respect of inventive step the Appellant argued that a skilled person looking for tackifying aqueous latices of acrylic polymers or copolymers would have tried with a reasonable expectation of success the polymers known to be suitable tackifiers for styrene butadiene resins, since the carboxylated styrene butadiene emulsions of document (B) were not structurally different from the

aqueous acrylic latices according to the patent in suit and since it could be deduced from compositions 6 and 12 in Table II of document (G) that such acrylates were compatible with styrene butadiene resins.

He also expressed doubts whether all the acrylate resins covered by present Claim 1 could in fact be tackified by the resins according to that claim, since it was said in document (1) that resins according to the present invention lack compatibility with acrylic polymers containing butyl acrylate.

Finally, he submitted that the Opposition Division's finding that the whole subject-matter of claim 1 as granted did not enjoy the claimed priority right was correct, and that, even if one would consider document (B) only in respect of subject-matter extending beyond the disclosure of the priority document, this subject-matter would nevertheless lack inventive step, since no particular technical problem was solved by using only such resins of acrylic polymers or copolymers, for which the priority claim was invalid.

- V. The Respondent submitted that lack of novelty had not been cited as a ground of opposition and that he did not agree to the introduction of the objection of lack of novelty in the appeal proceedings.

He further submitted that the problem underlying the invention was the optimum combination of several adhesive properties. Relying inter alia on document

- (E) Adhesive Chemistry, Developments and trends, edited by Lieng-Huang Lee, Plenum Press, 1984, pages 693 to 723,

a publication by a technical expert of the Appellant, he argued that it was not predictable which resins would be suitable tackifiers for a specific polymer, so that the claimed subject-matter was not obviously derivable from the state of the art, particularly not from documents (B) and (G).

In this respect he also submitted that according to the conventional understanding an "acrylic copolymer" was a copolymer of two or more acrylic monomers that may contain copolymerised non-acrylic monomer, but only to the extent that the characteristics of acrylic polymers are retained and that, on the basis of this understanding, the carboxylated styrene butadiene resins of document (B), only describing carboxylated styrene butadiene copolymers containing 0.5 to 5.0 %w/w of an unsaturated carboxylic acid monomer, were very different in chemical structure and physical properties from the acrylic polymers and copolymers according to the patent in suit.

Additionally, since document (G) was concerned with the use of an acrylic latex for tackifying a carboxylated diene-vinyl aromatic polymer, he argued that the claimed use would not be rendered obvious by the content of this document.

VI. The Appellant requested that the decision under appeal be set aside and that the European patent No. 0 196 844 be revoked.

The Respondent requested as a main request that the appeal be dismissed and that the patent be maintained as granted, and as first and second auxiliary requests that the decision under appeal be set aside and that

the patent be maintained on the basis of one of the sets of claims headed first or second auxiliary request respectively, submitted at the oral proceedings on 4 September 1997.

At the end of the oral proceedings the decision of the Board was pronounced.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

2.1 Priority

2.1.1 According to Article 88(3) EPC, the right of priority covers only those elements of the European patent application (and, consequently, of the European patent) which are included in the application whose priority is claimed.

Since the disclosure of the priority document, GB 8507679, is restricted to

- (i) the use as a tackifier for an acrylic polymer or copolymer of a resin having a **softening point from 10°C to 80°C** being a copolymer of a feed which is predominantly C₅ olefines and diolefines and one or more monovinyl aromatic compounds containing **from 10 to 30 wt.% of the monovinyl aromatic compounds** (page 5, lines 1 to 7), wherein the acrylic polymer or copolymer is in the form of a latex (page 6, line 25), and

(ii) pressure sensitive adhesives comprising from 30 to 85 wt.% of a resin having a **softening point from 10°C to 80°C** being a copolymer of a feed which is predominantly C₅ olefines and diolefines and one or more monovinyl aromatic compounds said resin containing **from 10 to 30 wt.% of the monovinyl aromatic compounds** (page 5, lines 8 to 15, and claim 5),

a right of priority cannot be recognised for those parts of the claims, which concern the use of a resin having a softening point from above 80°C to 120°C and/or containing from above 30 to 60 wt.% of the monovinyl aromatic compounds and to adhesives comprising such a resin.

2.1.2 Article 88(2) EPC allows multiple priorities to be claimed in respect of a European patent application, and also multiple priorities to be claimed for any one claim. In the present case this means that the right of priority from the priority application dated 25 March 1985 covers all the subject matter of Claim 2 but only part of the subject matter of Claims 1 and 5. Insofar as Claims 1 and 5 relate to the use of a resin having a softening point from above 80°C to 120°C and/or containing from above 30 to 60 wt.% of the monovinyl aromatic compounds and to adhesives comprising such a resin they are only entitled to the date of 21 March 1986, and document (B) belongs to the state of the art according to Article 54(2) EPC in relation to this subject-matter, but is only state of the art according to Article 54(3) EPC in relation to the other subject matter covered by these claims.

2.2 Novelty

Lack of novelty was not raised at all as a ground of invalidity in the original opposition. The Respondent did not consent to lack of novelty in relation to documents (B) or (G) being considered in the appeal proceedings. Following the reasoning given in decisions G 1/95 and G 7/95 (OJ EPO, 1996, 615 and 626 respectively) of the Enlarged Board of Appeal, that fresh grounds of opposition cannot be raised on appeal unless the patent proprietor consents, the Board holds that the objection of lack of novelty in relation to document (B) cannot be considered on appeal.

2.3 Inventive step

2.3.1 The presence of an inventive step was denied by the Appellant inter alia with respect to the state of the art represented by document (B). As is set out in points IV and V above, the relevance of this document depends on the proper construction of what is included by the term "acrylic copolymer" used in the claims of the patent in suit. Therefore, this question needs to be considered first.

The contents of document (B) are reflected by its claim 1 reading "The use as a tackifier for carboxylated styrene butadiene copolymers of a resin having a softening point from 10°C to 30°C being a copolymer of a feed which is predominantly C₅ olefines and diolefins and one or more monovinyl aromatic compounds said resin containing from 10 to 30 wt% of the monovinyl aromatic compounds." Also described are pressure sensitive adhesives containing 15 to 70 wt% of such a resin and 30% to 85% by weight of a carboxylated styrene butadiene copolymer. The carboxylated styrene butadiene emulsion disclosed in document (B) may be made of butadiene, styrene and one or more unsaturated

acids comprising acrylic and methacrylic acid. The quantity of acid used, based on total monomer, is about 0.5 to 5% w/w (see the paragraph bridging pages 5 and 6).

In the Appellant's submission the term "acrylic copolymer" covers any copolymer containing an acrylate, such as acrylic acid, as a comonomer irrespective of however little of the acrylate might be present, to the effect that the copolymer disclosed in document (B) is an acrylic copolymer as defined in the patent in suit. This submission was, however, not supported by any evidence of such usage in the art. In particular, document (1), a post-published US-patent assigned to the Respondent provides no evidence of how the skilled man would interpret the term "acrylic copolymer" in the present patent. The definition given in document (1), namely that the term "acrylic copolymer" is meant to include those polymers made from vinyl acids and/or esters which are polymerizable under free radical conditions, optionally with other ethylenically unsaturated monomers copolymerizable with them (see column 3, lines 19 to 27) is a complex one. It does not provide clear support for the Appellant's argument, and that such a definition was considered necessary in document (1) speaks against its being the generally accepted meaning of the term "acrylic copolymer". Document (F) does not support the Appellant's submission either. This document relates to a continuous process for the preparation of a wide variety of carboxylated latices, including those addressed in document (B). However, the reference in document (B) concerns only the **preparation** of the latices used, but cannot, in the Board's judgment, be construed to mean that all the latices obtainable according to document (F) can be used for the purpose disclosed in document (B). Accordingly, this document cannot assist the skilled person looking for the proper

construction of the term "acrylic copolymer". To the Board, therefore, it appears rather that the usage of the term "acrylic copolymer" is confined to copolymers where the acrylate is the major comonomer. Quite how low a percentage of acrylate comonomer allows something still to be described as an "acrylic copolymer" need not be decided here, but the Board considers that the term does **certainly not** include a copolymer in which the acrylate makes up 0.5 to 5 wt. % as in document (B).

- 2.3.2 Document (B) had been relied on in the original opposition as depriving claims 1 and 5 as granted of inventive step, but this was done on the assumption that the whole subject matter of these claims was entitled only to the date of the actual filing of the European application. This is not the Board's view.

The Appellant did not dispute that the use as a tackifier for an aqueous latex of acrylic polymers or copolymers of an aqueous emulsion of a resin having a softening point from 10°C to 80°C being a copolymer of a feed which is predominantly C₅ olefines and diolefins and one or more monovinyl aromatic compounds, said resin containing from 10 to 30 wt% of the monovinyl aromatic compounds (i.e. the subject-matter of present claim 2; see point I above) and a corresponding pressure sensitive adhesive are disclosed in the priority document.

Therefore, insofar as these claims relate to a resin having a **softening point from 10°C to 80°C** being a copolymer of a feed which is predominantly C₅ olefines and diolefines and one or more monovinyl aromatic compounds said resin containing **from 10 to 30 wt.% of the monovinyl aromatic compounds**, the claimed subject-matter is entitled to the claimed priority date and, consequently, the contents of document (B) are only

state of the art pursuant to Article 54(3) EPC, as document (B) is a European patent application having a priority date earlier than the priority claimed for claims 1 and 5 but was published only after the priority date of the patent in suit. So document (B) can be taken into account when considering inventive step, only in relation to a resin having a **softening point from above 80°C to 120°C** and/or a resin containing **from above 30% to 60 wt.% of the monovinyl aromatic compounds.**

2.3.3 Article 56 EPC provides that documents which are state of the art only because they are within Article 54(3) EPC are not to be considered in deciding whether there has been inventive step. Given this prohibition in the Convention, the Board considers it would have been inappropriate to apply the suggestion made in the answer given in decision G 7/95 of the Enlarged Board of Appeal that "the allegation that the claims lack novelty in view of the closest prior art may be considered in the context of deciding upon the ground of lack of inventive step" to the situation in the present case where a document (B) is state of the art only pursuant to Article 54(3) EPC, without first referring a question to the Enlarged Board as to whether this suggestion was also meant to apply to an Article 54(3) EPC document. However, on the Board's view of the facts as stated in point 2.3.1 above, an answer by the Enlarged Board to this further question is not necessary for deciding the present case.

2.3.4 In respect of the subject-matter entitled to the claimed priority date, i.e. the subject-matter of present claim 1 which is also covered by present claim 2 (see points I and 2.3.2 above), there remains to be decided whether the claimed subject-matter was obviously derivable from the state of the art exemplified by documents (A), (G) and (E).

2.3.5 In document (A), it is stated on page 324 (last two paragraphs) and page 325 (first two paragraphs) that aqueous emulsions of acrylic adhesives may be tackified by a phthalate ester of hydroabietyl alcohol or by the addition of pre-emulsified tackifying resins, and from document (E) it was known that also pure monomer resins, copolymers of α -methyl-styrene and vinyl toluene, copolymers of α -methyl-styrene and styrene, rosin esters, glycerol ester of highly hydrogenated rosin and the phthalate ester of hydroabietyl alcohol are useful for tackifying aqueous emulsions of acrylic adhesives (page 713, third paragraph to page 716, first paragraph). In the Board's judgment, these documents represent the closest state of the art.

2.3.6 In view of the teachings of these documents, the problem underlying the invention is seen as developing further adhesive formulations having a suitable combination of several adhesive properties, more particularly, in developing adhesives having good loop tack and ball tack, whose components will not migrate during storage leading to unsightly colouring and lowering of adhesive properties (see the patent in suit, page 2, lines 52 to 57).

2.3.7 According to Claim 1 this problem is solved by using an aqueous emulsion of a resin as defined in Claim 1 for tackifying an aqueous latex of acrylic polymers or copolymers.

In view of the peel strength-, loop tack- and shear-data provided in the experimental part of the patent in suit, the Board finds that the problem is indeed thereby credibly solved.

In this respect, the Board cannot agree with Appellant's objection, that it follows from the passage in column 2, lines 6 to 8, in document (1), that not

all the aqueous latices of acrylic copolymers can be tackified by the resins according to Claim 1. As it may be concluded from the passage in column 2, line 66 to column 3, line 2 of that document, saying that the resins described therein exhibit *inter alia* excellent compatibility with acrylic adhesives, this document is concerned with further developing and, consequently, improving the tackification of acrylic adhesives. Therefore, the above-mentioned passage can only be interpreted as meaning that the properties of the prior art resins may still be improved, which, however, does not mean that such resins would not have the properties described in that prior art document.

- 2.3.8 On the evidence the Board heard from the experts of both parties, the Board accepts, that in this field it is virtually impossible to predict what will be a suitable tackifier for a particular latex unless there is evidence that a particular tackifier has already successfully been used on a closely similar latex.

In documents (A) and (E) the skilled person cannot find any pointer to choosing a tackifier for acrylic copolymer latices other than those suggested therein.

The Appellant argued that, however, the claimed use was obvious over the teaching of document (G), which is concerned with compositions comprising a latex of a polymer and a tackifier resin, wherein the polymer is obtained by polymerising a vinyl or vinylidene monoaromatic monomer, a C₄₋₆ conjugated diene and 1 to 5 wt.% of an unsaturated carboxylic acid monomer and the tackifier resin may be *inter alia* a C₅ cut of a hydrocarbon stream or a synthetic latex of an acrylic resin (page 1, line 55 to page 2, line 9). Document (G) specifically discloses as the sixth and the twelfth composition in Table II mixtures of carboxylated styrene butadiene resins and acrylic resins. But

document (G) is not concerned with the problem of tackifying aqueous latices of acrylic polymers or copolymers, nor is it concerned with copolymers of a feed which is predominantly C₅ olefines and diolefins and one or more monovinyl aromatic compounds said resin containing from 10 to 60 wt% of the monovinyl aromatic compound. The Board can therefore see no pointer in document (G) that would lead the skilled person to the claimed subject matter, nor is there any reason why a skilled person would have been guided towards that subject-matter by the combined teachings of the three documents under consideration.

- 2.3.9 In respect of the subject matter not entitled to the priority of 25 March 1985, which is limited to a resin having a **softening point from above 80°C to 120°C** and/or a resin containing **from above 30% to 60 wt.% of the monovinyl aromatic compounds**, document (B) can be considered for inventive step.

On the interpretation put on the term "acrylic copolymer" by the Board (see point 2.3.1 above), the carboxylated styrene butadiene emulsion disclosed in that document is not an "aqueous latex of acrylic polymers or copolymers", as defined in the patent in suit. Accordingly the Board does not consider that document (B) can be treated as the closest prior art, and that, therefore, documents (A) and (E) remain the appropriate basis for the assessment of inventive step, for the reasons set out in point 2.3.5 above.

Consequently, the Board considers that the problem formulated on that basis in point 2.3.6 above remains unchanged and that it can be regarded as also being solved by the subject matter now under consideration.

2.3.10 The Board considers that the skilled person might well take document (B) into account when seeking a solution to the problem formulated above. However, this document is concerned with resins having a **softening point from 10°C to 80°C** being copolymers of a feed which is predominantly C₅ olefines and diolefines and one or more monovinyl aromatic compounds containing **from 10 to 30 wt.% of the monovinyl aromatic compounds** and their use as tackifier for carboxylated styrene butadiene copolymers (page 4, line 23 to page 5, line 8). To the Board it appears that the most that the skilled person can derive from document (B) is that some of the resins described in (B) **might** be useful also for tackifying acrylic copolymers. But none of the resins described in document (B) form part of the subject matter to be considered here, i.e. the subject matter not entitled to the priority of 25 March 1985. This subject matter is confined to resins **not** disclosed in document (B). The Board can thus see no reason why the skilled person **would** derive from document (B) that **resins not disclosed** in it would solve his problem.

2.4 The above reasons apply *mutatis mutandis* to the independent claim 5 and to the dependent claims 3, 4 and 5 to 8. Therefore, the Board comes to the conclusion that none of the claimed subject-matter is obviously derivable from the available prior art documents.

3. In view of the above, the grounds for revoking the patent in suit do not prejudice the maintenance of the patent as granted.

4. In the light of the above findings, there is no need to consider the first and the second auxiliary request.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:


E. Görgmeier

The Chairman:


R. Spangenberg