BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Publication in the Official Journal Yes / No

File Number: T 332/87 - 3.3.1

Application No.: 81 300 550.1

Publication No.: 0 035 332

Title of invention: Ceramic tile adhesives

Classification: C09J 3/00

D E C I S I O N
of 23 November 1990

Applicant:

Proprietor of the patent: Scott Bader Company Limited

Opponent: 01 Wacker-Chemie GmbH
02 BASF Aktiengesellschaft
03 Naamloze Vennootschap DSM

Headword: Ceramic tile adhesives/SCOTT BADER

EPC Art. 54(1)(2); 56

Keyword: "Novelty - Question of combining the disclosure of examples with teaching of the same document"; "Inventive step (yes)"

Headnote

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 332/87 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 23 November 1990

Appellant : (Proprietor of the patent)
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Decision under appeal : Decision of Opposition Division of the European Patent Office dated 4 August 1987 revoking European patent No. 0 035 332 pursuant to Article 102(1) EPC.

Composition of the Board :

Chairman : K.J.A. Jahn

Members : P. Krasa

C. Payraudeau

Summary of Facts and Submissions

I. European patent No. 35 332 was granted with eight claims concerned with aqueous emulsion polymer composition for use as a ceramic tile adhesive.

Notices of opposition were duly filed requesting the revocation of the patent for lack of novelty and inventive step. The oppositions were based on a number of documents. In the course of the oral proceedings before the Board the Respondents relied finally only on the following:

(1) FR-A-2 154 638
(3) GB-A-1 155 275
(9) DE-A-2 310 213
(10) J. Appl. Polym. Sci. 24, 915-921 (1979).

II. The Opposition Division revoked the patent for lack of novelty having regard to document (9). Example 7 of this document disclosed an aqueous emulsion polymer composition which differed from that of the disputed patent only by the absence of a filler. In the light of the disclosure on page 13 that these emulsions may be modified by the incorporation of filler material, this teaching was considered detrimental to the novelty of the disputed patent.

III. An appeal was lodged against this decision on 2 October 1987 together with a Statement of Grounds of Appeal and the prescribed fee was paid.

The Appellants submitted that it was not appropriate to combine Example 7 of document (9) and the said passage. The Appellants also contended that there was no indication in document (9) that the emulsion polymer of Example 7 might be suitable for incorporation into a ceramic tile

adhesive where it has to be admixed with large amounts of filler. The Appellants submitted in addition that the organosilicon monomers as recommended by the patent in suit are quite different from the organosilicon polymer as present in Example 7 of document (9). As far as document (3) was concerned, the Appellants argued that this citation discloses a very wide range of polymers for a very wide range of uses without suggesting the use in a ceramic tile adhesive.

The Appellants further emphasised that the wording in the claims "for use as a ceramic tile adhesive" should be construed as "suitable" for use", which implies, as the skilled man would appreciate, that a large amount of filler is required in the compositions claimed.

Regarding inventive step, the Appellants submitted that the comparative tests filed with the letter of 14 January 1983 show unexpected beneficial effects. They further stated that neither in (1) nor in (9) information can be found which would lead the skilled man to combine the respective disclosure of these documents.

IV. The Appellants requested that the decision under appeal be set aside and that the European patent be maintained in amended form either on the basis of Claims 1 to 8 of the first (main) request or on the basis of the claims of three auxiliary requests filed together with the statement of grounds of appeal.

Claim 1 of the main request reads:

"An aqueous emulsion polymer composition for use as a ceramic tile adhesive, containing filler material and an emulsion polymer of at least one acrylate monomer selected from acrylates and methacrylates and at least one vinyl

aromatic monomer, the composition being prepared in the presence of at least one unsaturated organosilicon compound, and the emulsion polymer containing a small proportion of unsaturated organic acid residues derived from a small proportion of unsaturated organic acid monomer."

The first auxiliary request designated by the Appellants "second (supplementary) request" comprises 8 claims. Claim 1 is the only independent claim and differs from Claim 1 of the main request insofar as the term "organosilicon compound" is replaced by "organosilicon monomer".

The second and third auxiliary requests differ from the first auxiliary request in that they are limited by incorporation respectively of Claim 2 and of Claim 3 of the granted patent in their respective Claim 1.

V. The Respondents submitted that ceramic tile adhesives comprising unsaturated organic acid units in the silyl groups containing styrene-acrylate-copolymers and their use as ceramic tile adhesives together with fillers were known from document (1), it being trivial to introduce such unsaturated carboxylic acid residues either by partial hydrolysis of acrylate-esters which takes place, according to document (10), in the course of the polymerisation, or via incorporating unsaturated carboxylic acids as co-monomers, which was also disclosed in (1). Thus Claims 1 of all the requests were lacking novelty and inventive step.

The Respondents also contended that document (9) discloses all the features of Claim 1 of the main request and that

in any case the subject-matter of the patent in suit is not inventive over the combined disclosure of (1) and (9).

During the opposition proceedings one Respondent (Opponent OI) also alleged a prior use of the subject-matter of the disputed patent but furnished documents in support of this allegation only during the appeal proceedings.

VI. The Respondents request that the appeal be dismissed.

VII. Oral proceedings took place before the Board on 23 November 1990 at which the Appellant, although duly summoned, was not represented. The Appellants had however previously informed the Board that they would not appear, but that they were maintaining their appeal and requests. At the end of the oral proceedings the Chairman announced the decision of the Board to allow the appeal on the basis of the first auxiliary request of the Appellants.

Reasons for the Decision

1. The appeal is admissible.

2. **Main request**

2.1 Claim 1 of this request is directed to an aqueous composition containing filler material and an emulsion polymer of at least one acrylate monomer and at least one vinyl aromatic monomer the composition being prepared in the presence of at least one unsaturated organosilicon compound and the emulsion polymer containing unsaturated organic acid residues derived from a small amount of unsaturated organic acid monomer.

This claim differs essentially from Claim 1 as granted by the fact that it is in one-part form and that it is specified that the composition contains "a small proportion of unsaturated organic acid residues derived from a small proportion of unsaturated organic acid monomer" instead of "a small proportion of unsaturated organic acid units". This amendment, being a mere clarification, is supported by page 2, lines 33 to 35 of the patent as granted (page 2, lines 24 to 27 of the application documents as originally filed). Thus, Claim 1 complies with the requirements of Art. 123 EPC. Dependent Claims 2 to 8 are identical with the respective claims as granted and, therefore, are also admissible.

2.2 Normally, and as already expressed by the Board (see e.g. T 12/81, Reasons for the Decision No. 7, OJ EPO 1982, 296, 301 and T 424/86, Reasons for the Decision No. 4.2, unpublished) the disclosure of a document has to be considered as a whole and not only on the basis of the examples thereof. It is the overall disclosure which the skilled person can unambiguously take from a document which is decisive for establishing whether such disclosure is novelty destroying or not.

This means that, when examining novelty, different passages of one document may be combined provided that there are no reasons which would prevent a skilled person from such a combination. In general the technical teaching of examples may be combined with that disclosed elsewhere in the same document, e.g. in the description of a patent document, provided that the example concerned is indeed representative for the general technical teaching disclosed in the respective document.

2.3 Document (9) relates to copolymers of polysiloxanes and ethylenically unsaturated monomers e.g. styrene and/or

(meth)acrylate esters which can be used especially for coatings or adhesives for ceramics (see (9), page 1 and page 13, lines 7 to 9). Such adhesives can contain fillers (cf. page 13, lines 21 to 23). The 10 examples are all in line with this teaching.

Example 7 discloses the preparation of an emulsion polymer which results from copolymerisation of styrene, ethyl acrylate and a small amount of anhydrous acrylic acid (about 0.5%) and of a polysiloxane which was prepared according to Example 2 of this document. This polysiloxane has an average structure comprising inter alia eight $-OSi(CH_3)(CH=CH_2)-$ units and, thus, falls within the expression "unsaturated organosilicon compound" of Claim 1 of the disputed patent as was admitted by the Appellant under point 7 of his statement of grounds of appeal. Example 8 is a repetition of Example 7. The only difference is the use of vinyl-terminated methylpolysiloxane as starting material the average structure of which comprises two terminal vinyl-dimethylsilyl groups and a polydimethyl siloxane chain with twenty Si-atoms. Thus, this silicon compound also complies with the respective definition of Claim 1 of the disputed patent.

2.4 The relevant passages of the second paragraph on page 13 of document (9) read:

"Copolymers manufactured according to the present invention are especially useful in coating and for applications as adhesives. Aqueous emulsions of the present copolymers may be coated on a broad range of substrates and the polymers form, after drying, extremely secure bondings with such various substrates as aluminium, glass, ceramics, wood and plastics. ...The emulsions may

be applied as clear coatings or as adhesives and they may be modified by incorporation of various extenders or fillers."

There is no indication to be found in (9) that this general technical teaching should apply only to a part of the copolymers - or their aqueous emulsions - disclosed in (9). Hence, the skilled person would understand this teaching as generally applicable to all the copolymer emulsions obtainable according to (9) including that of Examples 7 and 8. The amount of filler to be incorporated into the adhesives depends on the particular requirements and is necessarily the same in adhesives intended for the same purpose. Thus, it cannot constitute a distinguishing feature.

This technical teaching of (9) is not distinguished from that of Claim 1 of the disputed patent.

2.5 In this connection it is irrelevant that the last sentence of the above-quoted passage from (9) indicates two possible uses i.e. as clear coatings or as adhesives. As long as the issue of novelty of compositions is concerned only such features and parameters are to be considered which relate to the physical substance of such compositions. Thus, a new use cannot confer novelty to a known product. In applying this principle there is no contradiction e.g. with EPC Guidelines, C-III, 4.8, referred to by the Appellant, where it is said that a claim directed to a product for a particular use has to be construed as defining a product suitable for this use. This means only that it may be admissible in appropriate cases to introduce functional language into a claim for defining a product. However, a product defined **inter alia** by means of a functional feature can only be considered as novel if this functional feature differentiates the product in substance from known products.

In the present case the Board finds that "use as a ceramic tile adhesive" is no technical feature by which the subject-matter of Claim 1 is delimited over document (9) for the reasons given.

Hence, the Board holds that the subject-matter of this claim is anticipated by document (9). As a decision can be made only on a request in its entirety the main request is not allowable.

3. **First auxiliary request**

3.1 This request differs from the main request only in that its Claim 1 uses the expression "organosilicon monomer" instead of "organosilicon compound". This amendment finds support on page 2, line 38 and in Claim 2 of the patent as granted (page 3, line 1 and Claim 2 of the application documents as originally filed) and represents a clear limitation. Thus, this request also complies with the requirements of Article 123(2) and (3) EPC.

3.2 As already indicated, Claim 1 differs from the respective claim of the main request by defining the organosilicon component as "organosilicon monomer". The Respondents suggested that the term "monomer" should be understood in connection with its function, in other words that the expression "organosilicon monomer" comprises all compounds which can be copolymerized including the copolymerizable polysiloxanes of document (9) (see e.g. Example 2). Therefore Claim 1 should be considered as anticipated by document (9).

The Board cannot accept this argument. In the normal sense of these words, monomers and polymers are quite different. The term monomer normally designates an unsaturated low

molecular weight compound which can be polymerized or copolymerized. The result of such a polymerisation is then the polymer and it is not decisive whether or not such polymer may be further (co)polymerized or cross-linked.

Example 2 of (9) discloses the preparation of the organosilicon compound used as a starting material in Example 7 by polymerisation of organosilicon monomers. Thus, the respective compounds - designated "polysiloxanes" in these examples - cannot be considered as being "organosilicon monomers". This is in agreement with the definition in the description of the disputed patent on page 2, lines 36 to 40 where methacryloxypropyl trimethoxy silane, vinyl triethoxy silane and vinyl trimethoxy silane are given as typical unsaturated organosilicon compounds which all are low molecular weight compounds. Thus, in the Board's judgment, Claim 1, on its proper construction, does not comprise copolymerizable polysiloxanes as a component for the aqueous emulsion polymer.

Hence, the Board holds that Claim 1 is novel over document (9).

3.3 Document (1) is concerned with aqueous polymer dispersions which can be used in adhesives. Example 16 discloses ceramic tile adhesives with improved adhesion in the presence of water (see especially page 23, line 30 to page 24, line 15). The copolymer D of Example 16 results from copolymerisation of about 50% styrene, 50% butylacrylate and 1% vinyl silanol formed from tri-(ß-methoxy-ethoxy)-vinyl silane. One hundred parts of this dispersion which contains 50% of solids is used together with 5 parts of a 10% aqueous solution of sodium hexametaphosphate, 150 parts of quartz powder and 30 parts of clay. Thus, this particular example differs from the

subject-matter of present Claim 1 only by the lack of "unsaturated organic acid residues derived from a small proportion of unsaturated organic acid monomer".

In the last complete paragraph on page 3 of document (1) acrylic acid is mentioned inter alia as a monomer to be optionally incorporated up to 10% into the polymers concerned. Therefore, the question whether or not document (1) is a full anticipation of Claim 1 amounts to the issue whether or not a skilled person would have combined the composition of Example 16D with the said disclosure of acrylic acid as a possible comonomer on page 3.

3.4 As already stated above the teaching of examples may be combined with the teaching disclosed elsewhere within the description of the same patent application provided, however, that the examples concerned are in line with the general teaching of such document.

3.5 According to its introductory paragraph on page 1, document (1) is concerned with a process for the preparation of vinyl polymer dispersions with improved adhesion. Document (1) in particular deals with a process for the preparation of stable aqueous dispersions of a polyvinyl ester comprising silanol groups by polymerisation in aqueous phase of vinyl esters optionally in the presence of up to 25% by weight of other monomers (see page 1, lines 16 to 23). Examples of suitable vinyl esters are disclosed on page 3 as is the possibility of copolymerizing them with other olefinically unsaturated monomers. The following groups of monomers are given as examples: vinyl halogenides, olefins having preferably from 2 to 4 carbon atoms and the mono- or diesters of unsaturated carboxylic acids.

While, on page 3, no figures are given in respect to these monomers, the Board considers it to be clear from page 1 that they can be present in amounts of up to 25% by weight. The last complete paragraph on page 3 discloses finally that either monomers having multiple olefinic unsaturations or water-soluble monomers can also be added in an amount of up to 10% by weight to the homo- or copolyvinyl esters described in the preceding paragraph. As already stated acrylic acid is one compound given as an example for the water-soluble monomers.

3.5.1 The paragraph bridging pages 5 and 6 of document (1) discloses that the process described in some detail for the preparation of the polyvinyl esters in the preceding paragraphs can also be applied to the polymerisation of acrylic acid esters on the one hand and for the copolymerisation of butadiene and styrene with up to 40% by weight of butadiene on the other hand. From page 6 of document (1) it can be deduced that polyacrylic acid esters comprising silanol groups and butadiene-styrene copolymerisates comprising silanol groups are put on the same footing as the respective polyvinyl esters in respect to adhesion (see e.g. page 6, lines 29 to 33). From lines 5 to 7 of page 6 it can be inferred that the acrylic acid esters may also be copolymerized with other monomers as designated on page 3, lines 17 ff.

Thus, in summary, the technical teaching disclosed in (1) is the following:

Three groups of monomers, i.e. vinyl esters, or acrylic acid esters, or mixtures of butadiene with styrene (with up to 40% by weight of butadiene) can be copolymerised with up to 25% by weight of other unsaturated monomers in the presence of an unsaturated hydrolysable organo-silicon compound to form aqueous emulsions for use in adhesives.

3.5.2 An inspection of the composition D of Example 16 shows now that this composition does not conform to such general teaching of document (1): as no vinyl ester is used as a starting monomer, this composition could obviously belong only to the second group, i.e. to the copolyacrylic acid esters, styrene being the other monomer which is copolymerized with the butyl acrylate in the presence of a silicon organic monomer. However, nowhere in document (1) is styrene mentioned as a possible comonomer of an acrylate. Even if one might assume that this compound is comprised within the term olefins of page 3 which, in the Board's opinion would be rather artificial, then the inconsistency remains that according to page 1 of (1) such an olefin should only be present in amounts of up to 25% by weight in contrast to Example 16D where styrene is present in an amount of about 50%.

3.6 Hence, the Board concludes that the composition D of Example 16 is not in agreement with the general technical teaching of document (1) and that in view of this discrepancy the skilled person would not have combined the disclosure on page 3, i.e. the possibility of addition of acrylic acid, with that of Example 16D.

Thus, in the Board's judgment the subject-matter of Claim 1 is also novel over document (1).

4. The Board takes document (1) as starting point for the evaluation of inventive step. The disclosure of (1) was already discussed in detail hereinabove. Therefore, it is sufficient to state here that ceramic tile adhesives are known from this document and that especially one composition is disclosed in Example 16D which differs from the ceramic tile adhesives of the disputed patent only by the fact that it does not contain unsaturated organic acid residues derived from a small proportion of unsaturated organic acid monomer.

In view of this closest state of the art, the technical problem underlying the patent in suit can be defined as improving the adhesion and especially the wet adhesion of the ceramic tile adhesives known from (1).

According to the patent in suit it is suggested as a solution to provide the ceramic tile adhesives as defined in Claim 1. In view of the comparative tests submitted by the Appellant (cf. No. III hereinabove) the Board is satisfied that the claimed ceramic tile adhesives effectively solve the technical problem. In these comparative tests the shear strength of a ceramic tile adhesive prepared according to Example 2 of the disputed patent was compared with that of a composition which in fact was identical with the composition of Example 16D of document (1). The acrylate component disclosed in the said Example 2 is the ethyl derivative while that disclosed in Example 16D of (1) is butyl acrylate.

The results of these tests stood unchallenged until the oral proceedings before the Board. Only then did the Respondents contest the relevance of these comparative tests as support of inventive step. They alleged that the comparison was inadequate because of the different acrylates used as monomers. No evidence supporting the relevance of such difference was produced.

In the oral proceedings the Respondents emphasised that in the test report a shear strength of 1.15 MPa is given for a composition prepared according to Example 2 of the disputed patent while in the patent in suit itself this value is 0.9 MPa. By pointing to this difference the Respondents argued that the reliability of such tests is questionable. The Board, however, is of the opinion, that in this field of the art normally values derived from

different experimental set-ups should not be compared but only those data which result from the same series of tests. This was confirmed by one of the Respondents' experts. Hence, in the absence of convincing counter-evidence the Board relies on the above comparative tests.

5. It remains to be investigated whether the suggested solution results from an inventive step.

5.1 As already stated, document (1) discloses inter alia the use of acrylic or methacrylic acid as comonomers for emulsion polymers which may be incorporated in ceramic tile adhesives. The purpose of the addition of these acids is however not indicated in document (1).

Document (10) discloses the increase of the stability of polyacrylate emulsions by the addition of acrylic acid. However, this document is also completely silent on the possible influence of acrylic acid on the adhesion of such emulsions.

Therefore, neither (1) nor (10) contains an incentive for the skilled man to use acrylic or methacrylic acid as a comonomer for improving the adhesion of ceramic tile adhesives and, thus, for solving the underlying technical problem as defined.

5.2 Document (3) refers to aqueous dispersions of copolymers of styrene with acrylic and/or methacrylic esters which do not comprise silyloxy groups and which are particularly suitable for painting but may also be used for example as adhesives, for coating paper, or for improving cement (page 3, lines 84 to 88). On page 2, lines 71 to 89, it is disclosed without experimental support that the addition of minor proportions of e.g. acrylic acid or methacrylic acid may increase the adherence and pigment compatibility

of these copolymer dispersions. There is no indication in (3) which would have led the skilled person to add acrylic acid or methacrylic acid to compositions known from document (1) for increasing their wet adherence. This was confirmed by one of the Respondents' experts at the oral proceedings who stated that a skilled person would not use such an acid for improving the waterproofness of an adhesive; he would rather expect that its stickiness would be impaired thereby, the skilled man would turn to the addition of acids rather for improving the stability of the emulsions, this being in agreement with the teaching of document (10).

5.3 The compositions of document (9) can be distinguished from the compositions of present Claim 1 by the fact that they comprise polysiloxanes (which have to be prepared from appropriate starting materials) as organosilicon component. Without giving any data, it is said in document (9) that the compositions have an increased weatherproofness (cf. (9), page 2, paragraph 2). There is no indication in (9) to be found that silicon organic compounds other than those disclosed in document (9) could have the same effect. This is clear from the paragraph bridging pages 2 and 3 where the respective polysiloxanes are disclosed as an essential element of the compositions of document (9).

Hence, the Board holds that the subject-matter of Claim 1 of the first auxiliary request was not obvious for the skilled man in view of the citations (1), (3), (9) and (10) either alone or in combination.

6. One of the Respondents (Opponent OI) alleged a prior use of the subject-matter of the disputed patent. This was mentioned for the first time on 21 February 1986 before the Opposition Division. No supporting evidence was then produced. It was not before 15 September 1988 that photocopies of the following papers were submitted: a sheet with the heading "Styrol-Acrylat-Dispersion Type: SAF 54" dated 15 October 1979 and marked "Vertraulich" which was alleged to prove the manufacture of a particular emulsion polymer comprising inter alia Silan GF58. An undated leaflet with the heading "Wackersilicone" which was said to be a prospectus for Wacker Silan GF58 and a prospectus for Vinnapas(R) Emulsion SAF 54. These documents obviously cannot be considered as sufficient evidence to establish a prior use and, therefore, have been disregarded by the Board.

7. Claims 2 to 8 relate to preferred embodiments of Claim 1 and derive their patentability from that of this claim.

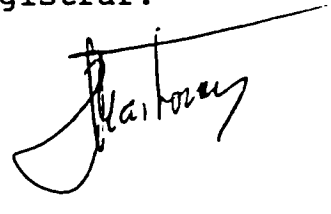
Order

For these reasons, it is decided that:

1. The decision of the Opposition Division 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 (supplementary) request filed 2 October 1987 and a description to be correspondingly adapted.

The Registrar: The Chairman:



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