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Aktenzeichen / Case Number / N^o du recours : T 77/87 - 3.3.1

Anmeldenummer / Filing No / N^o de la demande : 80 303 804.1

Veröffentlichungs-Nr. / Publication No / N^o de la publication : 0 030 080

Bezeichnung der Erfindung: Vinylidene chloride copolymer latex composition
Title of invention: and method of coating using it
Titre de l'invention :

Klassifikation / Classification / Classement : C08F 214/08

ENTSCHEIDUNG / DECISION

vom / of / du 16 March 1989

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

ICI PLC

Einsprechender / Opponent / Opposant :

Hüls AG

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 54

Schlagwort / Keyword / Mot clé :

"Novelty (yes) - erroneous disclosure not regarded as novelty-destroying"

Leitsatz / Headnote / Sommaire

I When it is clear from related contemporaneously available evidence that the literal disclosure of a document is erroneous and does not represent the intended technical results, such an erroneous disclosure should not be considered as part of the state of the art under Article 54 EPC.

II When a published abstract contains a cross-reference to its original document which is contemporaneously available, and the literal disclosure of the abstract is inconsistent with the disclosure of original document, the abstract should be interpreted by reference to the original document for the purpose of ascertaining the technical reality of what has been disclosed. If it is then clear that the disclosure in the abstract is erroneous, such erroneous disclosure should not be considered as part of the state of the art.

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EPÜ/EPC/CBE Articles 54, 56 and 114

Schlagwort / Keyword / Mot clé :

"Novelty (yes) - erroneous disclosure not regarded as novelty-destroying"
"Inventive step (yes) - technical feature resulting in a technical effect"
"Documents cited for the first time in the appeal stage"

Leitsatz / Headnote / Sommaire

Headnote follows

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Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number : T 77/87 - 3.3.1



D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 16 March 1989

Appellant :
(Opponent)

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Representative :

Respondent :
(Proprietor of the patent)

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Decision under appeal :

Decision of the Opposition Division of the European Patent Office dated 5 December 1986 rejecting the opposition filed against European patent No. 0 003 080 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : K. Jahn

Members : C. Gérardin

G.D. Paterson

Summary of Facts and Submissions

- I. The mention of the grant of the patent No. 30080 in respect of European patent application No. 80 303 804.1 filed on 27 October 1980 and claiming priority of 21 November 1979 from the earlier application GB 79/40267, was published on 1 August 1984 on the basis of 8 claims.

Claim 1 reads as follows:

"An aqueous latex comprising a copolymer of (i) vinylidene chloride, (ii) vinyl chloride, (iii) one or more alkyl acrylates or alkyl methacrylates having from 1 to 12 carbon atoms in the alkyl group and (iv) one or more aliphatic alpha-beta unsaturated carboxylic acids, characterised in that

- (a) the proportion of vinylidene chloride is from 50 to 75 parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride,
- (b) the proportion of vinylidene chloride is not more than 75 parts by weight per hundred parts by weight of total vinylidene chloride, vinyl chloride and the said acrylate(s) and/or methacrylate(s), and
- (c) the proportion of the said acrylate(s) and/or methacrylate(s) is more than 15 but less than 45 parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride,

said latex having a minimum film-forming temperature within the range of 6°C to 25°C."

II. On 26 April 1985 the Appellant (Opponent) filed a notice of opposition requesting the revocation of the whole patent on the ground of lack of inventive step with regard to the teaching of following documents:

- (1) DE-A-2 756 000
- (2) Monograph "Polyvinylidene chloride" by Ritchie A. Wessling, published by Gordon and Breach Science Publishers Ltd., London, 1977, page 141, paragraph 9.1.2.
- (3) Article "A statistical theory of discoloration for halogen-containing polymers and copolymers" by R.F. Boyer, published in Journal of physical and colloid chemistry, 1947, Volume 51, pages 80 to 106.

In support of the inventiveness of the patent in suit the Respondent filed the following prepublished document:

- (4) Article "Structure and Moisture Permeability of Film-forming Polymers" by P.W. Morgan, published in Industrial and Engineering Chemistry, 1953, Volume 45, No. 10, page 2296 to 2306.

III. The Opposition Division rejected the opposition in a decision dated 5 December 1986 which was based essentially on the following reasons:

With respect to the teaching of document (1) which describes aqueous latices with a higher proportion of vinylidene chloride and a lower amount of (meth)acrylate than the latices presently claimed, the problem can be defined as the improvement of the thermal stability. Although documents (2) and (3) would appear to suggest to increase the (meth)acrylate ratio in order to improve the stability of vinylidene chloride polymers, document (4) shows that higher amounts of such monomers have a detrimental effect on permeability to water vapor of the

films. In the absence of clear teaching regarding the amount of (meth)acrylate and in view of the beneficial effect on thermal stability of the claimed copolymers the combination of proportions chosen by the Patentee must be regarded as inventive.

IV. The Appellant thereafter filed a notice of appeal on 5 February 1987 and paid the prescribed fee at the same time. In the Statement of Grounds filed on 7 April 1987 the issue of novelty was raised for the first time; more specifically, it was objected that the subject-matter of Claim 1 was not novel with regard to the disclosure of the following additional documents:

- (7) "Surface treatment to improve the adhesion of coatings on polyesters substrates" by August J. Van Paesschen, published in Chemical Abstracts, 1972, Volume 76, No. 115002p.

The Appellant accepted that the disclosure of this abstract did not correspond with the original document, DE-A-2 128 006 (Document (7')), from which it was abstracted, in a vital respect as far as his argument of lack of novelty was concerned; the abstract discloses a ratio of 50/30 for vinylidene chloride/vinyl chloride in the latex, whereas the original document (7') discloses a corresponding ratio of 30/50. In the abstract, vinylidene chloride and vinyl chloride have been wrongly inverted. Nevertheless, the Appellant submitted that the abstract had to be considered as a separate publication, and as such it destroyed novelty.

- (8) "Heat-sealable packaging films" by Masaski Kyoama, published in Chemical Abstracts, 1975, Volume 82, No. 99476n.

This document described a tetrapolymer from the same monomers in partly the same amounts as the copolymer claimed as latex in the patent in suit.

Furthermore, in order to demonstrate that 15% by weight was not a critical value for the amount of (meth)acrylate monomer in the copolymer, comparative examples were filed showing that copolymers with 14.8 and 16.2% by weight of ethylhexyl acrylate had in fact the same yellowing index. This was evidence that the claimed effect, i.e. an improved thermal stability of the films made from these copolymers, was not achieved and that, therefore, no inventive step should be acknowledged.

- V. In his various submissions and in oral proceedings held on 16 March 1989 the Respondent put forward essentially the following arguments:

Document (7) is an abstract and is therefore inextricably linked with document (7'); as an abstract, it is not an independent publication and cannot disclose more as an anticipating document than the original document which it purports to abstract.

Document (8) is concerned with improving the heat seal strength of a plastics packaging film, such as a polypropylene film, that has been coated with a conventional vinylidene chloride copolymer in order to impart desirable properties such as high barrier and chemical-resisting properties to the packaging film. The intermediate vinylidene chloride tetrapolymer of this laminate-type product has a very wide range of composition in terms of the allowable levels of vinylidene chloride, vinyl chloride and acrylate which overlap only to a small extent with the levels of the corresponding comonomers in the copolymers according to the patent in suit. For this

reason the teaching of document (8) cannot be novelty destroying.

The Appellant's comparative tests show the same positive trend as the results achieved by the Respondent regarding thermal stability; this improvement should be considered together with the fact that the protective properties of the films are not deteriorated, which could not be predicted.

During oral proceedings the Respondent submitted two auxiliary sets of claims differing from the granted version by the fact that the proportion of (meth)acrylate in Claim 1 is from 16 to less than 45 parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride according to the first auxiliary set of claims, whereas this proportion is from 18 to less than 45 in Claim 1 according to the second auxiliary set of claims.

VI. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained as granted as main request or, alternatively, on the basis of the first auxiliary set of claims as first auxiliary request or on the basis of the second auxiliary set of claims as second auxiliary request.

At the end of the oral proceedings the decision was announced that the impugned decision was set aside and the patent maintained in accordance with the Respondent's second auxiliary request.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. The amendments introduced by the Respondent in the two auxiliary sets of claims which only concern the lower limit of the amount of acrylate(s) and/or methacrylate(s) with respect to the total amount of vinylidene chloride and vinyl chloride do not give rise to objections under Article 123 EPC.

The new figures of 16 according to the first auxiliary set of claims and 18 according to the second auxiliary set of claims correspond respectively to the preferred and to the especially preferred lower limits for the range of (meth)acrylate monomer(s) originally disclosed in the application on page 3, lines 24 to 28 and in the granted version of the patent on column 2, lines 13 to 17. The resulting new ranges are thus acceptable.

3. The patent in suit concerns a vinylidene chloride latex composition and the use thereof as protective coatings on metallic substrates. As already acknowledged in the introduction of the description which refers to GB-A-1 558 411 which corresponds to document (1), similar compositions suitable for similar applications are well known in the art. Document (1) discloses water-based coating compositions comprising copolymers derived from (a) 65 to 90 parts by weight of vinylidene chloride, (b) vinyl chloride, (c) 2 to 15 parts by weight of one or more alkyl acrylates having from 1 to 12 carbon atoms in the alkyl group and/or one or more alkyl methacrylates having from 2 to 12 carbon atoms in the alkyl group and (d) 0.2 to 8 parts by weight of one or more aliphatic α , β -unsaturated carboxylic acid(s) per hundred parts by weight

of the total vinylidene chloride and vinyl chloride (Claim 1). Although the films obtainable for these latices exhibit excellent protective properties, in particular a low permeability to water vapour, on a variety of substrates, especially metallic substrates, their thermostability was regarded unsatisfactory for certain specific applications.

In the light of this prior art the technical problem underlying the patent in suit may thus be seen in providing a copolymer which would confer an improved thermostability measured by the yellowing index to the coatings without impairing the low permeability thereof to water vapour.

This problem is solved essentially by increasing the relative amount of alkyl acrylate(s) and/or alkyl methacrylate(s) in the copolymer. More specifically, the solution claimed by the Respondent involves the presence of more than 15 but less than 45 parts by weight of alkyl acrylate(s) and/or alkyl methacrylate(s) per hundred parts by weight of total vinylidene chloride and vinyl chloride according to the main request, this range being 16 to less than 45 according to the first auxiliary request and 18 to less than 45 according to the second auxiliary request. In the three cases the proportion of vinylidene chloride is from 50 to 75 parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride.

4. For the first time during the appeal stage of the opposition proceedings the Appellant has raised the issue of novelty having regard to documents (7) and (8).
- 4.1 Document (7) is on its face sufficiently relevant to be admitted in the proceedings. It discloses the coating of biaxially oriented polyester films with an aqueous

composition comprising, besides organic solvents and an aqueous dispersion of finely divided silica containing chloral hydrate, a latex of a copolymer of vinylidene chloride, vinyl chloride, butyl acrylate and itaconic acid in the proportions of respectively 50, 30, 18 and 2. The relative amounts of these monomer ingredients meet all the quantitative requirements specified in Claim 1 of each of the three sets of claims on file.

4.1.1 As conceded by the Appellant in the Statement of Grounds, the corresponding original document (7'), and more specifically Example 1 thereof, does not disclose the above 50:30:18:2 vinylidene chloride-vinyl chloride-butyl acrylate-itaconic acid copolymer, but a 50:30:18:2 vinyl chloride-vinylidene chloride-butyl acrylate-itaconic acid copolymer. In the abstract document (7), the vinyl chloride and vinylidene chloride positions have thus been mistakenly inverted to give a different tetrapolymer compound having 62.5 parts of vinylidene chloride per hundred parts by weight of total vinylidene chloride and vinyl chloride which is not disclosed in the corresponding original document (7').

4.1.2 When determining the state of the art for the purpose of Article 54 EPC, what has to be considered is what has been made available to a skilled man. A skilled man is interested in technical reality.

The literal disclosure of a prior published document *prima facie* stands on its own when assessing novelty. This is the general rule.

4.1.3 The first question which arises is whether the skilled reader would immediately interpret the monomer composition disclosed in document (7) as a technical impossibility and, therefore, as an obvious error or whether the

specific tetrapolymer according to this prior art is a plausible copolymer. Whereas document (1) describes similar tetrapolymers based on the same four monomers but containing possibly even more vinylidene chloride as major ingredient (Claim 1), as well be discussed hereinafter, Table II of document (4) mentions a whole series of vinylidene chloride-vinyl chloride copolymers wherein the relative amounts of the two monomers vary from 92:8 to 10:90 (page 2301). Further, in the paragraph 2.1.2.6, page 50 of Kunststoff-Handbuch, Volume II, published by Carl Hanser Verlag München, 1963, devoted to the copolymerization of vinyl chloride with various comonomers, vinyl chloride appears as the major component and vinylidene chloride is the minor ingredient (paragraph 2, lines 1 to 5).

Although admittedly tetrapolymers are more complex entities than copolymers derived from two monomers only, there are thus clear indications in the prior art that either monomer can be the major component in a copolymer with the other monomer. This means that the composition disclosed in document (7) would not strike the skilled reader as being unconceivable.

4.1.4 As already stated, document (7) is an abstract of document (7') which is the original document and was also prior published, and the title of the abstract makes this clear by means of a cross-reference. Thus the disclosure of abstract document (7) should be interpreted by reference to its original, i.e. to document (7'), for the purpose of ascertaining the technical reality of what has been disclosed and should not be regarded as an independent document in isolation. The original document is the primary source of what has been made available as a technical teaching and its abstract is by its nature merely a secondary and derivative source.

It is axiomatic that an original basic document and its abstract cannot disclose two different subject-matters as a matter of technical reality. When, as in the present case, there is a substantial inconsistency between the original document and its abstract, it is clearly the disclosure of the original document that must prevail. The disclosure in the original document provides the strongest evidence as to what has been made available to the skilled man. When, as here, it is clear from related contemporaneously available evidence that the literal disclosure of a document is erroneous and does not represent the intended technical reality, such an erroneous disclosure should not be considered as part of the state of the art. The general rule in relation to the literal disclosure of a document set out in paragraph 4.1.2 above does not then apply.

Thus, in the Board's judgment, the literal disclosure of document (7) does not form part of the state of the art, because document (7') must be considered as providing the definitive description of the monomer composition in question. It follows that document (7) does not deprive Claim 1 of the patent in suit of novelty.

- 4.1.5 A further submission provided by the Respondent during oral proceedings was that the mere content of an abstract would never be the starting point of experimental work. The skilled man, having found a potentially interesting teaching in an abstract, would not embark upon an expensive investigation program without referring to and scrutinizing the corresponding original document wherein the various alternatives and/or embodiments are mentioned. This would apply all the more in the present case in view of the discrepancy between the abstract document (7) and the corresponding original document (7'), which in practice would lead the skilled man to disregard the

content of document (7). In the Board's view, this submission constitutes relevant evidence to confirm the skilled man's primary interest in technical reality.

4.1.6 Summarizing, the inconsistency between abstract document (7) and its basic original document (7') would lead the man skilled in the art to ignore the abstract as erroneous and to consider as relevant teaching only the description according to the basic document. Since the amount of vinylidene chloride in the composition according to document (7') to be considered lies outside the range defined in (a) of Claim 1 of the three sets of claims on file, novelty with regard to document (7) should be acknowledged on that basis.

4.2 Document (8) mentions the use of a latex copolymer to improve the heat seal properties of the conventional vinylidene chloride polymer coated film packaging. This intermediate coating layer comprises a copolymer derived from 10 to 60 percent by weight of vinylidene chloride, 10 to 70 percent by weight of vinyl chloride, 10 to 60 percent by weight of methyl acrylate and optionally 0.1 to 2 percent by weight of itaconic acid or acrylic acid. The ranges specifying the relative amount of the three main comonomers are much broader than the corresponding ranges in Claim 1 of the patent in suit and cannot therefore be novelty destroying. This is even more obvious from the latex copolymer actually exemplified which derives from 10 percent by weight of vinylidene chloride, 50 percent by weight of vinyl chloride and 40 percent by weight of methyl acrylate; such low proportions of vinylidene chloride are evidence that the copolymers contemplated in this document have little in common with the aqueous latices claimed in the patent in suit.

In view of the little relevance of this teaching, the Board, in the exercise of discretion under Article 114(2) EPC, decided to disregard this late filed document.

- 4.3 After examination of the documents (1) to (6) already considered in opposition procedure the Board has reached the conclusion that the claimed subject-matter is not disclosed in any of them. Since novelty is not disputed in this regard, it is not necessary to consider this matter in detail.
5. It still remains to be examined whether the subject-matter of the patent in suit involves an inventive step with regard to the teaching of the cited documents.
- 5.1 In view of the large overlap of the amounts of vinylidene chloride in document (1) and in any of the three Claims 1 on file, respectively 65 to 90 and 50 to 75 parts by weight per hundred part by weight of total vinylidene chloride and vinyl chloride, it is evident that the critical feature is the amount of alkyl acrylate(s) and/or alkyl methacrylate(s).
- 5.1.1 Documents (2) and (3) mention the stabilising action of (meth)acrylate monomers in vinylidene chloride polymers.

Document (3) describes the beneficial influence of neutral comonomers on the colour stability of vinylidene chloride and vinyl chloride polymers exposed to heat and/or light. When interspersed at random along the polymer backbone these neutral comonomers tend to limit the structural rearrangements which affect the polymer after the loss of hydrogen chloride caused by degradation (page 80, paragraph 1; page 81, paragraph 2 to page 82, paragraph 1; page 91, paragraphs 2 and 3). More specifically, they will prevent the formation of certain long conjugated systems

that might otherwise occur or at least limit the maximum size thereof and will tend to inhibit inductive action between adjacent conjugated systems. In this regard (meth)acrylate comonomers have proved to be particularly suitable. As the proportion of (meth)acrylate comonomer increases there will exist long runs of meth(acrylate) chains which do not contribute their maximum possible amount to the desired stabilising action except by acting as a diluent. Quantitatively, a desired copolymer would be one containing exactly one or two (meth)acrylate units between every three to four vinylidene chloride units along the chain (page 92, paragraph 2 to page 93, paragraph 1). Although this cannot be expressed accurately in terms of weight ratios since the alkyl group is not further specified, these optimal amounts would broadly correspond in the case of the lower alkyl(meth)acrylates to weight ratios (meth)acrylate:chlorinated monomer between 1:4 and 2:3, thus generally more than in document (1), and in the case of higher alkyl groups to even more.

A similar conclusion arises from document (2) wherein the greater light stability of vinylidene chloride copolymers with regard to that of homopolymers is attributed to the presence of acrylate comonomer units in the polymer chain (page 141, point 9.1.2, paragraph 1). Although this document is apparently concerned with light stability only, it is evident from document (3) discussed above that this problem is similar to heat stability as far as the mechanisms of degradation and structural rearrangement are concerned.

In conclusion, the teaching of documents (2) and (3) would thus invite the skilled man to increase the amount of alkyl acrylate(s) and/or alkyl methacrylate(s) in order to improve the thermostability or colour stability of the vinylidene chloride copolymers described in document (1).

5.1.2 However, as put forward by the Respondent, this increase in (meth)acrylate would have a detrimental effect on the moisture permeability of the coatings made from these copolymers.

This effect has to be appreciated in the more general context of the influence of the hydrophilicity of the comonomer and the symmetry of the polymer backbone on moisture permeability of the coating discussed in document (4) (page 2305, column 2, last paragraph). The introduction of a hydrophilic unsymmetrical comonomer markedly raises the moisture permeability of vinylidene chloride polymers; similarly, the introduction of non hydrophilic unsymmetrical units into a laterally symmetrical polymer raises the moisture permeability only slightly at first, then more rapidly as the proportion of unsymmetrical constituent is increased in the copolymer (page 2299, chapter "Effects of Copolymerization in Symmetrical Polymers"). This last effect is quite apparent from Table II, page 2301, wherein the moisture permeability of vinylidene chloride - vinyl chloride copolymers increases with the amount of vinyl chloride in the copolymer.

This teaching would thus be an incentive to limit the relative amount of (meth)acrylate in the vinylidene chloride copolymer; besides, it would rather suggest to lower the proportion of vinyl chloride, i.e. conversely to increase the proportion of vinylidene chloride with regard to the total amount of vinylidene chloride and vinyl chloride.

5.1.3 The dual condition set in the above defined technical problem would thus invite the skilled man both to increase the amount of alkyl acrylate(s) and /or alkyl

methacrylate(s) in the copolymer in order to improve the thermostability and to limit the amount of this comonomer as much as possible in order not to impair the moisture permeability of the coating. These two incentives are clearly incompatible.

Furthermore, the fact that the patent in suit deals with copolymers derived from three main comonomers and a fourth minor comonomer makes the situation more complex than in documents (2) to (4) discussed above which basically concern binary copolymers.

The Board's conclusion is that the prior art does not provide any clear teaching for the solution of the problem underlying the patent in suit.

- 5.2 The experimental data provided by the parties do not demonstrate that the lower limits of the amount of alkyl acrylate(s) and/or alkyl methacrylate(s) as specified in Claim 1 of the main request (more than 15%) and Claim 1 of the first auxiliary request (from 16%) are critical values for the thermostability of the coatings measured by the yellowing index.

Together with the Statement of Grounds the Appellant indicated the yellowing data of 4 vinylidene chloride-vinyl chloride-ethylhexyl acrylate-acrylic acid copolymers derived from 70 parts of vinylidene chloride, 30 parts of vinyl chloride and 2 parts of acrylic acid, the amounts of these three monomers being thus constant, and respectively from 11, 14, 17 and 20 parts of ethylhexyl acrylate. The analysis of the polymer film from the chlorine and oxygen contents showed that the amounts of acrylate monomer actually polymerized were respectively 11.65, 14.8, 16.2 and 22.35 parts per hundred parts by weight of total

vinylidene chloride and vinyl chloride. Following yellowing indices were measured: 12, 7, 7 and 5.

Similarly, in his reply filed on 6 August 1987 the Respondent summarized various experimental data already provided during examination procedure (Declaration by J.C. Padget filed on 7 October 1985) as well as those mentioned in the patent in suit obtained for copolymers derived from the same monomers as above:

75.6/24.4/6.2/2.2	: yellowing index = 8
60/40/17/2.4	: yellowing index = 1.65 or 1.7
72.7/27.3/22/2.5	: yellowing index = 3.9
56/44/29.6/2.6	: yellowing index = 2

Although a trend showing an improvement of the yellowing index for increasing ethylhexyl acrylate contents in the copolymer cannot be denied, there is no difference at all in yellowing index for copolymers having 14.8 and 16.2 parts by weight of ethylhexyl acrylate per hundred parts of total vinylidene chloride and vinyl chloride; in fact, the effect is only noticeable when the acrylate content is 17.

Since the lower limit of the alkyl acrylate(s) and/or alkyl methacrylate(s) content according to Claim 1 of the main request starts where the upper limit of the amount of this monomer ends in the compositions known from document (1), there is a mere continuity both in the definition of the compositions and in the thermostability achieved. Although according to Claim 1 of the first auxiliary request the lower limit of 16 for the (meth)acrylate monomer content provides a discontinuity with regard to the range in the prior art, it does not involve a corresponding discontinuity of the thermostability. This means that the latex compositions according to Claims 1 of

the main request and of the first auxiliary request do not solve the problem underlying the patent in suit and consequently cannot involve an inventive step. For these reasons the main request and the first auxiliary request must fail.

- 5.3 By contrast, the above experimental data show that copolymers with an ethylhexyl acrylate content of 17 parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride have a yellowing index of only 1.7 which is a marked improvement of this parameter.

In the statement filed on 4 December 1987 the Appellant objected that this value of 1.7 of the yellowing index is inconsistent with the figure of 3.9 obtained for this parameter when the ethylhexyl acrylate content is 22 parts by weight per 100 parts by weight of total vinylidene chloride and vinyl chloride. In fact, as demonstrated convincingly by the Respondent during oral proceedings, one should take into account the fact that the measure of the yellowing index is relatively inaccurate (± 1) and that the relative amounts of the various monomers are not the same in the two copolymers; whereas vinylidene chloride and vinyl chloride are present in a weight ratio of 60:40 in the copolymer with 17 parts by weight of ethylhexyl acrylate, the two chlorinated monomers are present in a weight ratio of 72.7:27.3 in the copolymer with 22 parts by weight of ethylhexyl acrylate, so that a direct comparison is rather meaningless.

Further, as repeatedly put forward by the Respondent, the fact that the moisture permeability is not significantly impaired by (meth)acrylate levels up to 45 parts by weight is totally unexpected in view of the detrimental influence of hydrophilic unsymmetrical comonomers on the permea-

bility of vinylidene chloride polymer coatings mentioned in document (4).

Summarizing, the range of 18 to less than 45 encompasses thus alkyl acrylate(s) and/or alkyl methacrylate(s) ratios which confer an improved thermostability to the copolymers; this effect obtained from a combination of features which is not suggested in the prior art, is regarded as surprising and involves thus an inventive step.

- 5.4 This conclusion is supported by the outstanding properties attributed in Example 7 of the patent in suit to the coatings made from the copolymers according to the second auxiliary request.

According to Example 7 paints are prepared from latices containing 19.5, 27.6 and 29.6 parts of ethylhexyl acrylate parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride, and applied as two coats of wet thickness of 100 μ m to degreased mild steel panels. Following test results are reported:

In each case the coated panels passed 80 in. lb (92.2 kg. cm) in the Gardener Reverse Impact Test (ASTM D2794-69) and had good adhesion (Gt 1 according to DIN 53151).

The panels were also tested by being soaked in distilled water for 14 days. The degree of blistering above and below the water-line ranged from few blisters of very small size to no blister at all.

Finally, the panels were subjected to the salt spray test which is harder than immersion; after 1000 hours exposure, the first paint exhibited medium-density blisters of very

small size whereas the other two had dense micro-blisters with few blisters of very small size and few blisters of small size.

This balance of properties confers a marked advantage to the claimed coating compositions over those known from document (1) and affords a gamut of applications not suggested in the prior art. Whereas the prior art coatings would be suitable as protective coatings for bridges and the outside of buildings, the present coatings can be used on car bonnets, car radiators and engine blocks for which higher thermostability is required.

- 5.5 In conclusion, for the reasons given above the content of alkyl acrylate(s) and/or alkyl methacrylate(s) from 18 to less than 45 parts by weight per hundred parts by weight of total vinylidene chloride and vinyl chloride is regarded as an inventive feature so that Claim 1 of the second auxiliary request is allowable.
6. Claim 1 being allowable, the same applies to Claims 2 to 6 which correspond to preferred embodiments of the subject-matter of Claim 1 as well as to Claims 7 and 8 which are respectively directed to a paint composition comprising an aqueous latex defined in Claim 1 and to the use of these latices as protective coatings on metallic substrates.

Order

For these reasons, it is decided that:

The decision of the Opposition Division is set aside.

The case is remitted to the first instance with an order to maintain the patent with text in accordance with the second auxiliary request filed at the oral proceedings.

The Registrar:

The Chairman:

F. Klein

K. Jahn