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**D E C I S I O N**  
of 21 January 2003

**Case Number:** T 0420/00 - 3.3.3

**Application Number:** 93305355.5

**Publication Number:** 0578498

**IPC:** C08F 20/06

**Language of the proceedings:** EN

**Title of invention:**  
Acrylic polymer, its use and process for producing it

**Patentee:**  
NIPPON SHOKUBAI CO., LTD.

**Opponent:**  
Minnesota Mining and Manufacturing Company

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 123(2), 84

**Keyword:**  
"Amendments - added subject-matter (no)"  
"Claims - clarity (no)"

**Decisions cited:**  
T 0301/87; T 0472/88

**Catchword:**  
-



Case Number: T 0420/00 - 3.3.3

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.3  
of 21 January 2003

**Appellant:**  
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**Respondent:**  
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**Representative:**  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 24 February 2000  
revoking European patent No. 0 578 498 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** R. Young  
**Members:** W. Sieber  
J. Van Moer

## Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 578 498, with 14 claims, in respect of European patent application No. 93 305 355.5, filed on 8 July 1993 and claiming JP priorities of 10 July 1992 (JP 183997/92), 13 July 1992 (JP 185519/92), 30 July 1992 (JP 204129/92) and 21 April 1993 (JP 94404/93), respectively, was published on 16 April 1997 (Bulletin 1997/16). Claim 1 read as follows:

"1. An acrylic polymer obtained by a bulk polymerization reaction; being characterized in containing an acrylic acid-based monomer unit (a) in a proportion of from 50 to 100% by weight in the structure of the acrylic polymer, and having a number-average molecular weight in a range of from 1,000 to 1,000,000, a glass transition temperature of  $-80^{\circ}\text{C}$  or higher and a molecular weight distribution ( $M_w/M_n$ ) of 5 or less, the acrylic acid-base monomer being at least one member selected from the group consisting of acrylic acid, an acrylic acid salt, an acrylic acid derivative, methacrylic acid and a methacrylic acid salt and not including a methacrylic acid ester."

Claims 2 to 7 were dependent claims directed to elaborations of the subject-matter of Claim 1.

Claim 8, an independent claim, was directed to a process for producing an acrylic polymer as claimed in Claim 1.

Claims 9 to 14 were dependent claims directed to elaborations of the process of Claim 8.

II. A Notice of Opposition was filed on 15 January 1998, on the grounds of Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (insufficiency of disclosure). The opposition was supported *inter alia* by the following documents:

D1: US-A-4 141 806;

D2: US-A-3 879 357;

D4: US-A-4 546 160; and

D5: JP-024632 (translation into English); and the later filed but admitted document

D9: Aldrich Catalogue of 1990, pages 1074, 1075, 1078 and 1080.

III. During prosecution of the case before the opposition division, amended sets of claims were filed by the proprietor, by way of a main request and a first auxiliary request. By a decision announced orally on 1 February 2000 and issued in writing on 24 February 2000, the opposition division revoked the patent because the subject-matter of the independent claims of the main request and the first auxiliary request lacked novelty.

The claims of the main request differed from the claims as granted in that in Claim 1 the lower limit of the acrylic acid-based monomer unit (a) had been amended to 53.28% by weight and the lower limit of the number average molecular weight range to 5,000.

Claim 7 as granted had been deleted and the remaining claims renumbered. The figure "53.28" had also been introduced into Claims 4 and 7.

The respective claims of the first auxiliary request differed from the claims of the main request only by amending the wording at the end of Claim 7 ("... and contains a polymerization initiator in proportion by weight of one-third or less based on the weight of the sulphur compound") to "... and the monomer component when starting the polymerization reaction contains a polymerization initiator in proportion by weight of one-third or less based on the weight of the sulphur compound and the polymerization system contains a polymerization initiator in proportion by weight of one-third or less based on the sulphur compound".

The decision under appeal held that the subject-matter of the independent claims of each request on file was not novel over D1, D2, D5 and D9. Under these circumstances, a discussion of inventive step, sufficiency of disclosure and allowability of the amendments under Article 123(2) EPC was not deemed appropriate or expedient.

- IV. On 21 April 2000, a Notice of Appeal against the above decision was filed by the proprietor (hereinafter referred to as the appellant), the prescribed fee being paid on 22 April 2000.

The Statement of Grounds of Appeal, filed on 23 June 2000, was accompanied by six sets of claims, forming a main request and a first to a fifth auxiliary request, respectively. The first auxiliary request was then replaced by a revised first auxiliary request (30 June 2000), so that the claims of both the main request and the first auxiliary request corresponded to those underlying the decision under appeal.

- V. With a submission filed on 8 January 2001, the opponent (hereinafter referred to as the respondent) requested that the appeal be dismissed because the subject-matter

of the requests was anticipated by the prior art, and the amendments made in the main claims of all requests were not allowable under Article 123(2) EPC. Additionally, the respondent maintained the other grounds of opposition, ie Articles 56 and 100(b) EPC, that had been raised in the opposition proceedings before the first instance but were not addressed in the decision under appeal.

VI. In a communication dated 23 July 2002 accompanying a summons to oral proceedings, the board raised objections under Article 123(2) EPC against various amendments in all claim sets. As none of the requests on file was formally allowable, a discussion of novelty was considered premature. Nevertheless, the appellant's attention was directed to documents D4 and D9, which appeared to be of high relevance for any product claim.

VII. In reply, the appellant withdrew all the previous claim sets and filed on 19 December 2002 a new main claim set and seven auxiliary claim sets accompanied by reasons as to why the new claim sets met the requirements of Articles 123, 54 and 56 EPC.

VIII. Oral proceedings were held on 21 January 2003, in the course of which the discussion focused on the question whether the claims met the requirements of Articles 123(2) and (3) EPC. Following an objection raised by the board, the appellant filed an amended main claim set and amended seven auxiliary claim sets.

(i) Claim 1 of the main claim set, comprising seven claims, read as follows:

"1. A process for producing an acrylic polymer being used for a pressure-sensitive adhesive, said polymer containing an acrylic acid-based monomer unit in proportion of from 60 to 100% by

weight in the structure of the acrylic polymer and a crosslinkable functional group in proportion of 0.005 to 1.4 mmol/g in its structure, and having a number-average molecular weight in a range of from 10,000 to 500,000, a glass transition temperature of  $-80^{\circ}\text{C}$  to  $-30^{\circ}\text{C}$ , a molecular weight distribution ( $M_w/M_n$ ) of 5 or less, and the acrylic acid-base monomer being at least one member selected from the group consisting of acrylic acid, an acrylic acid salt, an acrylic acid derivative, methacrylic acid and a methacrylic acid salt and not including a methacrylic acid ester, comprising carrying out a bulk polymerization reaction of a monomer component which contains the acrylic acid-based monomer, characterised in that the bulk polymerization reaction of a starting material for polymerization is carried out in the presence of an inactive gas and that the starting material for polymerization contains said monomer component as well as an organic sulfur compound in proportion of from 0.001 to 20 parts by weight based on 100 parts by weight of the total of the monomer component, and contains a polymerization initiator in proportion by weight one-third or less based on the weight of the sulfur compound."

The remaining dependant Claims 2 to 7 corresponded to granted Claims 9 to 14.

- (ii) The claims of the first auxiliary claim set corresponded to those of the main claim set other than limitation of the molecular weight distribution figure to "4.1 or less" in Claim 1.

- (iii) The claims of the second auxiliary claim set corresponded with the main claim set with the further limitation at the end of Claim 1: " the polymerization initiator being an azo-based initiator or a peroxide".
- (iv) Claim 1 of the third auxiliary claim set, comprising six claims, corresponded with Claim 1 of the main claim set with the further limitation at the end of Claim 1: "and contains no polymerization initiator".

The remaining dependant Claims 2 to 6 corresponded to granted Claims 10 to 14.

- (v) The fourth auxiliary claim set was a combination of the limitations introduced into the first and third auxiliary claim sets.
- (vi) Claim 1 of the fifth auxiliary claim set, comprising six claims, corresponded with Claim 1 of the main claim set with the further limitation to the organic sulphur compound being "an organic mercaptan".

The remaining dependant Claims 2 to 6 corresponded to granted Claims 9 and 11 to 14.

- (vii) The sixth auxiliary claim set was a combination of the third and fifth auxiliary claim sets.
- (viii) The seventh auxiliary claim set was a combination of the first, third and fifth auxiliary claim sets.



Following the issue of Articles 123(2) and (3) EPC, the discussion focussed on the point whether Claim 1 of the main claim set and the auxiliary claim sets, respectively, met the requirements of clarity (Article 84 EPC).

IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained:

- on the basis of the main claim set comprising 7 claims, filed on 21 January 2003, or, in the alternative,
- on the basis of one of the auxiliary claim sets, all filed on 21 January 2003, in a cascade manner.

The respondent requested that the appeal be dismissed. In addition, the respondent maintained the other grounds of opposition, ie lack of inventive step and sufficiency of disclosure, which had been raised in the opposition proceedings but were not addressed in the decision.

## Reasons for the Decision

1. The appeal is admissible.

### *Main request*

2. *Amendments*

2.1 The process of Claim 1 is based on the process of Claim 8 as originally filed where the product features required in originally filed Claims 1 and 3 have been incorporated into the preamble of the claim, ie the process must result in a product having these features.

2.2 Although Claim 8 as originally filed is directed to a process for producing an acrylic polymer in general and does not contain a reference to the specific polymers of originally filed Claims 1 and 3, respectively, it is clear from the application that the general process as described in Claim 8 is equally applicable in the production of various polymer products. Thus, page 26, first full paragraph, as originally filed states: "The present invention provides a production process preferable for obtaining a polymer including the above-mentioned acrylic polymer and other members (emphasis added by the board)". The passage following contains references to the process features listed in the characterizing portion of Claim 8 as originally filed. Hence, the wording of originally filed page 26 makes it unequivocally clear that the generic process can be applied to the "above mentioned acrylic polymer" which is - *inter alia* - an acrylic polymer as described on page 9 as originally filed, second paragraph (corresponding to the polymer of original Claim 1) or an acrylic polymer being used for a pressure sensitive adhesive as set out in the paragraph bridging originally filed pages 13 and 14 (corresponding to the polymer of original Claim 3).

2.3 Summing up, amended Claim 1 has a clear basis in the application as originally filed, and meets the requirements of Article 123(2) EPC. Therefore, the respondent's argument that the generic process of Claim 8 as originally filed cannot be associated with the specific combination of product features now required must fail.

2.4 The extent of protection is not affected by the amendment, so that Claim 1 meets also the requirements of Article 123(3) EPC. Nor was any objection under Article 123(3) EPC raised by the respondent against the amendment.

3. *Clarity*

3.1 Amended Claim 1 requires that the polymer product resulting from the process contains an acrylic acid-based monomer unit in proportion of from 60 to 100% by weight whereby the acrylic acid-based monomer (forming the acrylic acid-based monomer unit) is at least one member selected from the group consisting of acrylic acid, an acrylic acid salt, an acrylic acid derivative, methacrylic acid and a methacrylic acid salt and not including a methacrylic acid ester. Thus, the polymer can contain 60 to 100% by weight of acrylic acid.

3.2 On the other hand, amended Claim 1 requires also that the polymer product resulting from the process contains a crosslinkable functional group in proportion of from 0.005 to 1.4 mmol/g in its structure. The opposed patent exemplifies - *inter alia* - acrylic acid as a monomer containing a crosslinkable functional group for use in a pressure sensitive adhesive (page 10, line 6 of the patent in suit).

3.3 The fact that acrylic acid can be both the acrylic acid-based monomer and, at the same time, the monomer which introduces a crosslinkable functional group into the polymer structure leads to an apparent contradiction in amended Claim 1: If the acrylic acid-based monomer is acrylic acid, the polymer contains acrylic acid in an amount of 60% by weight or more. The consequence of this is, however, that the maximum of 1.4 mmol/g of crosslinkable functional group in the polymer structure is inevitably exceeded. As pointed

out by the respondent (opponent) during the opposition procedure, an upper limit of 1.4 mmol/g crosslinkable functional group corresponds in the case of acrylic acid to 10% by weight. Thus, if acrylic acid is used as the acrylic acid-based monomer, amended Claim 1 contains two separate incompatible requirements.

3.4 Even if there were a conceptual intellectual difference between acrylic acid being used as the acrylic acid-based monomer and acrylic acid being used as the monomer for introducing the crosslinkable functional group, such a difference is not apparent from the patent in suit. Consequently, amended Claim 1 encompasses at least one embodiment where a person skilled in the art has no objective basis for understanding the structure of the claim, let alone for construing the scope of the claim. Hence Claim 1 does not meet the requirements of clarity (Article 84 EPC).

3.5 The use of acrylic acid as the acrylic acid-based monomer leading to the incompatible requirements in the claim is not only a theoretical possibility, as argued by the appellant, but is in fact a preferred embodiment as illustrated by dependent Claim 5. According to Claim 5, the monomer component contains either one or both of acrylic acid and methacrylic acid in totality of from 10 to 100% by weight. Although there is some inconsistency as regards the lower limit, ie 10% by weight versus 60% in Claim 1, it is clear that acrylic acid can be a major portion of the monomer component leading to the above mentioned inconsistency. Therefore, appellant's argument that acrylic acid is only a theoretical possibility of Claim 1 is not convincing.

3.6 Furthermore, the appellant argued that Claim 1 was not open to an objection under Article 84 EPC since new Claim 1 was in essence a combination of granted Claims 1, 3 and 8. The board can, however, not follow this argument for the following reasons:

3.6.1 According to T 301/87 (OJ EPO, 1990, 335; point 3.8 of the reasons), Article 102(3) EPC requires that, when amendments are made to a patent during the opposition proceedings, the opposition division or the board of appeal shall consider whether the amendments introduce any contravention of any requirement of the Convention, including Article 84 EPC; however, Article 102(3) EPC does not allow objections to be based on Article 84 EPC if such objections do not arise out of the amendments made.

3.6.2 In the present case, the introduction of the product features of granted Claim 3 (corresponding to Claim 3 as originally filed) into the independent process claim leads to a process claim of considerably altered scope which has never been part of the granted claims. Although the two separate incompatible requirements were already present in dependent granted Claim 3 relating to a **product**, the amendments have themselves introduced a contravention of the requirement of clarity into the new independent **process** claim. The amendments have not been used to raise an objection under Article 84 EPC totally unconnected with the amendments. Therefore, upon a proper interpretation of Article 102(3) EPC, the board is not only entitled but required to examine whether substantively amended Claim 1 meets the requirements of Article 84 EPC.

3.6.3 Furthermore, it was held in T 472/88 (10 October 1990; not published in the OJ EPO; point 2 of the reasons) that an amendment directly giving rise to an ambiguity objectionable under Article 84 EPC will require to be dealt with by the board under the power of Article 102(3) EPC. In this context, the word "arise" was construed broadly, so as to cover any one of its normal acceptations in the English language, including a case where the amendment clearly brings into notice an ambiguity that has existed all along. The principle laid down in T 472/88 applies to the present case because the incorporation of the features of dependent granted Claim 3 into the independent claim clearly brings into notice an ambiguity that had existed all along. In other words, a clarity problem which was hidden in a dependent claim is highlighted by incorporating the features of that dependent claim into the independent claim.

3.6.4 Summing up, in the present case, the board has the power to examine whether Claim 1 meets the requirements of Article 84 EPC.

3.7 Since, however, the result of this examination is that Claim 1 of the main request fails to meet the latter requirement of the EPC, this request must be refused.

*First to seventh auxiliary requests*

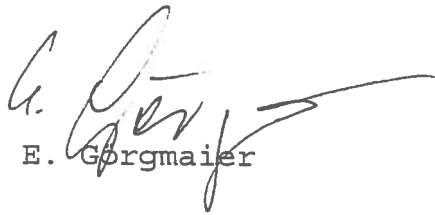
4. Although the board refrained from raising any objection under Article 123(2) EPC, Claim 1 of each of the auxiliary requests contains the same deficiency with regard to Article 84 EPC as Claim 1 of the main request. Consequently, all the auxiliary requests must be refused.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:



E. Gorgmaier

The Chairman:



R. Young