BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 5 July 1994

Case Number: T 0575/91 - 3.3.3

Application Number: 85107680.2

Publication Number: 0165615

IPC: C08F 212/10

Language of the proceedings: EN

Title of invention:
Modified impact-resistant vinylaromatic copolymers

Patentee:
Montedison S.p.A.

Opponent:
BASF Aktiengesellschaft

Headword:
-

Relevant legal norms:
EPC Art. 123(2), 123(3)

Keyword:
"Difference in the formulation of a disclaimer without influence on the scope thereof"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0575/91 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 5 July 1994

Appellant: (Opponent)
BASF Aktiengesellschaft, Ludwigshafen
-Patentabteilung - C6-
Carl-Bosch-Strasse 38
D-67056 Ludwigshafen (DE)

Representative:
-

Respondent: (Proprietor of the patent)
Montedison S.p.A.
31, Foro Buonaparte
I-20121 Milan (IT)

Representative:
Weinhold, Peter, Dr.
Patentanwälte Dr. V. Schmied-Kowarzik
Dipl.-Ing. G. Dannenberg
Dr. P. Weinhold
Dr. D. Gudel
Dipl.-Ing. S. Schubert
Dr. P. Barz
Siegfriedstrasse 8
D-80803 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office announced orally on 15 May 1991, and posted on 7 June 1991 concerning maintenance of European patent No. 0 165 615 in amended form.**

Composition of the Board:

Chairman: C. Gérardin
Members: P. Kitzmantel
M. Aúz Castro

Summary of Facts and Submissions

I. European patent application No. 85 107 680.2, filed on 21 June 1985 and claiming the priority of 22 June 1984 from an earlier application in Italy, resulted in the grant of European patent No. 0 165 615 on 15 March 1989 on the basis of 7 claims, Claim 1 reading as follows:

"A modified impact-resistant vinylaromatic copolymer containing from 2 to 10% by weight of an ethylenically unsaturated nitrile and from 0 to 30% by weight of alpha-methylstyrene and having a gel content higher than 23%, a cracking resistance, in an olive oil/oleic acid mixture (weight ratio 50/50) and under a load of 10 MPa, of more than 100 minutes and a melt index (200°C/5 kg) lower than 1,5 g/10 minutes, said copolymer being obtained by a polymerization carried out in the absence of mineral oil as lubricant."

Independent Claim 4 related to mixtures containing at least a copolymer according to Claim 1 and another polymer compatible therewith, and Claims 2, 3 and 5 to 7 were dependent upon Claim 1 or Claim 4, respectively.

II. Notice of Opposition was filed on 14 December 1989 requesting revocation of the patent in its entirety, on the grounds of lack of novelty and lack of inventive step, having regard to document

D1: EP-A-0 029 174.

III. In its interlocutory decision announced orally on 15 May 1991 (written decision date-stamped 7 June 1991) the Opposition Division held that the patent in suit, in the amended form indicated below, met the requirements of the EPC.

The said amendment concerned Claim 1 and the corresponding adaptation of the description, the only difference to granted Claim 1 residing in its final statement amended to read:

"..., said copolymer being obtained by a polymerization carried out in the absence of **a lubricant**." (emphasis added)

It was found in this decision that, by virtue of the general exclusion of lubricants during the polymerisation, the subject-matter of amended Claim 1 was novel over D1 and - owing to the unexpectedly improved stress cracking resistance of the claimed copolymers - involved also an inventive step.

IV. On 6 August 1991 (letter dated 2 August 1991) the Appellant (Opponent) lodged an appeal against the interlocutory decision of the Opposition Division and paid the appeal fee. The Statement of Grounds of Appeal was submitted on 9 October 1991.

V. Oral Proceedings were held on 5 July 1994.

VI. The Appellant argued that the general exclusion of "lubricants" - as opposed to the term "lubricating compounds usually employed in such polymerization" literally disclosed in the opposed patent - was not supported by the original application; that amendment extended the protection as conferred by the granted version, which excluded only "mineral oil as lubricant", and therefore offended against Article 123(2) and (3) EPC. In the absence of this inadmissible amendment the claimed subject-matter would lack novelty over D1. Moreover, since it was known from D1 that excessive

amounts of lubricants might have a detrimental effect on the stress cracking resistance, the total omission of lubricants from the polymerization reaction could not be regarded as inventive.

VII. The Respondent (Patentee) contended that the disclosure in the opposed patent concerning the absence of "lubricating compounds" (page 2, lines 16 to 19) and of "mineral oils, generally employed as lubricant" (page 2, lines 61 to 64) provided sufficient support for the amendment in Claim 1. Since the meaning of the word "lubricant" was broader than that of the term "mineral oil", this amendment entailed a broadening also of the disclaimer, resulting in a restriction of the protection conferred. Hence, amended Claim 1 complied with the requirements of both, Article 123(2) and (3) EPC.
With regard to inventive step the Respondent stressed the importance of the combination of features in Claim 1 contributing to a surprisingly enhanced stress cracking resistance, as evidenced by the tensile strength results in Table I, Samples 4 to 7 and by the additional evidence presented during the opposition proceedings (Annexes 1 and 2, Runs A to G of letter dated 25 June 1990).

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

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Article 123(2) and (3) EPC*

2.1 D1 on page 11, 1st full paragraph, refers to the presence of lubricants during the polymerization of rubber-modified copolymers of monovinylaromatic compounds and (meth)acrylic acid derivatives, including nitriles (Claim 1; page 3, lines 20, 21). Mineral oil is reported to be more favourable to the tear strength ("Reißfestigkeit") of the final products than polar lubricants, like butyl stearate.

With the intention to establish novelty over this disclosure, the Respondent (Patentee) during the opposition proceedings changed the feature in granted Claim 1 "... in the absence of mineral oil as lubricant" into "... in the absence of a lubricant."

2.2 When judging the technical importance of the above-mentioned amendment, it has to be borne in mind that the reader of a patent specification is a person skilled in the art who interprets the wording of the description and the claims in the light of the specific technical context of the patent.

It is not disputed that a lubricant is a broader concept than a mineral oil, since a lubricant may be a gas, a liquid or a solid; mineral oils, however, are by far the most used lubricants (Mc Graw-Hill Encyclopedia of Science and Technology, Volume 10, page 212, article "Lubricant", 7th Edition; Encyclopédie des Sciences Industrielles Quillet, Tome 3, page 100, point 2.2, 1974). In the framework of the process of polymerisation as defined in the patent in suit, however, the lubricant

can only be a mineral oil. This results from a proper interpretation of the four passages in the patent specification which mention that aspect of the process, namely (i) "in the absence of lubricating compounds usually employed in such polymerisation" (page 2, lines 17, 18), (ii) "in the absence of mineral oil as lubricant" (page 2, lines 26, 27), (iii) "in the absence of mineral oil, generally employed as a lubricant" (page 2, lines 62, 63), and (iv) "in the absence of lubricating oils" (page 3, line 11); these four passages are consistent only if there is no difference between these terms, thus in particular between lubricant and mineral oil. This interpretation is especially supported by the use of the term "lubricating oil" in passage (iv) as fully equivalent to the term "mineral oil" in passage (iii), both said passages referring to the achievement of the object of the alleged invention by the absence of such "oils".

For a skilled reader, thus, there is no difference in the context of the patent as granted between a mineral oil and a lubricant, which means that the omission of the former is equivalent to the omission of the latter. Whether the process is carried out in the absence of mineral oil as lubricant, as in the granted version of Claim 1, or in the absence of a lubricant, as in the amended version of Claim 1, the process and thereby the definition of the product are identical.

2.3 During the oral proceedings the Appellant referred to the passage on page 2, lines 13 to 15 of the patent specification according to which "An object of the present invention is to increase the thermal resistance and, at the same time, improve the cracking resistance of the ... copolymers ... in the presence of oils and fats." The Appellant took the view that, in spite of the requirement in Claim 1 that lubricants should be absent

during polymerisation, the description in fact did not exclude the presence of oils; this was consistent only if "oils" and "lubricants" were different entities, in their definition as well as in their function.
As noted by the Respondent, that passage does not concern the preparation of the polymers at all, but only the improved thermal resistance and cracking resistance properties in the presence of oils and fats of the polymers already prepared. There is thus no contradiction between that statement and the wording of Claim 1. Consequently, the fact that the oils referred to in this particular passage of the description have nothing to do with lubricants does not support the argument that mineral oils and lubricants should be different.

2.4 Thus, amended Claim 1 complies with the requirements of Article 123(2) and (3) EPC.

3. *Novelty*

3.1 In view of the disclaimer, the novelty of the subject-matter of amended Claim 1 over the only document cited in this appeal, namely D1, has been recognized by the Appellant.

3.2 Novelty over D1 is, however, not based on the disclaimer, but on the fact that D1 does not disclose the combination of the features "absence of lubricant", "use of an unsaturated nitrile as comonomer in the vinylaromatic copolymer" and "melt index lower than 1,5 g/10 min".

3.3 The presence of lubricants is not really a mandatory feature of D1; this results from the wording on page 11, lines 4 to 6 of D1: "Jedoch kann das Verhältnis von Reißfestigkeit zur Streckgrenze durch die üblichen

Zusatzstoffe, insbesondere Schmiermittel und Farbstoffe, beeinflußt werden." (However, the correlation between tear strength and yield point can be influenced by the usual additives, particularly lubricants and dye-stuffs.) It must be concluded from this passage that additives are only optional and that, consequently, the carrying out of the polymerisation reaction in the absence of lubricants is within the disclosure of D1.

3.4 Concerning the features "unsaturated nitrile as comonomer" and "melt index lower than 1,5 g/10 min" the first-mentioned is a not preferred alternative of D1 (page 3, line 21: (meth)acrylonitrile) and the latter one is not mentioned therein.

3.5 The subject-matter of Claim 1 is therefore novel over D1, and the same applies to the subject-matter of independent Claim 4 directed to mixtures containing a copolymer in accordance with Claim 1 and, due to their appendancy, to all dependent claims.

4. *Inventive step*

4.1 Although there is no explicit reference in Claim 1 of the patent in suit to a rubber being present during the polymerisation reaction, the expression "modified impact-resistant vinylaromatic copolymer", the reference to rubber in the description as well as the specific embodiments illustrated in the examples make it clear that the claimed copolymers are **rubber**-modified. The examples of D1, which relate to rubber-modified copolymers of a vinylaromatic compound and (meth)acrylic acid derivatives prepared in the presence of mineral oil, are regarded as the closest state of the art. These copolymers are not entirely satisfactory for applications which require a good cracking resistance in the presence of fatty substances.

4.2 In view of that shortcoming, the technical problem underlying the patent in suit is to be seen in the provision of rubber-modified vinylaromatic copolymers having an improved stress cracking resistance.

4.3 According to the patent in suit this problem is to be solved by selecting ethylenically unsaturated nitriles as comonomers, setting an upper limit of the melt index of 1,5 g/10 minutes and by omitting lubricants during their preparation.

4.4 That this problem was indeed solved is convincingly demonstrated by the "inventive" Samples 5 and 7 in Table I of the opposed patent, when compared with the "comparative" Samples 4 and 6, respectively; the stress cracking resistance (as indicated by the tensile strength in olive oil/oleic acid at 10 MPa) of the copolymers according to the "inventive" samples, prepared without the addition of mineral oil as lubricant, is by far superior to the one of the "comparative" samples, which have been prepared in the presence of mineral oil.

5. In assessing an inventive step it must therefore in particular be asked whether the skilled person, when starting from D1, had any incentive to operate without lubricants during the polymerisation reaction in order to get copolymers having an improved stress cracking resistance.

5.1 D1, page 11, 1st full paragraph discloses that too large amounts of lubricant may reduce the tear strength ("Reißfestigkeit") below the yield point ("Streckgrenze") causing thereby - depending in a decisive way on the kind of the lubricant - a drop of the stress cracking resistance. There is however not the slightest suggestion in D1 that any benefit may be

gained by operating entirely without lubricants; rather D1 explicitly recommends the use of mineral oil as a lubricant (page 11, line 20) and indeed mineral oil is added to the polymerization reaction in all worked examples.

The skilled person had therefore no reason to assume that the stress cracking resistance of rubber-modified vinylaromatic copolymers could be considerably improved by leaving lubricants out during their preparation.

5.2 Thus, even when leaving aside the other differences between the copolymers according to the patent in suit and D1 (see section 4.1 above), the latter did not contain any pointer for the expert to solve the existing technical problem in the way claimed in amended Claim 1.

5.3 Therefore the subject-matter of amended Claim 1 involves an inventive step.

6. Because the mixtures according to independent Claim 4 contain these copolymers, the subject-matter of this claim is also inventive; this conclusion extends also to dependent Claims 2, 3 and 5 to 7 which are directed, respectively, to preferred copolymers according to Claim 1 or preferred mixtures according to Claim 4.

7. Consequently, the objections brought forward by the Appellant do not prejudice the maintenance of the patent as amended in accordance with the appealed decision.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier C. Gérardin

5.8.94