

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 18 March 1996

Case Number: T 0018/94 - 3.3.3

Application Number: 86904359.6

Publication Number: 0235294

IPC: C08G 73/10

Language of the proceedings: EN

Title of invention:

Polyimides and heat-resistant adhesives comprising the same

Applicant:

mitsui toatsu chemicals, Inc.

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 54, 111(1)

EPC R. 67

Keyword:

"Novelty (yes) - after amendments"

"Remittal to first instance after substantial amendments"

"Reimbursement of appeal fee (no) - no substantial procedural violation"

Decisions cited:

-

Catchword:

-



Case Number: T 0012/94 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 18 March 1996

Appellant: MITSUI TOATSU CHEMICALS, Inc.
2-5 Kasumigaseki 3-chome
Chiyoda-Ku
Tokyo 100 (JP)

Representative: Rackham, Anthony Charles
Lloyd Wise, Tregear & Co.
Commonwealth House
1-19 New Oxford Street
London WC1A 1LW (GB)

Decision under appeal: Decision of the Examining Division of the European
Patent Office posted 10 August 1993 refusing
European patent application No. 86 904 359.6
pursuant to Article 97(1) EPC.

Composition of the Board:

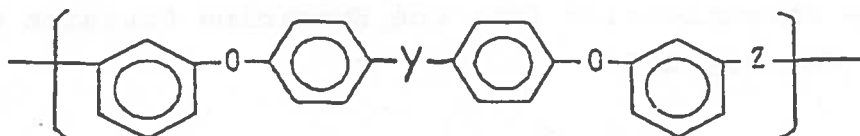
Chairman: C. Gérardin
Members: B. ter Laan
J. A. Stephens-Ofner

Summary of Facts and Submissions

I. European patent application No. 86 904 359.6, filed on 30 June 1986, claiming priority from four earlier applications in Japan (JP 186610/85 of 27 August 1985, JP 205223/85 of 19 September 1985, JP 224812/85 of 11 October 1985 and JP 46369/86 of 5 March 1986), and published on 9 September 1987 under publication No. 0 235 294, was refused by a decision of the Examining Division of the European Patent Office dated 10 August 1993.

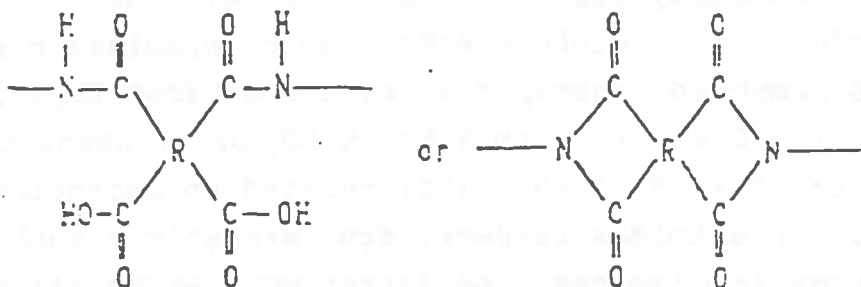
The decision was based on a set of 10 claims filed on 2 April 1992, claim 1 reading as follows:

"A polymer having repeating units of the formula



where Y is a direct bond or a radical selected from divalent hydrocarbons having 1 to 10 carbons, hexafluorinated isopropylidene, carbonyl, thio, sulfinyl, sulfonyl and oxide:

Z is



and; P is a tetra-valent radical selected from aliphatic radicals having 2 or more carbons, cyclo-aliphatic radicals, monocyclic aromatic radicals, fused polycyclic aromatic radicals, and polycyclic aromatic radicals wherein the aromatic rings are mutually interconnected by a direct bond or a bridging group."

Claims 2 to 5 referred to preferred embodiments of Claim 1. Claim 6 was directed to a high temperature stable adhesive comprising the polymer of Claim 1 and Claims 7 to 10 referred to preferred embodiments of Claim 6.

II. In that decision it was first stated that the amendments made to the claims filed on 1 April 1992 were merely editorial in nature and did not change the issues under consideration. In that respect, reference was made to the communication from the Examining Division dated 23 January 1990.

The reason given for refusal was lack of novelty of the subject-matter as defined in claims 1 and 6. More specifically, it was held that the abstract of JP-A-58-157190 (D1) as published in the Japanese Patents Gazette, 7 December 1983, J5 8157-190-A (D1a) and Chemical Abstracts, Volume 100 (1984), 104703f (D1b) disclosed polyimide adhesives prepared from 3,3',4,4'-benzophenone tetracarboxylic dianhydride and 4,4'-di(m-aminophenoxy)diphenylsulphone or 4,4'-di(m-aminophenoxy)diphenylether, which diamines corresponded to compounds encompassed by the general formulae of Claims 1 and 6, with Y being SO₂ or O, respectively. Also, JP-A-59-168030 (D2) related to injection mouldable polyetherimides prepared from aromatic bisanhydrides and aromatic diamines. The latter were exemplified as 4,4'-di(m-aminophenoxy)diphenylsulphone and 4,4'-di(m-aminophenoxy)diphenylketone, which likewise were

comprised by Claims 1 and 6. Furthermore, WO-A-84/04313 (D3) disclosed 4,4'-di(m-aminophenoxy)diphenylsulfide and 4,4'-di(m-aminophenoxy)diphenylsulphoné as suitable diamines for the synthesis of polyimides and polyamide acids, which polymers were said to be useful for the preparation of adhesives.

Although the decision was solely based upon the above-mentioned ground, it was pointed out that Claims 2 and 7 also lacked novelty in view of D3 and that Claims 3 to 5 and 8 to 10 were not inventive as no special technical effects due to the specific choice of compounds had been demonstrated.

III. On 8 October 1993 a Notice of Appeal was lodged against that decision, together with payment of the prescribed fee. With the Statement of Grounds of Appeal received on 16 December 1993, the Appellant (Applicant) filed, as an auxiliary request, a set of 18 claims. The Appellant argued essentially as follows:

- (i) As regards novelty, it was an essential feature of the invention that the group Y should be linked to the two central aromatic rings in para position relative to the two oxygen groups and that the two outer aromatic groups should be linked to the next repeating group or to Z in the meta position relative to the two oxygen groups (this molecular structure will hereinafter be referred to as "para/meta configuration"). Although the formulae given in D1a, D1b and D2 encompassed those possibilities, they were not specifically disclosed as such and the claimed subject-matter therefore constituted a selection out of the numerous possibilities mentioned in any of D1a, D1b and D2. Thus, these documents proposed the reaction of many different diamine and tetracarboxylic dianhydride

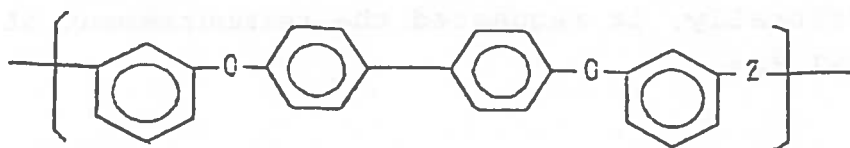
compounds with each other, but provided no disclosure that any polyimide as now claimed had ever actually been made. In any case, there was no disclosure at all of Y being a direct bond. Only D3 did, among many other possibilities, disclose that Y could be a direct bond. However, in view of the wording of the claims filed with the Statement of Grounds of Appeal, this possible novelty objection was overcome by disclaiming the relevant subject-matter of D3.

- (ii) As to the presence of an inventive step, the Appellant submitted that the para/meta configuration was an essential feature which conferred to the polyimides an excellent flowability in addition to superior heat resistance. In particular, compounds in which the diamine groups were in the para position relative to the oxygen groups lacked flowability. In support of its arguments the Appellant filed additional experiments in order to illustrate the advantageous properties of the claimed polyimides. Reference was also made to the description, in particular page 15, lines 8 to 25, where the advantageous properties and the usefulness of the invention polymers at high temperature adhesives were elucidated.

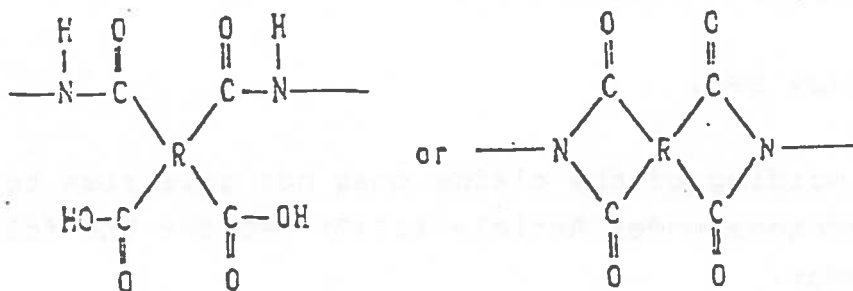
IV. In a letter dated 8 June 1995 the Appellant contended that the refusal of the application after one communication amounted to a substantial procedural violation, which by analogy to decision T 640/91 (OJ EPO 1994, 91S) justified the reimbursement of the appeal fee.

V. In response to a communication of the Board dated 6 December 1995, in which various objections under Articles 54, 56, 82, 84 and 123(2) EPC against the two sets of claims then on file were raised, on 22 December 1995 the Appellant filed a new set of five claims to be considered as its sole request, claim 1 reading as follows:

"A polymer having repeating units of the formula



in which Z is:



and R is a tetra-valent radical selected from an aliphatic radical having 2 or more carbons, a cycloaliphatic radical, a monoaromatic radical, a condensed polyaromatic radical, or a non-condensed polyaromatic radical wherein the aromatic radicals are mutually connected with a bond or a linking function."

Claims 2 and 3 refer to preferred embodiments of Claim 1.

- VI. By letter of 19 January 1996, the Appellant deleted Claim 4 and asked that Claim 5, which is directed to the use of the polymer of Claim 1 as a high temperature stable adhesive, be renumbered accordingly.
- VII. The Appellant requested that the decision under appeal be set aside and a patent be granted on the basis of claims 1 to 3 and 5 (appropriately renumbered) filed on 22 December 1995, or that, alternatively, the case be remitted to the first instance for further prosecution. Additionally, it requested the reimbursement of the appeal fee.

Reasons for the Decision

1. The appeal is admissible.

Article 123(2) EPC.

2. The wording of the claims does not give rise to any objections under Article 123(2) EPC for the following reasons.

Claim 1 is based on claim 1 as originally filed. It differs from it in that group Y has been specified as being a direct bond, which was one of the options of Claim 1 as originally filed and illustrated in the original Examples 5 to 12.

Claim 2 is based on Claim 3 as originally filed, Claim 3 is based on Claim 4 as originally filed and the subject-matter of "use" Claim 5 (to be renumbered) was originally disclosed in Claim 6, with the difference that, as in Claim 1, group Y has been specified as being a direct bond, which was one of the options of Claim 6 as originally filed.

Novelty

3. For the reasons set out below, the Board agrees with the interpretation of D1a, D1b, D2 and D3 of the Examining Division (cf. Summary of Facts and Submissions, point II).
- 3.1 D1a and D1b disclose laminates of metal foils with polyimide films bonded by polyimide copolymers containing aromatic O, SO₂, S, CO, CH₂, C(CH₃)₂ and/or C(CF₃)₂ repeating groups. In particular, in D1b the coating of a polyimide film onto a copper foil sheet by means of a dried solution of 3,3',4,4'-benzophenone tetracarboxylic acid dianhydride-4,4'-bis(m-aminophenoxy)diphenylsulphone copolymer is described. Clearly, contrary to the Appellant's assertions, this copolymer has in fact been prepared since the coating has actually been carried out, as can be concluded from the measurement of the technical properties of the resulting laminate. However, as no mention is made of polyimides containing aromatic groups linked by a direct bond, D1a and D1b do not disclose the polymers of the now claimed subject-matter.
- 3.2 As can also be seen from Japanese Patents Gazette 12 December 1984, J5 9163-030-A (D2a), Chemical Abstracts 1985, 102: 26116u (D2b) and Patent Abstracts of Japan, 24 January 1985, 59-168030(A) (D2c), JP-A-59-168030 (D2) describes the preparation of

injection-mouldable thermoplastic polyetherimides having good thermal stability and fluidity, from aromatic bis(ether-anhydrides) and aromatic diamines. On page 211 of D2, in the right hand column, four suitable diamines are exemplified, two of which contain the now required para/meta configuration: 4,4'-di(m-aminophenoxy)diphenylsulphone and 4,4'-di(m-aminophenoxy)diphenylketone. However, the reaction of these compounds with the aromatic bis(ether-anhydrides) specified in D2, D2b and D2c, would not result in a copolymer falling within the present subject-matter, since the resulting polymer would not contain the direct bond between the two central aromatic rings as now required. Also, no disclosure of any such possibility is present in any of D2, D2a, D2b and D2c.

- 3.3 D3 discloses a polyimide and a polyimide-acid composition readily convertible to the polyimide composition, which contains at least 20 mole% of a residue of a compound which falls under the present definition of group Z, and at least 50 mole% of a residue of a diamine compound in which the amino groups are linked by a divalent residue of an aromatic diether including those having the now required para/meta configuration (Claim 1). On page 13, lines 4 and 8, suitable diether diamines are specified as, among others, 4,4'-bis(3''-aminophenoxy)diphenyl sulfide and 4,4'-bis(3''-aminophenoxy)diphenyl sulphone, in which the two ether residues are linked to each other by means of a sulfide and a sulphone group, respectively. According to page 12, lines 12 to 16, the alternative possibilities of utilising, apart from sulfide and sulphone groups, a direct bond or a propane group for linking the two ether residues of the diether diamines are disclosed. Therefore, as regards D3 the now claimed

subject-matter requires the selection of the para/meta configuration on the one hand and the direct bond for linking the two diamine ether residues on the other hand, so that the claimed subject-matter is not specifically disclosed.

- 3.4 The above analysis of the cited documents shows that, although the now required para/meta configuration in combination with a number of possible linkages between the two central aromatic groups other than a direct bond is known from D1b, D2, D2b, D2c and D3 and the possibility of connecting the two ether residues by a direct bond is described in D3, neither of those documents specifically disclose the linkage of the two central aromatic groups by means of a direct bond in combination with the para/meta configuration, as is now claimed. For this reason, the Board concludes that the claimed subject-matter is novel.

Inventive step

4. Although the Examining Division in its decision to refuse the application also gave its opinion on the absence of an inventive step in some of the dependent claims then on file, they did not assess the inventiveness of the independent claims, so the only ground of their refusal was lack of novelty. Since the scope of present claim 1 is now more narrowly defined, the considerations and arguments upon which the Examining Division based its opinion regarding the dependent claims do not necessarily apply anymore. In these circumstances, in order not to deprive the Appellant from its right to appeal to a second instance, the Board deems it appropriate to make use of the power conferred upon it by Article 111(1) EPC to remit the case to the first instance for further prosecution.

Reimbursement of the appeal fee

5. The sole reason for the request for reimbursement of the appeal fee submitted by the Appellant, namely that the application was refused after only one communication by the Examining Division, cannot be a sufficient ground by itself to conclude that a substantial procedural violation has occurred. According to Article 96(2) and Rule 51(3) EPC, if "examination of a European patent application reveals that the application or the invention to which it relates does not meet the requirements of the EPC", any communication by the Examining Division "shall contain a reasoned statement covering, where appropriate, all the grounds against the grant of a European patent". Furthermore, according to Article 96(2) EPC, the Examining Division "shall invite the applicant, in accordance with the Implementing Regulations and as often as necessary, to file his observations...". The question as to what is meant by the phrase "as often as necessary" in Article 96(2) EPC, has been dealt with elaborately in decision T 640/91 (supra) (Reasons, point 6, 7 and 8). Emphasising the broad nature of the Examining Division's discretion in issuing further invitations, that decision held that the requirements of Article 113(1) EPC were fulfilled if the Examining Division, before issuing an adverse decision without a further and "necessary" invitation pursuant to Article 96(2) EPC, was satisfied that no lack of good faith had been shown by the Applicant in his previous observations. In other words, it is the real or perceived presence of such lack of good faith that makes the issuance of a further invitation for comment necessary, and indeed obligatory, in order to clear up, if possible, the issue of bad faith (see T 640/91, Reasons, points 7 and 8).

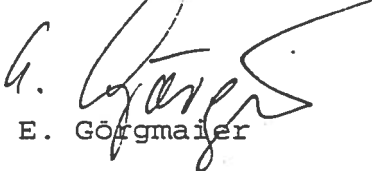
In the present case however, the Examining Division has made no statement regarding proper collaboration or good faith; their decision was based solely on objections already raised in the communication, so that there was no reason to suppose that the Examining Division exercised its discretion contrary to the principle of "reasonable prospect that a further invitation to file observations could lead to the grant of the application" as developed in the Boards' jurisprudence (Decisions T 162/82, OJ EPO 1987, 533 and T 84/82, OJ EPO 1983, 451). On the contrary, in view of the reasons given for the refusal in the light of the claims then on file and the disclosure of the prior art, and in view of the substantial limitations to the claimed subject-matter during the appeal proceedings, the Board concludes that the Examining Division had not exercised its discretion in such a way so as to constitute a substantial procedural violation. Therefore, the reimbursement of the appeal fee is refused.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further prosecution.
3. The request for reimbursement of the appeal fee is rejected.

The Registrar:


E. Görgmaier

The Chairman:


C. Gérardin