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**Datasheet for the decision
of 21 October 2020**

Case Number: T 1768/17 - 3.3.03

Application Number: 09740326.5

Publication Number: 2342260

IPC: C08G65/00

Language of the proceedings: EN

Title of invention:

HIGH PURITY DIPHENYL SULFONE, PREPARATION AND USE THEREOF FOR
THE PREPARATION OF A POLY(ARYLEETHERKETONE)

Patent Proprietor:

Solvay Specialty Polymers USA, LLC.

Opponents:

Victrex Manufacturing Limited
Evonik Operations GmbH

Relevant legal provisions:

EPC Art. 54, 84
RPBA Art. 12(4), 13(1)

Keyword:

Novelty - main request (no)

Auxiliary requests dealt with in the contested decision

Claims - clarity - auxiliary requests 1-3 (no)

Late-filed auxiliary requests - admitted (no)

Decisions cited:

G 0007/93, G 0003/14, T 0971/11



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Case Number: T 1768/17 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 21 October 2020

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 13 June 2017
revoking European patent No. 2342260 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman D. Semino
Members: O. Dury
 W. Ungler

Summary of Facts and Submissions

- I. The appeal by the patent proprietor lies against the decision of the opposition division posted on 13 June 2017 revoking European patent No. 2 342 260.
- II. A notice of opposition against the patent was filed, in which the revocation of the patent in its entirety was requested.
- III. The contested decision was based on the granted patent as main request and on auxiliary requests 2, 4, 6, 8, 10, 13, 15, 17, 19, 21, 24, 26, 28, 30 and 32, all filed with letter of 7 March 2017 (the remaining auxiliary requests 1, 3, 5, 7, 9, 11, 12, 14, 16, 18, 20, 22, 23, 25, 27, 29 and 31 filed with the same letter were withdrawn at the oral proceedings before the opposition division).

Claims 1 and 7 of said **auxiliary request 2** read as follows:

"1. A method for the preparation of a poly(aryletherketone) by aromatic nucleophilic substitution, wherein said aromatic nucleophilic substitution comprises reacting either a substantially equimolar mixture of at least one bisphenol and at least one dihalobenzoid compound or at least one halophenol compound in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone meets all of the following impurity limitations :

Monomethyldiphenylsulfone content (sum of all isomers)	Less than 0.2 area %
Monochlorodiphenylsulfone content (sum of all isomers)	Less than 0.08 area %
Sodium content	Less than 55 ppm
Potassium content	Less than 15 ppm
Iron content	Less than 5 ppm
Residual acidity content	Less than 2.0 $\mu\text{eq/g}$
Water content	Less than 0.1 wt. %
Diphenyl sulfide content	Less than 2.0 wt. %
APHA of 20 wt. % solution in acetone at 25°C	Less than 50
Total chlorine content	Less than 120 ppm

where ppm and wt. % are based on the total weight of the diphenyl sulfone and area % represents the ratio of the GC peak area of the impurity of concern over the total area of all GC peaks of the diphenyl sulfone."

"7. The method according to any one of the preceding Claims [sic], which is a method for the preparation of a semi-crystalline poly(aryl ether ketone) by aromatic nucleophilic substitution, wherein a nucleophile is reacted with a 4,4'-difluorobenzophenone, said 4,4'-difluorobenzophenone meeting the following impurity limitation :

$$[2,4'\text{-difluorobenzophenone}] + [4\text{-monofluorobenzophenone}] \leq 1250 \text{ ppm}$$

wherein the amounts of 2,4'-difluorobenzophenone and 4-monofluorobenzophenone in 4,4'-difluorobenzophenone are determined by liquid chromatography analysis."

Claim 1 of said **auxiliary request 4** differed from claim 1 of auxiliary request 2 in that the wording "in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone" was replaced by "in a solvent comprising a **recovered/recycled/reused** diphenyl sulfone, wherein said **recovered/recycled/reused** diphenyl sulfone" (emphasis by the Board).

Claim 1 of said **auxiliary request 6** differed from claim 1 of auxiliary request 2 in that the wording "in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone" was replaced by "in a solvent comprising a diphenyl sulfone, **wherein said diphenyl sulfone has been used in the preparation of a poly(aryletherketone and**" (emphasis by the Board).

Claim 1 of said **auxiliary request 8** differed from claim 1 of auxiliary request 2 in that the wording "in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone" was replaced by "in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone **has been used in the preparation of a poly(aryletherketone) and it has been isolated from a diphenyl sulfone mixture comprising at least one of the following : at least one low boiling organic solvent, water, one or more inorganic salts like chlorides, fluorides and carbonates, residual monomer(s), and residual oligo(aryl ether ketone)s and** wherein said diphenyl sulfone" (emphasis by the Board).

Claim 1 of said **auxiliary request 10** read as follows:

"1. A method for the preparation of a poly(aryletherketone) by aromatic nucleophilic substitution, said method comprising a step of:

(i) isolating a solid diphenyl sulfone from a diphenyl sulfone solution obtained in the preparation of a poly(aryletherketone), wherein the diphenyl sulfone solubility in said solution is lowered at a level of at or below 1.5 wt.% at the temperature at which the purification is done by either:

a) addition of a non solvent to the solution; or

b) addition of the solution to a non solvent; or

c) removal of a fraction of low boiling organic solvent present in the solution by a low temperature evaporation process, followed or preceded by addition of a non solvent to the solution; or

d) cooling the solution; or

e) a combination of two or more of a), b), c) and d); and

a step of:

(ii) reacting either a substantially equimolar mixture of at least one bisphenol and at least one dihalobenzoid compound or at least one halophenol compound in a solvent comprising the diphenyl sulfone obtained in step (i), wherein said diphenyl sulfone meets all of the following impurity limitations :

Monomethyldiphenylsulfone content (sum of all isomers)	Less than 0.2 area %
Monochlorodiphenylsulfone content (sum of all isomers)	Less than 0.08 area %
Sodium content	Less than 55 ppm
Potassium content	Less than 15 ppm
Iron content	Less than 5 ppm
Residual acidity content	Less than 2.0 µeq/g
Water content	Less than 0.1 wt. %
Diphenyl sulfide content	Less than 2.0 wt. %
APHA of 20 wt. % solution in acetone at 25°C	Less than 50
Total chlorine content	Less than 120 ppm

where ppm and wt.% are based on the total weight of the

diphenyl sulfone and area % represents the ratio of the GC peak area of the impurity of concern over the total area of all GC peaks of the diphenyl sulfone."

IV. The following documents were among others cited in the contested decision:

D1: W0 2009/021918
D2: W0 2005/030836
D3: EP 0 001 879
D5: DE 41 21 139
D7: US 6 069 223
D8: US 2007/0265415
D9: US 2005/0010015
D11: JP 2004-315764
D11a: English translation of D11

V. The following conclusions, which were reached by the opposition division in the contested decision, are relevant for the present decision:

- whereas auxiliary requests 2, 4, 6, 8, 13, 15, 17, 19, 24, 26, 28, 30 were admitted into the proceedings, auxiliary requests 10, 21 and 32 were not;
- the subject-matter of claim 1 of auxiliary request 2 was not novel over each of D1, D2, D3, D5, D7, D8 and D9;
- auxiliary request 4 neither satisfied the requirements of Article 84 EPC, nor those of Article 123(3) EPC;
- the subject-matter of claim 1 of auxiliary request 6 was not inventive starting from D3 as closest

prior art, in particular in view of D11;

- the other pending requests did not overcome the objection of lack of inventive step retained against auxiliary request 6 and/or the clarity objection retained against auxiliary request 4.

As a consequence, the patent was revoked.

VI. The patent proprietor (appellant) appealed the above decision. With the statement setting out the grounds of appeal, which was filed with letter of 13 October 2017, the appellant requested that the contested decision be set aside and that the patent be maintained in amended form according to any of the main request or auxiliary requests 1 to 6 filed with the statement of grounds of appeal.

Claim 1 of the **main request** was identical to claim 1 of auxiliary request 2 dealt with in the contested decision.

Claim 1 of **auxiliary request 1** differed from claim 1 of auxiliary request 4 dealt with in the contested decision in that the wording "in a solvent comprising a recovered/recycled/reused diphenyl sulfone, wherein said recovered/recycled/reused diphenyl sulfone" was replaced by "in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone is recovered/recycled/reused and it".

Claim 1 of **auxiliary requests 2 and 3** was identical to claim 1 of auxiliary requests 6 and 8 dealt with in the contested decision, respectively.

Claim 1 of **auxiliary request 4** differed from claim 1 of

auxiliary request 10 dealt with in the contested decision in that the wording "in a solvent comprising the diphenyl sulfone obtained in step (i), wherein said diphenyl sulfone" was replaced by "in a solvent comprising diphenyl sulfone, wherein said diphenyl sulfone is the diphenyl sulfone obtained in step (i) and it".

Claim 1 of **auxiliary request 5** read as follows:

"1. A method for the preparation of a poly(aryletherketone) by aromatic nucleophilic substitution, wherein said aromatic nucleophilic substitution comprises reacting either a substantially equimolar mixture of at least one bisphenol and at least one dihalobenzoid compound or at least one halophenol compound in a solvent comprising a diphenyl sulfone,

wherein said diphenyl sulfone has been isolated as a solid from a diphenyl sulfone solution obtained in the preparation of a poly(aryletherketone), wherein the diphenyl sulfone solubility in said solution is lowered at a level of at or below 1.5 wt. % at the temperature at which the purification is done by either :

- a) addition of a non solvent to the solution ; or
- b) addition of the solution to a non solvent; or
- c) removal of a fraction of low boiling organic solvent present in the solution by a low temperature evaporation process, followed or preceded by addition of a non solvent to the solution; or
- d) cooling the solution; or
- e) a combination of two or more of a), b), c) and d); and

wherein said diphenyl sulfone meets all of the following impurity limitations :

Monomethyldiphenylsulfone content (sum of all isomers)	Less than 0.2 area %
Monochlorodiphenylsulfone content (sum of all isomers)	Less than 0.08 area %
Sodium content	Less than 55 ppm
Potassium content	Less than 15 ppm
Iron content	Less than 5 ppm
Residual acidity content	Less than 2.0 µeq/g
Water content	Less than 0.1 wt. %
Diphenyl sulfide content	Less than 2.0 wt. %
APHA of 20 wt. % solution in acetone at 25°C	Less than 50
Total chlorine content	Less than 120 ppm

where ppm and wt.% are based on the total weight of the di phenyl sulfone and area % represents the ratio of the GC peak area of the impurity of concern over the total area of all GC peaks of the diphenyl sulfone."

Claim 1 of **auxiliary request 6** corresponded to claim 1 of auxiliary request 2 filed with the statement of grounds of appeal, whereby the following features were added at the end of the claims:

"and wherein said diphenyl sulfone comprises therein more than 0.03 area% and less than 2% area of one or more oligo(aryl ether ketone) impurities, where area % represents the ratio of the LC peak area of the impurity of concern over the total area of all LC peaks of the diphenyl sulfone."

VII. In its reply to the statement of grounds of appeal opponent 2 (respondent) requested that the appeal be dismissed and that each of auxiliary requests 1 to 6 filed with the statement of grounds of appeal be not admitted into the proceedings.

- VIII. Opponent 1 withdrew its opposition with letter of 7 January 2019.
- IX. The parties were summoned to oral proceedings with letter dated 17 December 2019. Issues to be discussed at the oral proceedings were then specified by the Board in a communication dated 24 January 2020.
- X. With letter dated 31 March 2020 the appellant submitted a **7th auxiliary request**, whose claim 1 read as follows (emphasis by the Board):

"1. A method for the preparation of a **semi-crystalline** poly(aryletherketone) by aromatic nucleophilic substitution, wherein said aromatic nucleophilic substitution comprises reacting a substantially equimolar mixture of at least one bisphenol and at least one dihalobenzoid compound in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone meets all of the following impurity limitations :

Monomethyldiphenylsulfone content (sum of all isomers)	Less than 0.2 area %
Monochlorodiphenylsulfone content (sum of all isomers)	Less than 0.08 area %
Sodium content	Less than 55 ppm
Potassium content	Less than 15 ppm
Iron content	Less than 5 ppm
Residual acidity content	Less than 2.0 µeq/g
Water content	Less than 0.1 wt. %
Diphenyl sulfide content	Less than 2.0 wt. %
APHA of 20 wt. % solution in acetone at 25°C	Less than 50
Total chlorine content	Less than 120 ppm

where ppm and wt.% are based on the total weight of the di phenyl sulfone and area% represents the ratio of the GC peak area of the impurity of concern over the total

area of all GC peaks of the di phenyl sulfone **and**

wherein the at least one dihalobenzoid compound is 4,4' difluorobenzophenone, said 4,4' difluorobenzophenone meeting the following impurity limitation :

$$[2,4'\text{-difluorobenzophenone}] + [4\text{-monofluorobenzophenone}] \leq 1250 \text{ ppm}$$

wherein the amounts of 2,4'-difluorobenzophenone and 4 monofluorobenzophenone in 4,4'-difluorobenzophenone are determined by liquid chromatography analysis."

- XI. With letter dated 19 August 2020 the respondent requested that the 7th auxiliary request be not admitted into the proceedings.
- XII. With letter dated 15 September 2020 the appellant requested that the oral proceedings scheduled to take place on 21 October 2020 (whereby the date was erroneously indicated in said letter as being 20 October 2020) be postponed.
- XIII. With a communication dated 12 October 2020 the request of postponement of the oral proceedings scheduled on 21 October 2020 was refused by the Board.
- XIV. With letter of 14 October 2020 the appellant informed the Board that he would be duly represented at the oral proceedings of 21 October 2020.
- XV. Oral proceedings were held on 21 October 2020 in the presence of the appellant and the respondent.
- XVI. The appellant's arguments, insofar as relevant to the decision, may be summarised as follows:

Main request - Novelty

- (a) Although the wording of claim 1 of the main request "a solvent comprising a diphenyl sulfone" was, due to the term "comprising" an open formulation, the skilled person would, on the basis of the whole patent specification, read the claims as being directed to a process wherein the solvent "essentially consisted of" or "consisted only of" diphenyl sulfone satisfying the purity requirements indicated in claim 1. The skilled person willing to understand the patent in suit would rule out the interpretation according to which the process would be performed in a solvent merely comprising such a diphenyl sulfone because it did not make sense and it was against common general knowledge in the present technical field to use different solvents.
- (b) For these reasons, it could not be concluded that any method according to the preamble of the method according to claim 1 ("A method... in a solvent") anticipated the subject-matter being claimed.

Auxiliary requests 1 to 3 - Admittance

- (c) Auxiliary requests 1 to 3 were either identical or at least very similar to requests dealt with in the contested decision. Therefore, there was no reason to hold these requests inadmissible.

Auxiliary requests 1 to 3 - Clarity

- (d) The amendments made in claim 1 of each of auxiliary requests 2 and 3 expressed the concept that the diphenyl sulfone solvent was being recycled within

the poly(aryletherketone) preparation process, which meant that the method claim 1 should mandatorily comprise the additional steps specified in the amendments made. Therefore, the respondent's objection pursuant to Article 84 EPC should be rejected.

- (e) No argument was provided by the appellant, either in writing or at the oral proceedings before the Board, to refute the objection of lack of clarity put forward by the respondent against auxiliary request 1 which is indicated in section XVII d) below.

**Auxiliary requests 4 to 6 and 7th auxiliary request -
Admittance**

- (f) Auxiliary request 4 mostly corresponded to auxiliary request 10 which was not admitted into the proceedings by the opposition division. However, it was argued at the oral proceedings before the Board that, in deciding not to admit into the proceedings said auxiliary request 10, the opposition division exercised its discretion in an unreasonable way. Indeed, both auxiliary requests 6 and 10 then pending were directed to similar additional steps of the method defined in claim 1 of the then pending auxiliary request 2 (main request in appeal). Therefore, it was not logical and even contradictory to admit the then pending auxiliary request 6 but not the then pending auxiliary request 10.

The additional steps a)-e) specified in claim 1 of auxiliary request 4 were all related to usual purification methods, which were all well known in

the art. Therefore, said features were not related to new surprising technical aspects and the core of the invention remained unchanged after addition of these steps: it was still directed to the use of diphenyl sulfone solvent satisfying specific purity limitations (as for the main request).

Therefore, auxiliary request 4 should be admitted into the proceedings.

(g) Auxiliary requests 5 and 6 were filed in reaction to the contested decision and at the first opportunity to overcome the non-admittance of the then valid auxiliary request 10 by the opposition division. Therefore, auxiliary requests 5 and 6 should be admitted into the proceedings.

(h) The 7th auxiliary request should be admitted because it was filed in response to the lack of novelty and lack of inventive step raised against the main request. In addition, claim 1 derived from the mere combination of granted claims with minor editorial amendments.

XVII. The respondent's arguments, insofar as relevant to the decision, may be summarised as follows:

Main request - Novelty

(a) The wording of claim 1 of the main request "a solvent comprising a diphenyl sulfone" was an open formulation, which allowed the presence of other components, including solvents such as diphenyl sulfone with any degree of purity. Said wording further did not exclude the presence in the solvent of impurities having their origin in other solvents

or components being used in the reaction. Therefore, the limitations in terms of purity indicated in claim 1 could be exceeded in the whole solvent.

- (b) Under these circumstances, claim 1 of the main request was anticipated by any method for the preparation of poly(aryletherketone) by aromatic nucleophilic substitution comprising reacting either a substantially equimolar mixture of at least one bisphenol and at least one dihalobenzoid compound or at least one halophenol compound in a solvent comprising a diphenyl sulfone even if no information was provided regarding the levels of impurity of the components indicated in the table of claim 1 of the main request, such as e.g. the methods disclosed in any of D1, D2 and D3.

Auxiliary requests 1 to 3 - Admittance

- (c) Auxiliary requests 1 to 3 were to be deemed inadmissible as late filed and an abuse of procedure. Although these auxiliary requests were based on requests dealt with in the contested decision, the opposition division should not have admitted these requests because they significantly shifted the subject-matter under appeal from the one of granted claim 1. In addition, the amendments made as compared to claim 1 of the main request were based on subject-matter that was cancelled from the application as filed and was effectively missing from the patent specification.

Auxiliary requests 1 to 3 - Clarity

(d) The wording of claim 1 of auxiliary request 1 was such that it included two possibilities, namely

i) the impurity limitations were met by a virgin diphenyl sulfone prior to the claimed use for preparation of poly(aryletherketone) and the diphenyl sulfone was then recovered, recycled or reused after the preparation of poly(aryletherketone) described in the claim or

ii) the diphenyl sulfone was a recovered, recycled or reused diphenyl sulfone and the impurity limitations were met by the diphenyl sulfone prior to the preparation of poly(aryletherketone).

Therefore, it was unclear whether the recovery, recycling or reuse now specified in claim 1 of auxiliary request 1 took place before or after the use of the diphenyl sulfone for preparation of poly(aryletherketone).

(e) At the oral proceedings before the Board, it was argued that it was unclear whether the amendments made in claim 1 of each of auxiliary requests 2 and 3, in particular due to the past form "has been used" and/or "has been isolated", imposed further limitations in terms of additional steps for the method being claims or were rather to be seen as product-by-process features.

**Auxiliary requests 4 to 6 and 7th auxiliary request -
Admittance**

(f) Auxiliary request 4 mostly corresponded to auxiliary request 10 which was not admitted into the proceedings by the opposition division in view of its late-filing and because the subject-matter so being claimed would have necessitated that a different set of relevant prior art documents be taken into account. During the oral proceedings before the Board, it was argued that the opposition division thereby applied the correct criteria for assessing the admittance of the then pending auxiliary request 10.

In the respondent's view, the decision not to admit said auxiliary request 10 was not in contradiction with the fact that the then valid auxiliary request 6 was admitted. Indeed, said auxiliary request 6 was primarily directed to a method in which a recycled diphenyl sulfone was used (unclear as that step was defined) whereas said auxiliary request 10 focused on how said diphenyl sulfone was isolated and purified. Auxiliary request 4 should therefore be held inadmissible.

(g) There was no reason justifying the filing of new auxiliary requests such as auxiliary requests 5 and 6 for the first time at the appeal stage. Therefore, auxiliary requests 5 and 6 should be held inadmissible.

(h) The 7th auxiliary request could and should have been submitted earlier. In particular, the amendments carried out in claim 1 of the 7th auxiliary request modified significantly the

subject-matter being claimed and would necessitate that new issues be dealt with for the first time at the oral proceedings before the Board. For these reasons, the 7th auxiliary request should not be admitted.

XVIII. The appellant requested that the decision of the opposition division be set aside and the patent be maintained in amended form according to any of the main request or auxiliary requests 1 to 6 filed with the statement of grounds of appeal or the 7th auxiliary request filed with letter of 31 March 2020.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. In its rejoinder to the statement of grounds of appeal, the respondent agreed with all the objections put forward in opponent 1's rejoinder to the statement of grounds of appeal dated 15 February 2018 (see recurrent statements such as "Diesbezüglich schließen wir uns den Ausführungen der Miteinsprechenden O1 an"). Therefore, although opponent 1 is, after the withdrawal of its opposition (see section VIII above) not part to the proceedings any more as far as the substantive issues are concerned, all the objections put forward in opponent 1's rejoinder to the statement of grounds of appeal (letter of 15 February 2018) were also made by the respondent in its rejoinder to the statement of grounds of appeal. That view, which was indicated in section 5.2 of the Board's communication, was not contested by the appellant.

Main request

2. Novelty

2.1 Reading of claim 1 of the main request

2.1.1 It was not in dispute between the parties that claim 1 of the main request is directed to a method for the preparation of a poly(aryletherketone) (hereinafter PAEK) by aromatic nucleophilic substitution according to well known chemical reactions (see preamble of the claim: "A method ... in a solvent"), whereby the only unusual feature of said claim 1 resides in the definition of the solvent, which is indicated therein as being a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone should satisfy specific limitations regarding the level of ten impurities (as indicated in the table of claim 1). However, the parties disagreed how the expression "in a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone meets all of the following impurity limitations" was effectively limiting for the method being claimed.

2.1.2 In that respect, the normal rule of claim construction is that the terms used in a claim should be given their broadest technically sensible meaning in the context of the claim in which they appear. In particular, if a term present in a claim has a clear, accepted, generic meaning, it may not be held to have a limited meaning in view of the description of the patent specification (Case Law of the Boards of Appeal of the EPO, 9th edition, 2019, II.A.6.3.1, third and fifth paragraphs).

2.1.3 In the present case, the literal wording of claim 1 unambiguously defines that the solvent comprises a diphenyl sulfone satisfying the ten requirements in terms of impurities defined therein. In that respect, according to accepted case law (Case Law, *supra*, II.A.6.2), the term "comprising" is an open formulation which cannot be equated with the more limiting reading proposed by the appellant ("essentially consisting of" or "consisting only of"). Even in the patent in suit it is indicated in paragraph 115 (page 22, lines 7-8) that "Terms such as "contain(s)" and the like as used herein are open terms meaning "including at least" unless otherwise specifically noted". Therefore, the argument of the appellant is not in line with the patent specification itself. For these reasons, the appellant's argument fails to convince.

2.1.4 The appellant argued that the skilled person would rule out the open interpretation of claim 1 contemplated by the respondent, according to which the process would be performed in a solvent merely comprising a diphenyl sulfone satisfying the ten impurity requirements specified in claim 1 because it did not make sense and would not be considered by the skilled person willing to understand the patent specification.

However, although it is correct that the term "comprises" does not allow for the presence of components which are incompatible with the method being claimed (such as e.g. high amounts of water, as discussed during the oral proceedings before the Board), it cannot be held to exclude solvents such as those obtained by mixing diphenyl sulfones of different purity as put forward by the respondent (e.g. a diphenyl sulfone satisfying the requirements of claim 1 and a diphenyl sulfone having higher impurity

levels). Such a solvent would be a solvent as defined in claim 1 of the main request. The Board further sees no reason why such a reading would not make sense, in particular from a technical point of view, and would, for that reason, not be considered by the skilled person. The fact that no mixture of diphenyl sulfones was shown to be used in the prior art documents cited in the present proceedings (or according to common general knowledge) and/or that the patent in suit only discloses a diphenyl sulfone according to claim 1 as sole solvent is not sufficient to give a more limiting meaning to the otherwise well established meaning for the term "comprising". Also, the fact that the gist of the patent in suit may be related to the use of a diphenyl sulfone satisfying specific purity requirements is not sufficient to read a well established term (here "comprising") present in the claims in a more limiting manner than its usual meaning. In particular, since claim 1 *per se* is unambiguous and would be understood without difficulty by the skilled person, there is no need to turn to the description of the patent specification to interpret it.

- 2.1.5 In addition, the wording of claim 1 does not exclude the presence in the solvent of impurities which may be comprised in reactants different from the solvent (e.g. the monomers) which are used to carry out the reaction defined in claim 1. However, once all components are mixed together with the solvent, one cannot distinguish any more between the impurities which were originally present in the solvent, even if it were to be a diphenyl sulfone satisfying the requirements in terms of purity according to the table of claim 1 of the main request, and those which were possibly contained in these reactants. Therefore, the wording of claim 1 of

the main request does not impose that the whole solvent, when carrying out the reaction defined in claim 1 of the main request, must satisfy the impurity limitations indicated in the table of said claim 1, even in case a diphenyl sulfone satisfying said requirements were to be used as the sole solvent. For the same reasons as outlined in section 2.1.4 above there is also no reason to hold that such a reading of claim 1 of the main request would not be considered by the skilled person because it does not make sense and/or in view of the content of the patent specification, contrary to the appellant's view.

- 2.1.6 During the oral proceedings before the Board, the appellant argued that the skilled person would understand that the impurity requirements indicated in claim 1 applied to the whole solvent or even to all reactants.

However, such a reading is not in line with the wording of claim 1 itself, which unambiguously specifies that the ten impurity limitations are for the diphenyl sulfone (see wording "wherein said diphenyl sulfone meets all of the following impurity limitations"). In that respect, as explained in section 2.1.4 above, there is no need to interpret the otherwise clear wording of claim 1, let alone to do so on the basis of the information provided in the description.

- 2.1.7 Under these circumstances, due to the wording "a solvent comprising a diphenyl sulfone, wherein said diphenyl sulfone meets all of the following impurity limitations" of claim 1 of the main request, a diphenyl sulfone used in the prior art as solvent in the same kind of reaction for making PAEK as defined in the preamble of claim 1 of the main request falls under the

definition of a solvent according to claim 1 of the main request, independently of whether or not any information regarding the level of impurities specified in the table of claim 1 is available for these diphenyl sulfones.

In that respect, the Board further shares the view of the respondent that the appellant is responsible for the wording of the operative claims. In the present case, it is in particular noted that although the issue of the reading of the expression "a solvent comprising a diphenyl sulfone..." was brought forward by the respondent in its rejoinder to the statement of grounds of appeal and explicitly identified in the Board's communication (section 9.8), the appellant has decided not to amend the claims of the main request (and of any auxiliary requests) in that respect. The appellant has in particular not contemplated using the well established, more limited wording "consisting of" or "consisting essentially of". Therefore, it appears to be the deliberate will of the appellant to leave the claims to be possibly interpreted in the broad sense indicated in section 2.1.3 above.

2.2 Documents D1, D2 and D3

2.2.1 The opposition division's finding according to which D1 was a prior art pursuant to Article 54(3) EPC was not contested (see first three lines of section 4.4.1 of the reasons of the contested decision).

2.2.2 It was also not in dispute between the parties that each of D1 (examples 1-3), D2 (examples 1-3) and D3 (examples 1-3) discloses a method for the preparation of a poly(aryletherketone) by aromatic nucleophilic substitution, wherein said aromatic nucleophilic

substitution comprises reacting a substantially equimolar mixture of at least one bisphenol and at least one dihalobenzoid compound in diphenyl sulfone as a solvent.

2.2.3 In view of the conclusion reached in section 2.1.7 above, the diphenyl sulfone used in each of these methods of D1, D2 and D3 can be considered as a solvent comprising a diphenyl sulfone as defined in claim 1 of the main request.

2.2.4 The appellant argued in writing that examples 1 to 3 of D1 could only be held to implicitly anticipate claim 1 of the main request if the purity requirements indicated in that claim were immediately apparent to the skilled person, which could only be done by placing the skilled person at a time before the effective date of the claims. Thus, if one considered the disclosure of D1 with the knowledge that the skilled person had before the effective date of the patent in suit, novelty was to be acknowledged since D1 neither disclosed the composition of the diphenyl sulfone solvent used, nor the effect that this had on the properties of the PAEK so prepared.

However, when assessing novelty of the method according to claim 1, the question to be answered is, as explained in the preceding section, not if D1 provides any teaching in respect of the effect that the purity of the diphenyl sulfone solvent has on the properties of the PAEK so prepared but rather if the method carried out in examples 1 to 3 of D1 directly and unambiguously satisfies all the features of said claim 1. In that respect, in view of the conclusion drawn in section 2.1.7 above, there is no reason for the Board to conclude that the diphenyl sulfone solvent

used in D1 is not to be considered as a solvent as defined in claim 1 of the main request. Therefore, the appellant's argument is rejected.

- 2.2.5 At the oral proceedings before the Board the appellant further argued that claim 1 of the main request was novel because none of the documents cited by the respondent effectively taught to use a diphenyl sulfone satisfying the purity requirements defined therein.

However, since claim 1 of the main request is a method claim in which a specific solvent as defined therein is used, the question to be answered is, as explained in the preceding section, whether or not the methods disclosed in D1, D2 or D3 directly and unambiguously disclose a solvent falling under the definition in said claim 1, which for the reasons given above is the case. Therefore, the appellant's argument is not persuasive.

- 2.3 In view of the above, the arguments put forward by the appellant provide no reason for the Board to overturn the decision of the opposition division according to which the subject-matter of claim 1 of the main request was not novel over each of D1, D2 and D3.

Auxiliary request 1

3. Admittance

- 3.1 Auxiliary request 1 was submitted together with the statement of grounds of appeal filed with letter of 13 October 2017 (see the first paragraph of section VI above). Therefore, its admittance is subject to the stipulations of Article 12(4) RPBA 2007 (see the transitional provisions according to

Article 25(2) RPBA 2020).

- 3.2 Under such circumstances, auxiliary request 1 is part of the proceedings (Article 12(1)(a) RPBA 2007) provided that the Board does not make use of its power pursuant to Article 12(4) RPBA 2007 to hold it inadmissible.

- 3.3 In that respect, auxiliary request 1 mostly corresponds to auxiliary request 4, filed with letter of 7 March 2017 (although a slightly different wording is used to define the diphenyl sulfone), which was admitted into the proceedings by the opposition division and decided upon in the contested decision (sections 3 and 5 of the reasons).
 - 3.3.1 However, the arguments put forward by the respondent in support of its objection regarding the non-admittance of auxiliary request 1 are not related to the differences in wording between operative auxiliary request 1 and auxiliary request 4 dealt with in the contested decision. In particular, it was neither shown, nor argued, that the scope of these auxiliary requests would be different due to their respective wordings. Under these circumstances, said difference in wording provides no reason for the Board to apply different criteria for assessing the admittance of auxiliary request 1 than the one which would have been used if an auxiliary request identical to auxiliary request 4 dealt with in the contested decision would have been filed together with the statement of grounds of appeal.

 - 3.3.2 In that respect, according to the case law (see Case Law, *supra*, V.A.3.5.1; see also decision G 7/93, OJ EPO 1994, 775: section 2.6 of the reasons), an opposition's

division discretionary decision may be overruled by the Boards if it is established that the opposition division did not exercise its discretion in accordance with the right principles or in an unreasonable way.

However, it was not argued by the respondent that the opposition division did not exercise correctly its discretionary power when deciding to admit auxiliary request 4 into the proceedings. Therefore, there is no reason for the Board to overturn that decision.

3.3.3 Under these circumstances, auxiliary request 1 is not held inadmissible pursuant to Article 12(4) RPBA 2007 and is in the proceedings.

4. Clarity

4.1 Claim 1 of auxiliary request 1 corresponds to claim 1 of the main request in which it was further indicated that the diphenyl sulfone "is recovered/recycled/reused".

4.2 It was not in dispute between the parties that these amendments were not present in the granted claims and that, therefore, they may be examined if they introduce non-compliance with Article 84 EPC (G 3/14, OJ EPO 2015, 102).

4.3 In section 13.2.2 of the Board's communication, the appellant was invited to explain why the respondent's objection identified in above section XVII d) according to which the wording of claim 1 included possibilities i) and ii) as identified therein could not be adhered to. However, no answer was provided by the appellant in that respect, neither in writing, nor at the oral proceedings before the Board (see section XVI d)). The

Board also considers that the wording of claim 1 of auxiliary request 1 allows both readings i) and ii) contemplated by the respondent. Therefore, the skilled person is not in a position to identify unambiguously which methods fall under the scope of claim 1 of auxiliary request 1. Also no support for possibility i) may be found in the patent specification.

- 4.4 For these reasons, claim 1 of auxiliary request 1 does not satisfy the requirements of Article 84 EPC.

Auxiliary requests 2 and 3

5. Admittance

- 5.1 The admittance of auxiliary requests 2 and 3, which were filed together with the statement of grounds of appeal, is subject to the stipulations of Article 12(2) and (4) RPBA 2007 (see section 3.1 above).

- 5.2 Auxiliary requests 2 and 3 are identical to auxiliary requests 6 and 8 admitted and dealt with in the contested decision, respectively.

However, the Board is not aware of any provision of the EPC under which a request which was admitted to the proceedings by the opposition division and dealt with in the contested decision could be excluded from the proceedings at the appeal stage. Therefore, there is no room for the Board to overturn the decision of the opposition division to admit the operative main request. Therefore auxiliary requests 2 and 3 cannot be held inadmissible pursuant to Article 12(4) RPBA 2007 as requested by the respondent and are in the proceedings.

6. Clarity

6.1 Claim 1 of auxiliary request 2 corresponds to claim 1 of the main request in which it was further indicated that the diphenyl sulfone "has been used in the preparation of a poly(aryletherketone)".

Claim 1 of auxiliary request 3 corresponds to claim 1 of auxiliary request 2 in which it was further indicated that the diphenyl sulfone "has been isolated from a ... and residual oligo(aryl ether ketone)s".

It was not in dispute between the parties that these amendments were not present in the granted claims and that, therefore, they may be examined if they introduce non-compliance with Article 84 EPC (G 3/14, OJ EPO 2015, 102).

6.1.1 In the Board's view, the wording "has been used" and/or "has been isolated" comprised in these amendments, in particular due to the past form used, renders unclear how the amendments made effectively limit the scope of the claims. In particular, it not clear if said amendments imply any further limitations of the method being claimed in terms of additional method steps, i.e. additional preparation steps which have to be mandatorily part of the method being claimed, or if they are rather to be seen as product-by-process features, which (possibly) characterise the diphenyl sulfone used as a solvent *per se* but which do not impose any additional process steps for the method being claimed. In that respect, the Board disagrees with the appellant's view according to which the wording of these amendments mandatorily imposed additional process steps to the method being claimed.

6.1.2 Under such circumstances, the skilled person is not in a position to identify unambiguously which methods effectively fall under the scope of claim 1 of auxiliary requests 2 and 3. For that reason, auxiliary requests 2 and 3 do not satisfy the requirements of Article 84 EPC.

Auxiliary requests 4 to 7

7. Admittance of auxiliary request 4

7.1 The admittance of auxiliary request 4, which was filed together with the statement of grounds of appeal, is subject to the stipulations of Article 12(4) RPBA 2007 (see section 3.1 above).

7.2 Although the wording of claim 1 of auxiliary request 4 is not completely identical with the one of auxiliary request 10 defended in front of the opposition division, the arguments provided by both parties in respect of the admittance of auxiliary request 4 were not related to these difference in wording but only in respect of the high similarity between the subject-matter being defined in both auxiliary requests. Therefore, the issue in dispute between the parties was solely related to the question whether or not auxiliary request 4 should be held inadmissible pursuant to Article 12(4) RPBA 2007 because auxiliary request 10 was already not admitted into the proceedings by the opposition division (see section 3.1.1 of the reasons of the decision).

7.2.1 In that respect, the sole argument put forward by the appellant which is in line with the criteria identified in section 3.3.2 (first paragraph) above was submitted during the oral proceedings before the Board, whereby

it was held that the opposition division exercised its discretion in an unreasonable way. In particular, it was in the appellant's view not logical for the opposition division to admit the then pending auxiliary request 6 but not the then pending auxiliary request 10, although both auxiliary requests were directed to similar amendments of the method defined in the then pending auxiliary request 2.

7.2.2 However, the Board concurs with the respondent that, contrary to the amendments carried out in the then pending auxiliary request 6, the amendments made in the then pending auxiliary request 10 were mostly directed to a method of isolation of the diphenyl sulfone (as defined in step i) of claim 1), which effectively imposed some additional limitations in terms of specific process steps for isolating the diphenyl sulfone. Therefore, the Board does not see that there is a contradiction in the contested decision to admit auxiliary request 6 but not auxiliary request 10. In addition, the Board concurs with the opinion of the opposition division that additional prior art documents could have been necessary to assess the allowability of the then pending auxiliary request 10 (as compared to the then pending auxiliary request 6). In that respect, the fact that said additional steps may be usual in the art, as argued by the appellant, does not play a role, since it does not change the conclusion that additional documents could have been required to attack the novelty or the inventive step (as compared to the then pending auxiliary request 2).

7.2.3 The above conclusion is reinforced by the fact that the then pending auxiliary request 10 was one of 32 auxiliary requests submitted altogether only about 2 months before the oral proceedings before the

opposition division (albeit within the deadline then set by the opposition division). In that respect, according to the case law, it is a matter for each party to submit all facts, evidence, arguments and requests relevant for the enforcement or defence of his rights as early and completely as possible, in particular in *inter partes* proceedings in order to act fairly towards the other party and, more generally, to ensure due and swift conduct of the proceedings. By submitting such a high amount of auxiliary requests shortly before the oral proceedings, the appellant let little time to the respondent (and the opposition division) to react to each of the then pending requests. In that respect, it is additionally noted that the opposition division indicated that said auxiliary request 10 was *prima facie* not supported by the application as filed (top of page 8 of the reasons). Therefore, its admission would have required that new issues be dealt with for the first time at the oral proceedings before the opposition division, which goes against the economy of the proceedings.

7.2.4 Under these circumstances, the Board is satisfied that the opposition division has not exceeded its discretionary power when deciding not to admit the then pending auxiliary request 10. Therefore, it is not justified to overturn the opposition division not to admit the then valid auxiliary request 10.

7.3 The Board further notes that, according to the case law, the fact that the opposition division did not admit a late-filed document and did not exceed the proper limits of its discretion by not admitting it does, in principle, not prevent the Board from admitting the document in particular if e.g. it considers it to be *prima facie* relevant (T 971/11,

sections 1.1 to 1.3 of the reasons; Case Law, *supra*, V.A.3.5.2.b and V.A.3.5.3.a). In particular, a submission which would have been admitted into appeal proceedings if it had been filed for the first time at the outset of those proceedings should not be held inadmissible pursuant to Article 12(4) RPBA, for the sole reason that it was already filed before the department of first instance and not admitted (T 971/11, section 1.3 of the reasons).

Although the above principles are related to late-filed documents, the Board considers that the same principles equally apply to the admission of a non-admitted late-filed request.

- 7.3.1 Therefore, the question arises if the circumstances of the present case may justify the filing of auxiliary request 4 for the first time with the statement of grounds of appeal. In that respect, the question has to be answered whether there are objective reasons why the appellant could have been expected to present such a request in the first instance proceedings (see Case Law, *supra*, V.A.4.4.2.a and V.A.4.11.1), i.e. if that request should have been filed in the first instance proceedings.

However, the appellant has not shown, not even argued that there were any reasons (apart from the non-admittance of auxiliary request 10) which would justify the filing of new requests together with the statement of grounds of appeal. The Board also sees no compelling reasons in that respect, in particular because no new objection or document was filed by the opponents at a late stage of the opposition proceedings and/or it was not shown that the appellant was taken by surprise at or shortly before the oral proceedings before the

opposition division. In that respect, the non-admission of an auxiliary request by the opposition division is not seen as a decision which may come as a surprise to the patent proprietor, in particular when a set of 32 auxiliary requests was submitted shortly before the oral proceedings in front of the opposition division. In particular, it is concurred with the opposition division that, although the subject-matter now being claimed is encompassed by the granted claims, as argued by the appellant (statement of grounds of appeal: bottom of page 24), the admission into the proceedings of auxiliary request 4 submitted with the statement of grounds of appeal may have required that additional documents to the ones relevant for the operative higher ranking requests be taken into account and/or may have changed the focus of the discussion, in particular in respect of the inventive step, from the question of using a diphenyl sulfone having a specific purity to the question of using a specific isolation process of diphenyl sulfone, which is not even mentioned as such in the granted patent (it was deleted from the description before grant).

7.3.2 In view of the above, there is no justification for filing auxiliary request 4 only at the appeal stage.

7.4 For these reasons, the Board finds it appropriate to make use of its power pursuant to Article 12(4) RPBA 2007 to hold auxiliary request 4 inadmissible.

8. Admittance of auxiliary requests 5 and 6

8.1 The admittance of auxiliary requests 5 and 6, which were filed together with the statement of grounds of appeal, is subject to the stipulations of

Article 12(2) and (4) RPBA 2007 (see section 3.1 above).

8.2 However, for the same reasons as outlined above in respect of auxiliary request 4 (section 7.3.1), the circumstances of the present case were not shown to justify the filing of new requests for the first time at the appeal stage.

8.3 Therefore, the Board finds it appropriate to make use of its power pursuant to Article 12(4) RPBA 2007 to hold auxiliary requests 5 and 6 inadmissible.

9. Admittance of the 7th auxiliary request

9.1 Considering that the summons to oral proceedings was notified to the parties with letter of 17 December 2019, the admittance of the 7th auxiliary request, which was filed together with the appellant's last written submission of 31 March 2020 is subject to the stipulations of Article 13(1) and (3) RPBA 2007 (see the transitional provisions according to Article 25(3) RPBA 2020)).

9.2 According to Article 13(1) RPBA, an amendment to a party's case (here the 7th auxiliary request) may be admitted and considered at the Board's discretion, whereby said discretion shall be exercised in view of *inter alia* the complexity of the new subject-matter, the state of the proceedings and the need for procedural economy.

9.3 In that respect, it is concurred with the respondent that the amendments made in claim 1 of the 7th auxiliary request are directed to a new aspect of the patent specification, namely the purity of the

dihalobenzoid compound (i.e. one of the monomer involved in the preamble of the method according to claim 1 of the main request), which was not discussed by the parties in the written phase (the focus was then on the purity of the solvent comprising a diphenyl sulfone). Therefore, should the 7th auxiliary request be admitted into the proceedings, new issues could have had to be addressed for the first time at the oral proceedings before the Board (e.g. are the added features implicitly satisfied by the cited prior art documents?; what is the contribution of the added features to inventive step?), which runs counter to the economy of the proceedings and could have led the parties and the Board to deal with a fresh case at a very late stage of the proceedings. In the present case, it was in particular neither shown, nor argued that a surprising development of the case may have justified the filing of the 7th auxiliary request at such a late stage of the proceedings. Under these circumstances, the fact that claim 1 of the 7th auxiliary request amounts to the combination of claims 1 and 7 of the main request is not sufficient to justify its admittance at such a late stage of the proceedings. For these reasons, the appellant could and should have submitted such a request earlier in the proceedings if it was desired to defend the patent in that form.

- 9.4 In view of the above, the Board finds it appropriate to make use of its discretion pursuant to Article 13(1) RPBA 2007 by not admitting the 7th auxiliary request into the proceedings.
10. Since the main request and auxiliary requests 1 to 3 are not allowable and auxiliary requests 4 to 6 are held inadmissible, whereas the 7th auxiliary request is

not admitted into the proceedings, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar:

The Chairman:



B. ter Heijden

D. Semino

Decision electronically authenticated