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**Datasheet for the decision
of 6 March 2012**

Case Number: T 1604/08 - 3.3.03

Application Number: 00124228.8

Publication Number: 1099720

IPC: C08G 63/16, C08G 63/82

Language of the proceedings: EN

Title of invention:
Polyester resin and its production process

Patent Proprietor:
Mitsubishi Chemical Corporation

Opponents:
INVISTA Technologies S.à.r.l.
Johnson Matthey PLC

Headword:
-

Relevant legal provisions:
EPC Art. 54, 83, 84, 123(2)

Keyword:
"Main request - clarity - (no)"
"First auxiliary request - novelty (yes)"
"Remittal for further prosecution"

Decisions cited:
G 0009/91, T 0226/85, T 0840/93, T 0386/04

Catchword:
-



Case Number: T 1604/08 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 6 March 2012

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office, dated 24 April 2008 and
posted 7 July 2008 revoking European patent
No. 1099720 pursuant to Article 101(3) (b) EPC.**

Composition of the Board:

Chairman: B. ter Laan
Members: M. C. Gordon
C. Vallet

Summary of Facts and Submissions

- I. The appeal by the patent proprietor lies against the decision of the opposition division announced on 24 April 2008 and posted 7 July 2008 revoking European patent 1 099 720 (application number 00 124 228.8).
- II. The patent as granted had 37 claims whereby independent claim 1 read as follows:

"A polyester resin produced by polymerizing a dicarboxylic acid component comprising an aromatic dicarboxylic acid or ester-forming derivatives thereof in an amount of not less than 50 mol% based on the dicarboxylic acid component, and a diol component comprising ethylene glycol in an amount of not less than 50 mol% based on the diol component, in the presence of a catalyst containing a titanium compound, which polyester resin contains titanium atoms (Ti) in an amount of 0.002 to 1.0 mole based on one ton of the polyester resin and has the following properties:

Intrinsic viscosity ($[\eta]$, dl/g) ≥ 0.70

Hunter's "b" value ≤ 4

Acetaldehyde content (AA_o, ppm) ≤ 5.0 ."

Claims 2-14 were dependent on claim 1, claims 6 and 7 reading:

"6. The polyester resin according to Claim 1, said polyester resin containing 0.02 to 4 moles of phosphorus atoms based on one ton of the polyester resin, and also containing compounds of Ia-Group atom(s) except for hydrogen, IIa-Group atom(s) and manganese

atoms in a total amount of 0.04 to 5 moles based on one ton of the polyester resin.

7. The polyester resin according to Claim 1, wherein the titanium atom content Ti (moles) and phosphorus atom content P (moles) based on one ton of the polyester resin, and the total content M (moles) of the Ia-Group atom(s) except for hydrogen, IIa-Group atom(s) and manganese atoms have the relations of the following formulae:

$$P/Ti \geq 1$$

$$1 \geq P/(Ti+M) \geq 0.1$$

$$1 \geq P/M > 0."$$

According to claim 8 the metal content of the polyester resin according to claim 1 had the relationship:

$$2.5 \leq M/Ti \leq 250.$$

Claim 11 read:

"The polyester resin according to Claim 1, said polyester resin being produced by esterifying the dicarboxylic acid component with the diol component, and then polymerizing the esterified product in the presence of a titanium compound, a phosphorus compound and a compound of at least one metal selected from Ia-Group metals except for hydrogen, IIa-Group metal compounds and manganese compounds."

Claim 16 read:

"A process for producing a polyester resin which comprises polymerizing a dicarboxylic acid component comprising an aromatic dicarboxylic acid or ester-

forming derivatives thereof in an amount of not less than 50 mol% based on the dicarboxylic acid component, and a diol component comprising ethylene glycol in an amount of not less than 50 mol% based on the diol component, in the presence of a catalyst containing (1) a titanium compound, (2) a phosphorus compound, and (3) at least one compound selected from compounds of Ia-Group metals except for hydrogen, IIa-Group metal compounds and manganese compounds, said compounds (1) to (3) being added to the reaction system in the order of (2), (3) and (1), wherein the polymerization is carried out in the presence of a titanium compound in an amount that will make the titanium atom content 0.002 to 0.2 mole based on one ton of the polyester resin yield."

Claims 17 to 22 were dependent on claim 16.

Claim 23 was formulated as an independent process claim containing all the features of claim 16 as well as an additional restriction regarding the time of addition of compounds (3) and (1).

Claims 24 to 30 were dependent on claim 23.

Claim 31 was again formulated as an independent process claim containing all the features of claim 16 as well as additional specifications regarding the titanium compound.

Claims 32 to 37 were dependent on claim 31.

III. Notices of opposition were filed by opponent I and opponent II both on 26 October 2005. Both opponents

invoked the grounds of opposition pursuant to Art. 100(a) EPC in combination with Art. 54 and 56 EPC (lack of novelty, lack of inventive step). Opponent II furthermore invoked the ground pursuant to Art. 100(b)/83 EPC (insufficiency of disclosure).

During the course of the opposition proceedings, with letter dated 19 March 2008, opponent I additionally invoked the ground of opposition pursuant to Art. 100(c)/123(2) EPC (extension beyond the content of the application as filed).

The oppositions were supported *inter alia* by the following documents:

E1: US-A-5 017 680

E2: Experimental report relating to example 5 of E1

E6: EP-A-1 013 692

E8: WO-A-97/47675 plus an appendix relating to the repetition of example 11 thereof, filed together with the notice of opposition (opponent II).

IV. The decision of the opposition division was based on the claims of the patent as granted as the main request and five auxiliary requests all filed with a letter dated 20 March 2008.

According to the decision:

- The late filed ground of opposition pursuant to Art. 100(c) EPC was not admitted to the proceedings.
- The main request satisfied the requirements of Art. 83 EPC. The subject matter of claim 1 of the main request was however not novel over example 5 of E1 and example 1 of E8;

- Auxiliary request I did not meet the requirements of Art. 54 EPC in view of E8, example 11;
- Auxiliary request II did not meet the requirements of Art. 84 and 123(2) EPC;
- Auxiliary request III did not meet the requirements of Art. 54 EPC in view of E8;
- Auxiliary requests IV and V did not meet the requirements of Art. 54 EPC in view of E1.

Accordingly the patent was revoked.

- V. The patent proprietor lodged an appeal against this decision on 13 August 2008, the prescribed fee being paid on the same day. Together with the statement of grounds of appeal, filed on 12 November 2008, the appellant filed five sets of claims forming a main and four auxiliary requests, as well as an experimental report.
- VI. The opponents - now the respondents - filed replies with letters of 20 March 2009 (opponent II) and 27 March 2009 (opponent I).
- VII. The appellant filed further submissions relating to the substance of the case with letters dated 7 August 2009, 27 July 2010 and 16 August 2011. With the latter submission four sets of claims designated I-IV, each with four alternatives A-D were submitted. Thus in total 16 sets of claims, IA-ID, IIA-IIID, IIIA-IIID and IVA-IVD were filed. Set IA was indicated as the new main request, the other sets as auxiliary requests. With a submission of 13 January 2012 replacement sets ID, IID, IIID and IVD were filed.

Set IA consisted of 14 claims whereby claim 1 read as follows (additions compared to claim 1 as granted are indicated by the Board in **bold**):

"1. A polyester resin produced by polymerizing a dicarboxylic acid component comprising an aromatic dicarboxylic acid or ester-forming derivatives thereof in an amount of not less than 50 mol% based on the dicarboxylic acid component, and a diol component comprising ethylene glycol in an amount of not less than 50 mol% based on the diol component, in the presence of a catalyst containing a titanium compound, **(1) a phosphorus compound and (2) at least one compound selected from compounds of Ia-Group metals except for hydrogen, IIa-Group metal compounds and manganese compounds, wherein**

the polyester resin contains titanium atoms (Ti) in an amount of 0.002 to 1.0 mole based on one ton of the polyester resin,

the phosphorus compound (1) is used in such amount that the phosphorus atom content in the produced polyester resin will become 0.02 to 4 moles based on one ton of the polyester resin,

the at least one compound (2) is used in such an amount that the total content of the metal atoms in the produced polyester will become 0.04 to 5 moles, based on one ton of the polyester resin,

a magnesium compound is used as the compound (2) in an amount thereof, as magnesium metal, of 0.1 to 3 moles, based on one ton of the polyester resin, and

the polyester resin has the following properties:

Intrinsic viscosity ($[\eta]$, dl/g) ≥ 0.70

Hunter's "b" value ≤ 4

Acetaldehyde content (AA₀, ppm) ≤ 5.0."

Claim 1 of set IB differed from claim 1 of set IA in that compound 2 was restricted to magnesium.

The wording of the claim up to the definition of the phosphorus compound (1) was identical to that of claim 1 of set IA. The remainder of the claim read as follows:

"[...of the polyester resin,]

a magnesium compound is used singly as the compound (2) and is used in an amount thereof, as magnesium metal, of 0.1 to 3 moles, based on one ton of the polyester resin, and

[the polyester resin has...]"

VIII. Respondent/opponent I filed further submissions relating to the substance of the case dated 12 March 2010, 19 August 2011, 15 September 2011 and 3 February 2012.

Respondent/opponent II did not make any further substantive submissions.

IX. On 5 April 2011 the Board issued a summons to attend oral proceedings. In a communication dated 15 April 2011 the Board set out its preliminary view on the case.

The Board noted *inter alia* that the terminology employed in the patent with respect to the catalyst was inconsistent, terms such as "catalyst", "catalyst system" being variously employed. This gave rise to questions regarding conformity of the amended claims

with the requirements of Art. 123(2) EPC.

X. Oral proceedings were held on 6 March 2012 attended by the appellant and respondent/opponent I. By letter of 8 November 2011 respondent/opponent II had stated that it would not be represented at the oral proceedings.

XI. The arguments of the appellant can be summarised as follows:

(a) Claim set IA was to be considered as the main request. The sequence in which the further requests were to be considered, i.e. whether set IB or IIA was to be the first auxiliary request would depend on the Board's conclusions with respect to the main request.

(b) *Request set IA (main request)*

Art. 84 EPC

The wording in respect of the definition of compound (2): "...the at least one compound 2 is used in such an amount that the total content of the metal atoms.....will become 0.04 to 5 moles...." related exclusively to the metal deriving from compound (2) and was not to be understood as including the titanium content. This was apparent from the patent specification which showed that the metal from compound (2) was distinct from the titanium component.

(c) *Request set IB (first auxiliary request)*

Art. 123(2) EPC

The subject matter of claim 1 of set IB was derived from the most general disclosure with respect to titanium content, the most general quantitative disclosure of the phosphorus compound and the preferred embodiment of compound 2, i.e. magnesium, in the broadest embodiment as regards magnesium content.

The terms "catalyst"/"catalyst system"/"polymerization catalyst" differed linguistically but not technically; they were synonymous and used interchangeably throughout the patent.

It was apparent from the patent specification that there was no restriction whether the process was carried out in a single step or in two steps. It also could not be concluded that this aspect would result in any structural differences in the polymer produced.

Art. 84 EPC

The term "ton" as used in the patent in suit denoted the metric ton, as shown by the use of the abbreviation "t", in line with the entirety of the patent in suit in which metric units were employed. The specification of magnesium in the claim had to be understood as meaning that the magnesium was present in the polymer. As it was stated in the claim that the polyester was produced in the presence of magnesium, the amount specified in the claim was mandatorily the amount in the resulting polyester resin.

Art. 83 EPC

In the patent in suit it was explained how to determine the parameters specified in the claim. The reason that comparative example 4 did not give rise to a polymer according to the claims was due to the order of addition employed, as explained in the patent specification.

Art. 54 EPC

Since in E1 and E8 magnesium compounds were not employed in the catalyst, these documents were not novelty destroying. Regarding E6 and in particular example 466 thereof, the amount of titanium was reported with respect to terephthalate units, i.e. the reported amount had to be related to the molecular weight of the individual terephthalic acid units. The resulting calculation gave an amount of 1.09 moles per ton which was outside the scope of the operative claim.

XII. The arguments of the respondents can be summarised as follows:

- (a) The admissibility of the amended claims, now including the words "a phosphorus compound and a magnesium compound", was disputed, reference being made to T 840/93 (OJ EPO 1996, 335) and G 9/91 (OJ EPO 1993, 408). This wording had not been present in any of the sets of claims considered during the opposition proceedings. Since these amendments did not clearly meet the requirements of Art. 123(2), 84 and 54 EPC, the Board should exercise its discretion not to admit the amended requests into the proceedings.

(b) *Request set IA (main request)*

Art. 84 EPC

It was not clear from claim 1 whether the amount of metal specified in the definition of compound 2 related to the entirety of metal in the polyester, including titanium or only to that derived from compound (2).

(c) *Request set IB (first auxiliary request)*

Art. 84 EPC

Although claim 1 specified various parameters the measurement methods were not defined. A variety of methods existed which yielded different results, rendering the scope of the claim unclear. The ambiguity concerning the definition of "ton" gave rise to a further unclarity. Contrary to the submission the appellant, it was not possible to derive from the application or patent which ton was meant.

Art. 123(2) EPC

According to the original application the catalyst was the titanium compound. The combination of titanium with the other components (phosphorus compound, magnesium compound) however constituted a "catalyst system". The original application was careful to distinguish between these terms - they were not used interchangeably. Therefore the absence of the word "system" from the claim gave rise to added subject matter.

The amounts of the catalyst (system) components were originally disclosed only in the context of a two stage process. This feature was however absent from claim 1. It was unknown whether the number of stages would exert any influence on the product properties.

Claim 1 as now on file had been significantly amended compared to the claim in the patent as granted. Many of its features were to be found only in the description, but not in the granted claims. There was no basis for the present combination of features. In particular claim 1 was now directed to the broadest disclosed range for titanium content together with a specific, preferred range for the phosphorus compound and a specific, preferred embodiment of compound (2), i.e. magnesium. This was a new combination that had been "carved out" of the disclosure of the application as filed.

Art. 83 EPC

The deficiency concerning the definition of the measurement methods also gave rise to an objection pursuant to Art. 83 EPC since it was not known with certainty how to rework the claimed subject matter. Also, the influence of the various reaction conditions was not adequately disclosed, meaning that the skilled person seeking to reproduce the claimed resin was faced with many different variables to try out. The order of addition was important as demonstrated by comparative example 4, but this feature was not in the claim, meaning that it was not possible to

operate the invention over the entire scope.

Art. 54 EPC

There was a difference in the language used in the patent with respect to titanium and phosphorus on the one hand and magnesium on the other. The consequence was that the claim specified that magnesium was used in the catalyst but did not require that it be present in the resin. Thus E1 and E8 were relevant for novelty. With regard to E6, the amount of titanium was based on "terephthalic acid units", which term related to the trimer-pentamer of ethylene terephthalate, i.e. on average a tetramer. Calculating the titanium content disclosed in E6 on this basis yielded a value of 0.335 mol titanium/ton which was within the scope of present claim 1. The interpretation of this disclosure put forward by the appellant was incorrect. The consequence was that E6 was novelty destroying.

XIII. The appellant (patentee) requested that the decision under appeal be set aside and that the patent be maintained on the basis of any one of the sets of claims designated as I-IV, each with four alternatives A-D, alternatives A-C as filed on 16 August 2011, alternative D as filed on 13 January 2012.

The respondents (opponents) requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Admissibility of the amended claims.*

In claim 11 of the patent as granted the presence of a phosphorus compound and a second metal compound was specified, in claim 6 as granted their amounts. The contents of those claims were retained in all the sets of requests considered by the opposition division. In addition, in the present claims magnesium is specified as the second component, which is disclosed as a preferred embodiment of the second component in paragraphs [0046] and [0047] of the granted patent, and is employed in the examples of the patent in suit. The restriction to magnesium represents an attempt to address the objection which led to refusal of the fifth auxiliary request, i.e. it can be seen as an attempt to challenge the decision of the opposition division on its merits (cf G 9/91, reasons 18). In decision T 386/04 (9 January 2007, not published in the OJ EPO) which referred *inter alia* to G 9/91, it was concluded that in the case of revocation of the patent the patent proprietor has considerable freedom in formulating requests on appeal, even to the extent of reverting to the patent in the form as granted in the case where the decision of the opposition division had been based on more restricted claims. The amendments made in the present case are significantly less far reaching than those sanctioned by T 386/04. Decision T 840/93, also relied upon by the respondent, related to an entirely different situation, namely that in which during the opposition proceedings divisional applications deriving

from the original application were pending. The findings of T 840/93 are not applicable to the present case.

Therefore, the amended claims as submitted during the appeal proceedings with letters of 16 August 2011 and 13 January 2012 are admitted to the proceedings.

3. *Main request - claim set IA*

3.1 Art. 84 EPC

Claim 1 contains three references to compound (2). The first is a general definition, in terms of its chemical constitution. In the second it is specified that it "is used in such amount that the total content of metal atoms in the produced polyester will become 0.04 to 5 moles based on one ton of the polyester resin". In the third it is specified that a magnesium compound is used as compound (2) in an amount thereof, as magnesium metal, of 0.1 to 3 moles (based on one ton of polyester resin).

The second reference is ambiguous since it is not apparent from the claim whether the specified amount of "total content of metal atoms in the produced polyester" relates only to those metal atoms derived from compound (2) or whether the entirety of metal atoms in the polyester, including the titanium from compound (1) is intended to be covered.

In claims 6 and 7 a number of inequalities are presented. However these relate to different facets of the claimed relationship between titanium, magnesium

and phosphorus and hence cannot serve to clarify this aspect.

The ambiguity regarding the nature of the second reference to compound (2) in the claim cannot be resolved by recourse to the patent specification since the relevant part - paragraph [0048] - employs precisely the same wording as the claim. Even if the description had provided an elucidation of this matter, the requirements of Art. 84 EPC would not thereby be satisfied since Art. 84 EPC stipulates that the claims themselves have to be clear.

Therefore, the amount specified for the "total content of metal atoms in the produced polyester" in claim 1 is unclear and accordingly the main request - set IA - does not meet the requirements of Art. 84 EPC.

3.2 The main request - claim set IA is therefore refused.

4. *First auxiliary request - claim set IB*

4.1 Art. 84 EPC

4.1.1 Due to the restriction of compound (2) to a magnesium compound and the specification of magnesium rather than metal in general in the final part of claim 1, the clarity objection raised with respect to the main request has been overcome.

4.1.2 That the claims do not define the measurement methods employed, is not open to an objection pursuant to Art. 84 EPC since these features were already present in the claims as granted and their meaning is not changed as a consequence of the amendments.

4.1.3 Regarding the question of the meaning of "ton" the Board is satisfied that the use of the abbreviation "t" together with the fact that the entirety of the patent employs metric units indicates that in fact the metric ton or tonne (1000 kg) is intended. Accordingly this aspect does not give rise to any ambiguity.

4.1.4 With respect to the question of whether the amounts of magnesium specified in the claims are intended to relate to the content in the final polymer produced, present claim 1 clearly refers to one ton of the polyester resin as its basis, indicating that the magnesium is present in the final resin. Therefore, despite the difference in wording from that employed for the basis of the amounts of titanium and phosphorus compound, it cannot be concluded that the meaning regarding the amount of magnesium compound would be any different. This interpretation is also in line with e.g. claim 6 as originally filed and as granted and with the original description paragraph [0049] and the patent specification, paragraph [0048].

4.1.5 In view of the above considerations, the requirements of Art. 84 EPC are satisfied.

4.2 Art. 123(2) EPC

The amended features of claim 1 are based on:

- originally filed claim 1 (polyester, titanium content, properties specified at end of claim);
- original page 10, lines 8-14 (mol% of diacid and diol components);
- passage bridging pages 16-17 (definition of compound (1));
- Page 18, line 5 (amount of phosphorus compound (1));

- Page 19, line 9-11 (compound (2) being magnesium and its amounts).

4.2.1 Regarding the objection of the respondents that the amounts of diacid and diol were disclosed on page 10 of the application as filed in the context of a two stage process (esterification or transesterification followed by polycondensation), the Board observes that claim 1 is directed to a product, not a process. Furthermore the respondents have advanced no evidence that the manner in which the polyester was produced - whether in one or more steps - would result in any structural differences at the level of the polyester. Therefore, the absence of the process features from the claim does not result in an extension of the subject matter compared to that of the application as filed.

4.2.2 Regarding the terms "catalyst", "catalyst system", "polymerisation catalyst", it is apparent that the wording employed in the application is inconsistent and highly variable. Thus in the passage bridging original pages 4 and 5 it is disclosed that titanium is used as a "polycondensation catalyst **constituent**" (emphasis here and below of the Board). According to the following paragraph however, titanium is used as a "**component**" of the polycondensation catalyst and that the polyester is produced by reaction in the presence of a catalyst "**containing**" a titanium compound. In the main paragraph of page 6 it is taught that a catalyst "**containing**" a titanium compound, a phosphorus compound and the metal compound is employed. On page 7 however the wording employed is inconsistent with the foregoing and with itself. Whilst at line 10 again a "catalyst **containing**" a titanium compound is referred to,

starting at line 14 it is stated that the titanium compound was **"used as a polymerization catalyst"** and a further metal catalyst was used as a co-catalyst. However at the top of page 11 reference is made to a catalyst **"comprising"** a titanium compound. The very next sentence diverges from this in referring to titanium compounds **"usable as catalyst"**. A further variation in wording is introduced in the final partial sentence of page 16 in which it is stated that as a preferred embodiment the **"catalyst system comprises a titanium compound and [phosphorus compound and metal compound (2)]"**. The sentence immediately preceding that refers to the titanium **polymerisation catalyst** and mentions cocatalysts. Page 19, lines 18-20 refer to the amounts of titanium compound and metal compounds **"in the polymerization catalyst"**.

The variations in wording employed in the original application with respect to the catalyst (system) thus render it impossible to establish with certainty whether a given compound is (solely) indicated as the catalyst or (solely) as a co-catalyst. Consequently, it cannot be concluded that there is any technical difference between the various permutations of terms such as "catalyst", "catalyst system" etc. so that these terms have to be considered, in this particular case, as being synonymous and interchangeable. It therefore follows that the fact that some of the features of claim 1 are disclosed in association with one or other variation thereof does not give rise to an objection pursuant to Art. 123(2) EPC.

4.2.3 The combination of features forming the present definition of the catalyst is derivable from the

convergent disclosure of the application as filed, relating to the most general quantitative disclosures of two of the aspects of the catalyst, i.e. the titanium compound and the phosphorus compound and a preferred sub-embodiment of the third component, namely magnesium as the compound (2).

4.2.4 As claim 1 is the result of a restriction to a preferred embodiment of the application as filed, the subject-matter of the dependent claims, all of which were originally dependent on claim 1, does not give rise to a new constellation of subject-matter which was not part of the original disclosure.

Claims 2-5 correspond to originally filed claims 2-5, claims 6-9 to originally filed claims 7-10.

Claim 10 corresponds to originally filed claim 11, however with the restriction to the magnesium compound.

Claim 11 corresponds to originally filed claim 12.

The upper limit of titanium specified in claim 12 is disclosed at page 12 line 6 as a preferred upper limit in conjunction with the lower limit of 0.002 (i.e. the lower limit disclosed in originally filed claim 1).

The subject matter of claim 13, i.e. the Hunter b value ≤ 3 is disclosed in the passage bridging pages 13 and 14 as a preferable upper limit.

The subject matter of claim 14 corresponds to that of original claim 13.

Accordingly the requirements of Art. 123(2) EPC are met.

4.3 Art. 83 EPC

4.3.1 Art. 83 EPC requires that it is the European patent application and by corollary the patent which has to disclose the invention in a clear and complete manner. Art. 83 EPC does not relate specifically to the claims. Consequently the fact that the claims might not specify a measurement method does not give rise to an objection of lack of insufficiency.

4.3.2 In the present case the required disclosure, i.e. explanation of measurement methods employed in the examples is provided by the description. Consequently it is possible to repeat the examples and thus ascertain whether one is operating according to the teaching of the patent. The respondents have advanced no evidence which would indicate that the information given in the patent specification is in any manner deficient in this respect.

Regarding the influence of the various aspects of the catalyst system on the outcome of the reaction, the Board is satisfied that the patent in suit provides adequate explanation and guidance in the description and examples and so provides the skilled person with sufficient information to proceed in a structured manner in reproducing the teaching of the patent in suit (cf T 226/85, OJ EPO 1988, 336, reasons 8). In particular the role of the relative amounts and the order of addition of the various catalyst components is clearly explained in paragraphs [0049] to [0055] and [0068] to [0074] and illustrated by the examples and comparative examples. Even a possible explanation of the effect of the amounts of the catalyst components is

given in paragraph [0056].

4.3.3 It is therefore concluded that the first auxiliary request - claim set IB - meets the requirements of Art. 83 EPC.

4.4 Art. 54 EPC

4.4.1 E1 relates to a catalyst system for preparing polyesters. E8 relates to a polyester article comprising a polyester polymer produced using a defined catalyst system. Neither of these documents however discloses the use of a magnesium compound as part of the catalyst or otherwise introduced in the polyester resin.

Accordingly the disclosures of these documents do not anticipate the subject matter of present claim 1 which mandatorily requires the presence of magnesium.

4.4.2 E6 discloses (claim 1) a catalyst system for polyester production comprising a titanium compound which is obtained by dehydro-drying a hydrolysate obtained by hydrolysing a titanium halide. According to claim 2 the catalyst may contain a compound (co-catalyst component) of at least one element other than titanium and according to claim 6 the co-catalyst is a magnesium compound. In claim 28 it is specified that the catalyst contains further at least one phosphorus compound selected from phosphoric acid and phosphoric esters. According to paragraph [0111] the magnesium compound can be selected *inter alia* from magnesium acetate and according to paragraph [0281] among the permissible phosphate esters is tri-n-butyl phosphate.

According to the section of Example 466 entitled "Production of polyethylene terephthalate", in which process a magnesium compound is used as a catalyst component, a "low condensate", namely a trimer to pentamer is produced (paragraph [0741]). In paragraph [0742] it is stated that a content of titanium of 0.021% by mol in terms of "titanium atom, based on the terephthalic acid unit in the low condensate" was added. A similar amount of magnesium acetate was added, reported as "magnesium atom, based on the terephthalic unit in the low condensate".

The parties have made contrary submissions as to the meaning of the term "terephthalic unit in the low condensate", the appellant petitioning that the "unit" related to single terephthalic acid units, whereas the respondent took the position that "unit" related to the totality of the "low condensate" (trimer-pentamer). E6 however fails to provide a definition or explanation of "based on the terephthalic acid unit in the low condensate". There is neither any explicit statement as to the meaning thereof, nor is there any information in the examples, e.g. absolute weights of polyester and of added titanium, magnesium and phosphorus compounds on the basis of which the meaning of the term "terephthalic acid unit" could be derived by calculation.

4.4.3 In that light, the only conclusion that can be drawn is that the disclosure of E6 in this respect is ambiguous and for this reason alone cannot provide an anticipation of the subject matter claimed.

4.4.4 As a further point, the Board notes that the reported amounts - whatever they mean - relate to a precursor,

not to the final resin. Consequently any argument relating to the content of metals in the final resin based on the amount present in this precursor relies the assumption that this proportion would be retained in the final resin of higher molecular weight. No evidence has been advanced to support the validity of such an assumption.

This further demonstrates the unsuitability of E6 to provide an anticipatory disclosure of the subject matter of operative claim 1.

- 4.4.5 It is therefore concluded that none of the documents E1, E6 or E8 provides a disclosure that anticipates the subject matter of claim 1 of the first auxiliary request (set IB).

Accordingly, the subject-matter of claim 1 of the first auxiliary request is novel.

- 4.4.6 All further claims being dependent on claim 1, this conclusion applies *mutatis mutandis* to their subject-matter.

- 4.4.7 The first auxiliary request therefore meets the requirements of Art. 54 EPC.

5. *The further procedure*

In view of the complete absence of any indication by the opposition division even of a preliminary view on the issue of inventive step the Board considers that the appropriate course of action is to remit the case to the first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance for further prosecution on the basis of the set of claims designated Set IB, filed with the letter dated 16 August 2011.

The Registrar

The Chairman

E. Goergmaier

B. ter Laan