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**Datasheet for the decision
of 7 December 2010**

Case Number: T 0941/08 - 3.3.03

Application Number: 97111839.3

Publication Number: 0803515

IPC: C08F 8/00

Language of the proceedings: EN

Title of invention:

Process for preparing polyisobutyl hydroxyaromatic compounds

Patentee:

Chevron Oronite Company LLC

Opponent:

Afton Chemical Corporation
The Lubrizol Corporation

Headword:

-

Relevant legal provisions:

EPC Art. 76(1), 100(c)

Relevant legal provisions (EPC 1973):

-

Keyword:

"Extension beyond the content of the earlier application as
filed - (yes)"

Decisions cited:

G 0001/05, T 0119/05

Catchword:

-



Case Number: T 0941/08 - 3.3.03

DECISION
of the Technical Board of Appeal 3.3.03
of 7 December 2010

Appellant: Chevron Oronite Company LLC
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 7 February 2008
and posted 26 February 2008 revoking European
patent No. 0803515 pursuant to Article 101(2)
EPC.

Composition of the Board:

Chairman: R. Young
Members: M. C. Gordon
C. Vallet

Summary of Facts and Submissions

Note concerning terminology: The terms "butylene" and "butene" and derivatives thereof, in line with the usage in the patent in suit and of the parties in their submissions are used interchangeably in this decision.

I. Mention of the grant of European Patent No. 0 803 515 in the name of Chevron Oronite Company LLC, in respect of European patent application No. 97111839.3, a divisional application of European patent application No. 93907276.5, filed on 9 March 1993 and claiming priority of an earlier US application serial number 07/854 172 dated 20 March 1992, was announced on 1 September 2004 (Bulletin 2004/36) on the basis of a single claim which read as follows:

1. A process for the preparation of a polyisobutyl hydroxyaromatic compound wherein the polyisobutyl substituent has sufficient molecular weight and carbon chain length to render the polyisobutyl hydroxyaromatic compound soluble in hydrocarbons boiling in the gasoline or diesel range, which comprises alkylating phenol in the presence of a boron trifluoride alkylation catalyst with a suitable polyisobutene containing at least 70% of a methylvinylidene isomer.

II. Notices of opposition against the patent were filed, both on 31 May 2005, by:

- Afton Chemical Corporation (OI) and
- The Lubrizol Corporation (OII).

Both opponents invoked the grounds of opposition pursuant to Art. 100(a) EPC (lack of novelty, lack of inventive step) and Art. 100(c) EPC (extension beyond the content of the earlier application as filed).

Inter alia the following documents were cited in support of the oppositions:

D1: WO-A-93/19140 (corresponding to EP93907276.5 - the parent application);

D7: US-A-4 238 628.

III. In a decision announced orally on 7 February 2008 and issued in writing on 26 February 2008 the opposition division revoked the patent.

(a) The decision was based on the patent in the form as granted.

(b) With regard to Art. 100(c) EPC the decision held:

- In line with G 1/05 (OJ EPO 2008, 271) the ground of opposition pursuant to Art. 100(c) EPC prejudiced maintenance of a granted patent if it contained subject-matter which extended beyond the content of the earlier application as filed;
- Although the earlier application - D1 - did contain an example for preparing polyisobutyl phenol, this example was much narrower in scope than granted claim 1 of the patent in suit;
- In agreement with the position of the patent proprietor, individual elements of the granted claim could be found in D1 (between page 11 line 10 and page 14 line 21) *inter alia*:
 - The polyalkyl substituent having sufficient molecular weight and carbon chain length to render the polyalkyl hydroxyaromatic compound soluble in hydrocarbons boiling in the gasoline or diesel range (page 11 lines 13-16), whereby it had to be noted that this passage did not refer to a polyisobutyl substituent;
 - Alkylating phenol in the presence of a boron trifluoride alkylation catalyst at page 13 lines 13-16 and 19-22. However

- these passages referred to prior art methods, without stating which method was employed in the process of D1;
- Polyisobutene containing at least 70% of a methylvinylidene isomer (page 12 lines 22-26);
 - Although some of these were disclosed as "preferred" this did not automatically allow them to be included in operative claim 1 since independent claims had to contain essential features, not preferred features;
 - D1 further disclosed four "suitable" methods for producing the polyalkyl hydroxyaromatic component starting at page 13 line 6. This disclosure could give rise to the question of selection of one of these methods in order to arrive at the subject matter of operative claim 1;
 - The opposition division held that the method disclosed at page 13 lines 18-26 of D1 (designated "Method 3" in the decision) formed the basis for the claimed process. As a consequence the issue of selection from four different processes did not arise;
 - However this method involved propylene or higher olefin polymer with terminal ethylene groups meaning that the polyisobutene would have to be selected from within this range of polymers. Further this method was silent about the feature "at least 70% of methylvinylidene isomer" and there was no link between the description of method 3 (at page 13 lines 18-26) and the mention of this particular isomer (at page 12 lines 22-26);

- Further, method 3 specified an alkylation temperature range and a particular molar ratio of complex (boron trifluoride and phenol) to olefin polymer having terminal ethylene units, both of which features were absent from the claim of the patent in suit;
- Thus the subject matter of claim 1 could only be arrived at by specifically selecting, incorporating and omitting features from the information at page 13 lines 18-26 without D1 providing any hint to do so.

(c) Consequently, the operative claim contained subject matter extending beyond the content of the earlier application as filed with the result that the grounds of opposition pursuant to Art. 100(c) EPC prejudiced maintenance of the patent.

IV. A notice of appeal against the decision was filed on 28 April 2008 by the patent proprietor, the prescribed fee being paid on the same day.

V. The statement of grounds of appeal was filed on 7 July 2008.

(a) With regard to Art. 100(c) EPC the patent proprietor - now the appellant - argued essentially as follows:

- The decisive question was whether the skilled person would contemplate the combination of the claim in the context of providing a process for preparing a polyalkyl hydroxyaromatic compound to be used as a fuel additive;
- Reference was made to T 119/05 of 8 May 2007 (not published in the OJ EPO), in particular

pages 11 and 12 thereof according to which the question of conformity with Art. 123(2) EPC had been considered by an analysis of the step by step teaching of the application as filed in which the skilled person was guided in the direction of the claimed invention;

- In T 119/05 the Board had recognised that the application as filed guided the skilled person to a combination of features suitable for producing the claimed subject matter rather than presenting the invention as a random selection of features from lists of equal possibilities. The sole example however provided no additional guidance from which the skilled person could derive the claimed subject matter;
- In contrast, the examples of the patent in suit clearly foreshadowed and called out the combination of features of the claim and served to supplement and reinforce the technically relevant information presented in the general part of the description;
- Phenol was marked out in the description as the most preferred hydroxyaromatic and was employed in the examples;
- Similarly polyisobutylene having at least 70% of a methylvinylidene isomer was marked out in the description as the most preferred polyolefin and was employed in the examples;
- The earlier application thus already focussed on polyisobutyl phenol as a fuel additive in the framework of a process where phenol was alkylated with a polyisobutylene

containing at least 70% of a methylvinylidene isomer. Polyisobutyl phenol was also specifically described in the description, a claim and the examples;

- Regarding the process, the earlier application referred to four patent documents which described processes for preparing polyalkyl hydroxyaromatic compounds by alkylation of phenols with olefin polymers. Three different catalysts were disclosed *inter alia* boron trifluoride;
- The skilled person would not view these three catalysts equally since the examples of the earlier application employed boron trifluoride. Thus the specification as a whole directed the skilled person to boron trifluoride;
- Analogously to the situation in T 119/05, earlier application D1 would have guided the skilled person to the combination of features which was suitable for producing the claimed subject matter. Consequently this subject matter was directly and unambiguously derivable from the earlier application.

(b) The decision under appeal had failed to consider the situation in the logical way presented by the appellant/patent proprietor. Instead it focussed only on part of the description, i.e. the passage at page 13 lines 18-26 referring to US-A-4 238 628 (D7), and decided that this passage did not provide a basis for the claim.

However it was not and had never been the position of the appellant/patent proprietor that this

passage provided the complete basis for the claim of the opposed patent.

- (c) In the case that the appeal was allowed it was requested that the case be remitted to the first instance for consideration of the grounds of opposition pursuant to Art. 100(a) EPC.
- (d) Although the appellant/patent proprietor provided submissions with respect to these matters, these submissions are not relevant to the present decision.

VI. The opponents - now the respondents - filed rejoinders with letters of 14 November 2008 (OI) and 26 November 2008 (OII).

- (a) Both opponents maintained objections that the patent in suit contained subject matter that extended beyond the content of the parent application as filed, submitting that the subject matter claimed could only be arrived at as the result of a number of unmotivated selections from within the disclosure of D1, i.e. there was no statement in D1 permitting the individual elements of the claim to be combined together.

In particular:

- The examples of D1 were significantly narrower than the operative claim and contained features not specified in the claim. Accordingly the examples could not serve as support for the claimed subject matter;
- The definition of phenol as the hydroxyaromatic compound required selection from an open group or list of hydroxy-

aromatic compounds, even though phenol was disclosed as being preferred;

- With respect to the polyisobutene, D1 (page 12 lines 9 and 13) showed that this resulted from a series of selections from an open group of polyalkyl precursors. In particular the cited passage stated that the polyalkyl substituent could be generally derived from polyolefins. Thus a first selection of a specific polyolefin was required;
- Selecting polyolefins comprising butylene was a further selection from the list given at page 12 lines 12-20 of D1;
- Selecting isobutylene from the possible butylene isomers was another unmotivated selection;
- The selection of the lower limit of the amount of reactive methylvinylidene isomer (from the disclosure of D1 (page 12 lines 22-26) was another selection to be made once isobutylene had been selected;
- Regarding the process of alkylation, although D1 disclosed that this could be carried out in the presence of a BF_3 based catalyst this was only disclosed as being one suitable catalyst;
- The process disclosed at page 13 lines 18-26 of D1, employing BF_3 (designated "method 3" in the decision under appeal - see section III.(b), above) could not provide support for the claim since this passage specified further features (temperature, molar ratio) which were not recited in the claim. Further

this passage related to a polyolefin having terminal ethylene units and consequently to one that was different from that specified in the claim;

- Similarly the method disclosed at page 13 lines 11 to 16 of D1 (designated "method 2" in the decision under appeal) could not provide a basis for the process features claimed since although this employed BF_3 this was silent about the feature "at least 70% of methylvinylidene isomer" and there was no link between the description of method 2 and the specification of polyisobutene and of its particular isomer.

(b) With regard to the appellant/patent proprietor's submissions with respect to T 119/05 the opponents submitted essentially as follows:

- The interpretation set out in T 119/05 went far beyond what was clearly and unambiguously derivable from the application as originally filed. Rather it seemed to introduce the concept of what would be contemplated, which belonged in the realm of inventive step (Art. 56 EPC);
- The situation underlying T 119/05 did not apply in the present case since in the case underlying T 119/05 the selections made had been guided by a specific aim (making a bullet proof vest) or by the selection of one alternative out of two;
- Such guidance was simply absent from the earlier application D1;

- In particular D1 was directed to fuel additive compositions whereas the claim of the patent in suit was directed to a process for the preparation of one of the components of the fuel additive composition;
- The skilled person did not even necessarily get the idea from D1 that the preparation of the polyalkyl hydroxyaromatic compound was critical.

(c) Both respondents/opponents also made submissions with respect to the grounds of opposition pursuant to Art. 100(a) EPC, and resisted the request of the appellant/patent proprietor for remittal in the case of a finding that the requirements of Art. 100(c) EPC were satisfied.

VII. On 21 September 2010 the Board issued a summons to attend oral proceedings on 7 December 2010.

VIII. In a letter dated 5 November 2010 the appellant/patent proprietor reiterated the request for remittal in the case that the Board find in its favour in respect of Art. 100(c) EPC.

IX. Oral proceedings were held before the Board on 7 December 2010.

(a) The appellant/patent proprietor referred to its submissions in the statement of ground of appeal with respect to Art. 100(c) EPC, and submitted further:

- The subject matter of the operative claim emerged directly from earlier application D1 without the need to make multiple selections;

- By analogy with T 119/05, D1 guided the skilled person to the claimed subject matter. If anything the situation in the case in suit was clearer than in that underlying T 119/05 as there was an example which brought all the requisite features together;
- The requirement that the polyalkyl substituent had to have sufficient molecular weight and carbon chain length so that it was soluble in hydrocarbons was disclosed at page 11 lines 10-16;
- The hydroxyaromatic compound was disclosed on page 12 line 2 which disclosure guided the skilled person to phenol;
- Regarding the polyalkyl substituent, page 12 lines 9-19 disclosed that polyisobutene was especially preferred. The specific embodiment of polyisobutene, i.e. having at least 70% of methylvinylidene groups was disclosed at page 12 lines 22-26 as the most preferred embodiment;
- Thus the description provided a clear direction to the preferred polyalkyl phenol compound as specified in the claim;
- On page 13 the group of possible processes was disclosed;
- These were applicable to all embodiments of the invention;
- Thus the process for preparing the polyisobutyl hydroxyaromatic compound was the only selection which had to be made from the disclosure of D1;

- Page 13 lines 11-16 described a process employing BF_3 as the catalyst. This catalyst was employed in the example of D1 together with the starting materials specified in the operative claim. Hence this skilled person was guided to the claimed combination of features by the disclosure of the description and by the example of the parent application.
- (b) The respondents referred to their written submissions, and argued further:
- T 119/05 appeared to be contrary to the established practice of the EPO regarding selection from various lists. It was observed that this decision has never been cited in any other decisions of the Boards;
 - The only parts of D1 which were relevant to the operative claim was pages 11-14;
 - D1 contained no indication that these features should be combined;
 - Thus the claimed combination of features did not arise in a direct and unambiguous manner from D1;
 - In particular the focus of D1 was on the additive composition, not on the process for preparation of a component thereof;
 - All claims of D1 related to the additive combination, not to the process;
 - D1 disclosed four processes which were all equally preferred. Two of these involved BF_3 ;
 - Thus even to arrive at BF_3 as the catalyst required a selection;

- Further the disclosure of the processes in D1 did not link any of these to isobutylene as the alkylating agent;
- The example of D1 could not provide a basis for the operative claim since this specified further features i.e. the concentrations and reaction conditions.

X. The appellant/patent proprietor requested that the decision under appeal be set aside and that the case be remitted to the first instance to deal with the grounds of opposition pursuant to Art. 100(a) EPC.

The respondents/opponents requested that the appeal be dismissed. In the alternative, they requested that the Board does not remit the case but deals with novelty and inventive step.

Reasons for the Decision

1. The appeal is admissible.
2. *Art 100(c) EPC*

According to Art. 100(c) EPC opposition may be filed, *inter alia*, on the grounds that, for a patent granted on the basis of a divisional application, the subject matter of the European patent extends beyond the content of the earlier application as filed. Accordingly it is necessary to examine whether the subject matter of the sole claim of the patent in suit extends beyond the content of the earlier application - "parent application" EP 93907276.5, i.e. D1.

2.1 The first part of the claim reads as follows:

"A process for the preparation of a polyisobutyl hydroxyaromatic compound wherein the polyisobutyl substituent has sufficient molecular weight and carbon chain length to render the polyisobutyl compound soluble in hydrocarbons boiling in the gasoline or diesel range..."

The constitution of the product and the indicated properties are disclosed generally, i.e. with reference to a "polyalkyl hydroxyaromatic compound" rather than to a specific embodiment thereof such as "polyisobutyl hydroxyaromatic compound" at page 2, lines 25-29 and in claim 1 feature (b) of D1.

Preparation processes are discussed starting at page 13 line 4 and one process is exemplified in example 1. Accordingly the earlier application provides a basis, in general, for the features of the first part of the claim.

2.2 The operative claim is however more specific than this part of the description with respect to the starting materials in that it defines the starting materials for the process as:

- phenol and
- polyisobutene containing at least 70% of a methylvinylidene isomer.

It therefore has to be examined whether these two starting materials, and the combination thereof are disclosed in the earlier application D1.

2.2.1 The first is phenol, i.e. as stated in the claim:

"...which comprises alkylating phenol..."

The permissible hydroxyaromatic compounds are disclosed at page 11 line 28 to page 12 line 2, whereby phenol is disclosed as being preferred. This is also specified in claim 17 of D1, and is employed in the example.

Accordingly it is concluded that there is a basis in D1, independently of other features that phenol be employed as the hydroxyaromatic compound.

2.2.2 The second starting material specified in the claim is:

"..a suitable polyisobutene containing at least 70% of a methylvinylidene isomer."

This aspect is discussed starting at page 12 line 9 of D1.

According to page 12 lines 16-20 polyisobutene is an "especially" preferred polyolefin, whereby the polyisobutene "more preferably" comprises at least 70 wt% of methylvinylidene isomer.

Accordingly the polyisobutene specified in the claim is disclosed as being the "more preferred" embodiment of the "especially preferred" polyolefin.

2.2.3 According to page 13 line 30 of D1 polyisobutylene phenol is one of the preferred polyalkyl aromatic compounds and the sole example of D1 which relates to the preparation of a hydroxyaromatic compound discloses the reaction of phenol with a polyisobutene having 76% methylvinylidene, i.e. a specific example of that class of polyisobutenes disclosed as being "more" preferable.

- In view of this constellation of preferences as well as the presence of an example of their combination, the Board is prepared to assume, in favour of the appellant/patent proprietor, that

the combination of reactants specified in the claim of the patent in suit, i.e. phenol and polyisobutene having at least 70% of methylvinylidene isomer is disclosed by the earlier application D1.

2.3 The question then arises, however, as to whether this combination of reactant features is disclosed in relation to the process features specified in the claim, namely that phenol is alkylated:

"...in the presence of a boron trifluoride alkylation catalyst...".

2.3.1 D1 discusses the methods for preparing polyalkyl hydroxyaromatic compounds in the passage from page 13 line 4 to page 14 line 13.

Four methods are disclosed whereby the first and fourth employ aluminium chloride-sulphuric acid and sulphonic acid catalysts respectively.

2.3.2 The second and third methods disclosed relate respectively to:

- A process involving alkylation of phenol with polypropylene, butylene and other polyalkylene compounds "in the presence of an alkylation catalyst such as boron trifluoride" (designated "Method 2" in the decision under appeal);
- A process involving alkylating at a defined temperature (0 to 60°C) a complex comprising boron trifluoride and phenol with a propylene or higher olefin polymer having terminal ethylene units in a molar ratio of complex to olefin polymer of 1:1 to 3:1 (with reference to D7 - see section II, above - designated "Method 3" in

the decision under appeal - see section III.(b), above).

2.3.3 The first of these methods ("Method 2") is presented in a paragraph which starts with the text "Numerous methods are known...".

In the light of this wording it is not possible to interpret this passage as an unambiguous disclosure that the methods referred to therein are those to be used in preparing the compounds of D1. On the contrary, this wording appears to indicate that what follows is in the nature of background information relating in a general fashion to known prior art methods, but not necessarily to methods to be used to prepare the compounds of the parent.

2.3.4 This objection does not arise in respect of the second such method (designated "Method 3" in the decision under appeal) which, according to page 13 line 18 of D1 is "preferred".

2.3.5 There remains, however, a problem that neither of these passages discloses the starting materials in the level of generality set out in the operative claim.

2.3.6 Thus the passage at page 13 lines 11-16 relates to alkylation of phenol with "polypropylene, polybutylene and other polyalkylene compounds". There is no disclosure - even in general terms - in this passage of a particular isomer of polybutene, or of any content of methylvinylidene isomer.

2.3.7 The second passage (page 13 lines 18-26) similarly fails to specify the starting materials in the relevant

level of generality. Indeed with respect to the polyolefin compound this passage is even more distant than the passage at page 13 lines 11-16 since it refers only to "propylene or higher olefin polymer having terminal ethylene units". Thus this passage fails to mention polybutene, let alone specifically "polyisobutene having at least 70% of a methylvinylidene isomer".

Further, this passage specifies other features which are absent from the claim:

- A particular form of boron trifluoride (a complex);
- Specific reaction conditions (temperature, molar ratio of complex to olefin polymer).

2.3.8 Accordingly neither of the passages at page 13 lines 11-16 or 18-26 discloses the process features of the operative claim together with the starting materials as specified in the operative claim.

2.4 In conclusion, and even if phenol and polyisobutylene containing at least 70% of a methylvinylidene isomer are considered to be disclosed as relevant starting materials *per se* there is no disclosure in D1 of their combination with the preparative process and catalyst as specified in the claim. On the contrary, there is even a discontinuity in the disclosure of D1 since the two aspects, i.e. catalyst and reactants are treated independently of each other and there is no general statement linking the required combination of reactants with a particular process, including the catalyst as specified in the claims.

2.5 The appellant/patent proprietor invoked the example of D1 (see sections V.(a) and IX.(a), above) . However this employs specific reactants in specific quantities under specific conditions, none of which are recited in the claim.

Hence the example cannot itself provide a basis for the subject matter as claimed.

2.6 Accordingly, and contrary to the position taken by the appellant/patent proprietor in the written and oral submissions (see respectively sections V.(a) and IX.(a), above) D1 does not "call out" the specific combination of starting materials and process features specified in the claim, i.e. there is no convergence in the disclosure of D1 with respect to the starting materials to be employed and the process features as specified in the claim.

2.7 The appellant furthermore relied in its arguments to a significant extent on decision T 119/05.

2.7.1 The case underlying T 119/05 related to ballistic resistant articles, in one embodiment a bullet proof vest. The Board in that case held that the combination of features specified in the claim could not be seen as a random permutation of the various possibilities disclosed generally in the application as filed but was constrained by the intended end use.

Accordingly in the case underlying T 119/05 the application as filed was considered by the Board to provide a convergent disclosure resulting in the claimed subject matter.

2.7.2 As explained above, however, D1 does not provide such a convergent disclosure with respect to the process features in combination with specific reactants.

2.7.3 Accordingly the situation underlying T 119/05 is not applicable to the present case.

3. Since the subject matter of the claim extends beyond the content of the earlier application EP 93907276.5 as filed. pursuant to Art. 100(c) EPC the patent has to be revoked.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

R. Young