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**Datasheet for the decision
of 12 February 2010**

Case Number: T 0210/08 - 3.3.03

Application Number: 98900555.8

Publication Number: 0952993

IPC: C08F 10/00

Language of the proceedings: EN

Title of invention:
Polymerisation Process

Patentee:
INEOS EUROPE LIMITED

Opponent:
Basell Polyolefine GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 123(2)
RPBA Art. 13(1), 13(3)

Relevant legal provisions (EPC 1973):

-

Keyword:

"Main request - amendments - added subject-matter (yes)"
"First auxiliary request - filed late - not admitted"

Decisions cited:

G 0001/93, T 0384/91, T 0860/00

Catchword:

-



Case Number: T 0210/08 - 3.3.03

DECISION
of the Technical Board of Appeal 3.3.03
of 12 February 2010

Appellant:
(Patent Proprietor) INEOS EUROPE LIMITED
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Respondent:
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 21 November 2007
and posted 29 November 2007 revoking European
patent No. 0952993 pursuant to Article 102(1)
EPC 1973.

Composition of the Board:

Chairman: R. Young
Members: M. C. Gordon
C.-P. Brandt

Summary of Facts and Submissions

- I. Mention of the grant of European Patent No. 0 952 993 with the title "Polymerisation Process" in the name of BP Chemicals Limited, later Ineos Europe Limited, in respect of European patent application No. 98900555.8, filed on 7 January 1998 as international application No. PCT/GB1998/000039, published as WO-A1-98/30605 on 16 July 1998, and claiming a priority date of 13 January 1997 from EP 97430001.4 was announced on 6 October 2004 (Bulletin 2004/41) on the basis of 14 claims.

Claim 1 read as follows:

A process for the polymerisation of olefins in a gas phase reactor said process operating in a non-condensed mode and being carried out in the presence of a catalyst system comprising (a) a metallocene and (b) an activator **characterised in that** a lower alkane chosen from the group consisting of butane, pentane, isopentane or hexane is added to the gas phase reactor.

Claims 2 to 14 were dependent claims, directed to preferred embodiments of the process of claim 1.

- II. A notice of opposition to the patent was filed on 5 July 2005 by Basell Polyolefine GmbH.

The grounds of opposition pursuant to Art. 100(a) EPC (lack of novelty, lack of inventive step), Art. 100(b) EPC (insufficiency of disclosure) and Art. 100(c) EPC (extension of the subject-matter of the patent beyond the content of the application as filed) were invoked. The following document was, *inter alia* cited in support of the opposition:

D1: WO-A-94/25497.

III. In a decision dated 21 November 2007 and posted on 29 November 2007 the opposition division revoked the patent on the grounds pursuant to Art. 100(c)/123(2) EPC.

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

- (a) The feature of claim 1 that the process was operated in a "non-condensed mode", which had been introduced into the claims during the examination procedure, was not explicitly disclosed in the application as filed.
- (b) The disclosure of the processes at page 8, line 22 to page 9 line 5 of the original application, invoked by the patent proprietor as providing a basis for this amendment, would be understood by the skilled person as relating to operation in a condensed mode. Consequently the skilled reader would conclude that the process of the invention was carried out in the condensed mode rather than in the non-condensed mode.
- (c) There was nothing in this passage nor elsewhere in the description which indicated that the process might be worked in a non-condensed mode or above the dew point of the gas mixture. The description did not permit it to be understood that the specific process (where the condensed mode was excluded) had ever been intended to be the invention.

(d) Examples 3 to 6 of the original application also could not serve as a basis for this amendment to claim 1. The examples were carried out as a batch process. Claim 1 however was directed to polymerisation processes in general (i.e. batch and continuous processes). Thus even if it were clear for the skilled person that the examples had been carried out in a non-condensed mode (because there was no mention of a liquid phase) the amendment to claim 1 resulted in an inadmissible generalisation.

(e) Since the main request did not meet the requirements of Art. 123(2) EPC the patent was revoked.

(f) The decision (and minutes) further records that at the oral proceedings before the opposition division the patent proprietor had been asked if it wished to file a further request and stated that it did not.

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

V. The statement of grounds of appeal was filed on 25 March 2008.

The arguments advanced can be summarised as follows:

(a) Although the expression "operating in a non-condensed mode" was not present *word for word* (emphasis of the appellant/patent proprietor) in

the application as filed the skilled person would readily understand the meaning of the expression which was also derivable from a reading of the application as filed.

- (b) The phrase "operating in a non-condensed mode" merely limited the protection for the subject matter of the claims by removing part of the protection conferred by the application as filed since gas phase processes which operated in a condensed mode were not/no longer covered by the claims of the patent, reference being made to G 1/93 (OJ EPO 1994, 541).

- (c) The disclosure implicit in the patent application, i.e. what any skilled person would consider as necessarily implied by the patent application as a whole in view of basic scientific laws, was relevant for the requirements of Art. 123(2) EPC, reference being made to the findings of T 860/00 (28 September 2004, not published in the OJ EPO).

The application as filed disclosed that the process could be carried out in any suitable gas phase process and included specific descriptions of processes which were known as condensed phase processes, reference being made to four patent documents in the application (EP 89 691, EP 699 212, EP 784 637 and WO 94/28032).

- (d) A further disclosure of condensed mode operation was to be found in D1 which disclosed at page 2 lines 1-5 that "the process of purposefully introducing a recycle stream having a liquid and a

gas phase into a reactor such that the weight percent of liquid based on the total weight of the recycle stream is greater than about 2.0 weight percent is defined to be operating a gas phase polymerisation process in a condensed mode".

(e) From all these publications it was clear that a condensed mode of operation had to comprise mandatorily the following elements:

- gas phase;
- fluidised bed;
- continuous process;
- cooled recycle stream;
- gas and liquid phase;
- liquid recycled to the reactor.

As was apparent from the four documents mentioned in the description of the application and patent in suit there could also be variants within this definition.

(f) The skilled person would therefore have no doubt as to the meaning of the term "condensed mode operation" and consequently would clearly understand operation in "non-condensed mode" as required by the claims of the patent in suit.

(g) The phrase "operating in a non-condensed mode" was thus implicitly derivable from the application as filed in a clear and unambiguous manner.

(h) Submissions were also made with respect to novelty and inventive step, which however are not of relevance to the present decision.

(i) An auxiliary request was also submitted, claim 1 of which read as follows:

A process for the polymerisation of olefins in a gas phase reactor said process being carried out in the presence of a catalyst system comprising (a) a metallocene and (b) an activator characterized in that a lower alkane chosen from the group consisting of butane, pentane, isopentane or hexane is added to the gas phase reactor provided that the process is not performed in a condensed mode of operation.

VI. The opponent - now the respondent - replied with a letter dated 6 October 2008 and argued essentially as follows:

(a) The expression "said process operating in a non-condensed mode" lacked full support in the application as filed.

(b) This feature could not be deduced directly and unambiguously from the implicit disclosure of the application as filed (with reference to T 860/00, cited in the statement of grounds of appeal).

(c) The argument of the appellant that the passage starting at page 8 and continuing onto page 9 of the application as filed would describe a process known as "condensed mode operation" was disputed. There was no way that the meaning of "condensed mode operation" could be unambiguously construed from the application as filed.

The passage invoked by the appellant/patent proprietor stated that the process could be carried out in any suitable gas phase process and

referred to two particular types of fluidised bed processes.

The first type entailed cooling of the recycled gas stream and returning the cooled recycled stream containing entrained liquid to the fluidized bed beneath the fluidization grid. The second type entailed cooling of the recycled gas stream, separating the entrained liquid and feeding it directly to the fluidised bed. The appellant/patent proprietor had artificially clustered these two types of processes to form a homogeneous group having a number of features (see section V.(e), above).

Reference to D1 would exclude the second type of process, i.e. wherein the liquid was separated and then reintroduced to the reactor. In any case in view of D1 the skilled person would be uncertain whether a process employing a weight of recycle stream of lower than 2.0 weight percent would qualify as condensed mode or not.

- (d) The lack of direct and unambiguous support was even more pronounced when it came to the language in question, namely "operating in a **non-condensed mode**" (emphasis of the respondent/opponent). By referring to the definition of condensed mode operation given by the appellant/patent proprietor a polymerisation process in non-condensed mode would be intended as a gas phase fluidised bed continuous polymerisation process wherein the cooling of the gaseous recycle stream before reintroducing it into the reactor was made by

maintaining the temperature above its dew point, i.e. without having condensation of part of the recycle stream. This was however neither explicitly or implicitly disclosed.

- (e) Further the skilled person was faced with the ambiguity of deducing from the application as filed whether the definition "operating in a non-condensed mode" would include or exclude stirred bed and discontinuous processes. In the former case there would be an inadmissible generalisation of the condensed mode feature since it had been at most disclosed in association with fluidised bed continuous processes; in the latter case the limitation "non-condensed mode" would be rendered senseless and would result in all working examples not supporting the invention.
- (f) The respondent/opponent disputed the arguments of the appellant/patent proprietor with respect to G 1/93.

According to T 384/91 (OJ EPO 1995, 745) a feature should not be considered as merely limiting the protection conferred (i.e. without providing a technical contribution) if it interacted with the remaining features of the claim so influencing the solution of the technical problem derivable from the application as originally filed. In view of the problem as set out at page 2 lines 12-14 of the application as filed, namely improving catalytic activity of the metallocene catalyst systems in gas phase processes, it followed that an evident interaction existed between the added

limitation (operation in the non-condensed phase) and the solution represented by the injection of an inert **liquid** (emphasis of the respondent/opponent) into the reactor. Addition of a liquid would clearly produce different results in a gaseous environment (non-condensed mode) than if a liquid was already present (condensed mode).

- (g) Objections were also raised with respect to the auxiliary request which are however not of relevance to the present decision.

VII. On 17 November 2009 the Board issued a summons to attend oral proceedings.

VIII. Oral proceedings were held before the Board on 12 February 2010.

- (a) At the commencement of the oral proceedings the appellant/patent proprietor withdrew the auxiliary request filed together with the statement of grounds of appeal (see section V.(i), above) and announced that a new auxiliary request would be presented in the course of the oral proceedings.

- (b) With respect to the main request the appellant/patent proprietor essentially reiterated the submissions made in the statement of grounds of appeal.

Whilst the disputed wording - "non-condensed mode" - was not present in the application as filed the skilled person would understand the meaning

thereof, this being derivable from the application as filed.

In particular, the reference to a recycle line at page 8 lines 25-30 of the application as filed would be understood implicitly to relate to the non-condensed mode of operation with no cooling below the dew point of the gaseous diluent stream. The examples were provided to demonstrate the improved effect of the invention in the context of standard laboratory scale apparatus and conditions representative of larger scale processes, but not to provide support for the full possible scope thereof.

The amendment was further in line with the findings of G 1/93 since the feature "non-condensed mode" merely excluded protection for part of the original scope and conferred no advantage on the patent proprietor.

- (c) The opponent/respondent emphasised that there was no disclosure of non-condensed mode operation in the application as filed and maintained the position as set out in the written submissions that there was no clear definition either in the application as filed or on the basis of common general knowledge of what was to be understood by "condensed mode operation" (see section VI.(c), above).

Even if the disclosure of the application as filed would be understood by the skilled person as relating to operation in the condensed mode it was

not clear how the further step to a non-condensed mode could be made on the basis of these disclosures nor what this would mean.

According to the logic of the appellant/patent proprietor (see section V.(e), above) the term "condensed mode" related to a process exhibiting a certain combination of parameters. Following this reasoning, any process lacking a single one of these parameters would have to be considered as "non-condensed mode".

However even following this logic the examples still would not provide support for the claims since they lacked all indicated features from pages 8-9 of the application as filed except for gas phase operation.

The objections raised with respect to decision G 1/93 were reiterated (See section VI.(f), above).

- (d) The appellant/patent proprietor emphasised that there was no ambiguity concerning what was meant by "condensed mode" operation. Although this had variations, as shown by the passage on Page 8-9 of the application it nevertheless had a set number of features. It was necessary to employ commonsense and focus on these features.

With respect to G 1/93 it was submitted that there was no evidence that the effect of the addition of alkane would be different depending on the environment within the reactor. It was in any case known that in condensed mode operations addition

of liquid provided certain advantages - namely improved productivity as the liquid cooled the bed improving the output.

The invention related generally to gas phase systems and showed that addition of alkane improved **catalyst activity** which, it was stressed, did not necessarily mean that the **production rate** was improved. The technical effect relied upon arose solely due to the addition of lower alkane into the reactor. Once in the reactor this became gaseous - regardless of the form in which it had been introduced. Thus the effect of the invention arose from introduction of the alkane *per se* and was not associated with the mode in which the reactor was operated (condensed or non-condensed mode) or with the form in which the alkane was introduced.

The examples together with the teaching on page 8 of the application showed that operation in a non-condensed mode was clearly intended since certain of the embodiments disclosed on page 8 would be understood as operating in the non-condensed mode. The absence of any evidence to support this position was due to the fact that at the time of filing the application the invention was not focussed on this point.

- (e) The opponent disputed that adding inert liquid to the reactor would not interact with the remaining features of the claim. It was clear that adding liquid into an environment with no liquid would have an effect different from that in an

environment where liquid was already present. Neither "non-condensed mode" nor the requirement that the temperature of the recycle stream be kept above the dew point was explicitly or implicitly disclosed in the application as filed.

- (f) Following conclusion of discussion on the main request, the new auxiliary request, announced at the commencement of the oral proceedings (see section VIII.(a), above) was submitted. This request consisted of 13 claims.

The appellant/patent proprietor explained that claim 1 had been amended by incorporation of the features of original claim 10 thus restricting the scope of the claims to fluidised bed polymerisation.

Claim 1 of this request thus read as follows:

1. **A process for the polymerisation of olefins carried out in a fluidised bed gas phase reactor said process operating in a non-condensed mode and being carried out in the presence of a catalyst system comprising (a) a metallocene and (b) an activator characterised in that a lower alkane chosen from the group consisting of butane, pentane, isopentane or hexane is added to the gas phase reactor.**

This request had only been filed at the oral proceedings before the Board because instructions had only very recently been received.

It had not been filed in direct response to any action of the respondent/opponent during the appeal proceedings, but to take account of submissions made in the opposition proceedings and comments of the opposition division that claim 1 was an over-generalisation.

The amendment was straightforward in particular as much of the debate concerning the main request related to the aspects of fluidised bed reactors and condensed/non condensed modes.

- (g) The respondent/opponent apart from disputing that this request was allowable objected to this as late filed. The appellant/patent proprietor had had ample time to submit such a request. As followed from the decision under appeal the patent proprietor had at the oral proceedings before the opposition division been given the opportunity to submit a further request but declined to do so (see section III.(f), above). A new request had however been filed with the statement of grounds of appeal, which request had been dealt with in the rejoinder to the statement of grounds of appeal. The appellant/patent proprietor should have submitted the new auxiliary request at least one month before the oral proceedings in order to give the respondent/opponent the opportunity at least to carry out a formal check.

The respondent/opponent indicated that it would require time to consider the request in detail and to prepare its response.

- IX. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted, or, in the alternative, that the patent be maintained on the basis of the Auxiliary Request (claims 1-13) filed at the oral proceedings.

The respondent (opponent) requested that the appeal be dismissed, or, in the case that the decision under appeal is set aside, that the case be remitted to the first instance for further prosecution.

Reasons for the Decision

1. The appeal is admissible.
2. *Art 123(2) EPC*
 - 2.1 As reported in section III above, the decision under appeal held that there was neither an explicit basis nor an implicit basis in the application as filed for the feature "operating in a non-condensed mode". The appellant/patent proprietor in the statement of grounds of appeal (section V.(a), above) and during the oral proceedings before the Board (section VIII.(b), above) conceded that there was no explicit basis, but maintained that this feature was implicitly derivable from the application as filed relying in its arguments on a disclosure of "condensed mode" in the application as filed.
 - 2.2 The explicit disclosure of the application as filed (page numbers refer to the PCT publication):
 - 2.2.1 According to the introductory part (page 1), the invention relates to a polymerisation process, in particular to a gas phase process for the polymerisation of olefins using a catalyst system comprising an activated metallocene catalyst.

According to page 2, lines 12-14 it has been found that in such gas phase processes an improvement in catalytic activity may be obtained by the injection of an inert liquid into the reactor. In particular lower alkanes can be employed (page 2, lines 15,16).

This thus constitutes the invention.

The following pages discuss the metallocene catalysts and activators that may be employed as well as the monomers that can be polymerised by the inventive process.

Starting at page 8 line 22 the modes for carrying out the process are discussed.

Any suitable gas phase process can be employed, including traditional stirred beds, although fluidised beds are particularly suitable.

The bed is maintained in a fluidised state by use of a fluidising medium which comprises a recycled gas stream which passes upwards through the grid.

At page 8 lines 31ff it is disclosed that a particular type of fluidised bed operation utilises the cooling of the recycled gas stream to aid cooling. The cooled recycled stream, containing entrained liquid is returned to the fluidised bed. Three European patent documents are referred to as disclosing such processes (numbers given as EP 89691, EP 699212 and EP 784 637). Starting at line 1 of page 9 it is explained that in another type of gas phase process - reference being made to WO 94/28032 - a recycled gas stream is cooled and separated into a gas stream and a liquid stream, whereby the liquid may be either an inert liquid or a condensable monomer. The liquid stream is introduced directly into the fluidised bed in order to provide a cooling of the bed.

According to page 9, lines 6 and 7 the alkane can be added to the reactor by any suitable means, e.g. directly to the reactor or indirectly, via the recycle line, catalyst injection system etc.

The examples of the application were carried out in an agitated dry phase reactor, the monomers and alkane being injected under elevated pressure. There is no disclosure in the examples relating to the conditions inside the reactor, e.g. whether any of the monomers are in the condensed state and in what state (liquid or not) the lower alkane was added.

- 2.2.2 The term "condensed mode" furthermore does not appear in the text of the application as filed.
- 2.2.3 Regarding the question of whether the term "condensed mode" could in some manner be derived or implied from the application as filed, the Board observes that the discussion in the application presents the documents relating to usable processes in two groups (see section 2.2.1, above). The more detailed categorisation or structure put forward by the appellant/patent proprietor in its written and oral submissions is however not apparent from this presentation.

In particular the application does not provide a detailed discussion of the various sets of conditions under which the polymerisation processes of these publications are to be operated. There is also no explicit teaching which would allow the skilled person to understand, as urged by the appellant/patent proprietor, that these documents represented specific

embodiments of a known, generic process consisting of a particular subset of features disclosed in the cited documents and common thereto. Consequently there is no disclosure in the application as filed or directly derivable from information contained therein of a generalised process exhibiting the combination of characteristics put forward by the appellant/patent proprietor in the statement of grounds of appeal (see section V.(e) above) and repeated at the oral proceedings (see section VIII.(d), above), let alone a statement that such a process would be recognised or defined in the art as operating in the "condensed mode".

2.2.4 Therefore it is concluded that not only does the application as filed contain no explicit disclosure of the limitation imposed by the feature "operating in a non-condensed mode", as conceded by the appellant/patent proprietor, but it does not even provide implicit, let alone explicit support for the precursor term with respect to which this limitation is intended to apply, i.e. operating in a "condensed mode".

2.3 The implicit disclosure of the application as filed

2.3.1 In its written submissions the appellant/patent proprietor argued that the phrase "operating in a non-condensed mode" could be implicitly derived from the application as filed (see section V.(g), above) since the skilled person would understand the meaning of operation in a condensed mode and consequently would clearly understand the meaning of operation in a non-condensed mode (see section V.(f), above).

2.3.2 Apart from the fact that this is manifestly not tenable due to the absence of any disclosure of "condensed mode" in the application (see section 2.2, above) this argument applies the wrong criterion.

The objection raised in the decision under appeal was not one of clarity of the features in the claim (Art. 84 EPC), i.e. whether the skilled person would understand the meaning of the term "operating in a non-condensed mode" *per se*. Rather the question was whether the application as originally filed provided a disclosure of a process excluding operation in the condensed mode.

2.3.3 As explained in section 2.2 above, however, due to the absence of a disclosure of operating in a "condensed mode" in the application as filed, there is no basis for a limitation or exclusion with respect to this mode of operation.

2.3.4 This assessment is not changed by the appellant/patent proprietor's reference in the statement of grounds of appeal to decision T 860/00. This decision explains that in assessing what is the implicit disclosure of a document account is to be taken of basic scientific laws. The appellant/patent proprietor relied upon this decision to establish what characteristics had to be exhibited by a condensed mode process. However as explained this is not the issue to be decided since, for the reasons given above, a process operating in the condensed mode is not *per se* disclosed.

2.4 The Board therefore concludes that there can be no basis - whether explicit or implicit - in the application as filed for the insertion of a reference to operating in a non-condensed mode.

Consequently this feature extends beyond the content of the application as filed contrary to Art. 123(2) EPC.

2.5 No different conclusion would be reached by invoking the findings of G 1/93 and arguing that the feature "operating in a non-condensed" mode merely represented a restriction (with respect to operation in the condensed mode) which did not make any technical contribution (see sections V.(b) and VIII (b), above). This is because, as explained above, the subject-matter with respect to which the restriction was intended to be made itself is not disclosed in the application as originally filed.

2.6 Consequently claim 1 of the main request does not meet the requirements of Art 123(2) EPC.

2.7 The main request is therefore refused.

3. *First auxiliary request*

3.1 The first auxiliary request was submitted only at the oral proceedings before the Board.

As stated by the appellant/patent proprietor at the oral proceedings (see section VIII.(f), above) this set of claims had been filed to take account of comments made during the opposition proceedings and in the

decision under appeal but was not in direct response to any submissions made during the appeal proceedings.

3.2 According to Art. 13(1) of the Rules of Procedure of the Boards of Appeal, amendments to a party's case may be admitted and examined at the Board's discretion, which shall be exercised taking into account *inter alia* the complexity of the new subject matter, the state of the proceedings and the need for procedural economy. According to Art. 13(3) RPBA, amendments to a party's case sought to be made after oral proceedings have been arranged shall not be admitted if they raise issues which the Board or other party cannot reasonably be expected to deal with without adjournment of the oral proceedings.

3.3 Thus since the request in question:

- had been filed on the last day of the appeal proceedings, i.e. at the oral proceedings;
- was unrelated to any request that had previously been in the proceedings, and
- as acknowledged by the appellant/patent proprietor itself, was not a direct response to any submission made during the appeal proceedings and
- the respondent/opponent explicitly stated that it was not in a position rapidly to assess the newly filed request without a break in the proceedings (see section VIII.(g), above),

pursuant to Art 13(1) and (3) RPBA the auxiliary request filed at the oral proceedings before the Board is not to be admitted to the procedure.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

E. Görgmaier

R. Young