BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 25 August 2010

Case Number: T 0482/07 - 3.3.03

Application Number: 00935303.8

Publication Number: 1187876

IPC: C08L 23/04

Language of the proceedings: EN

Title of invention:
Injection moulding

Patentee:
Borealis Technology Oy

Opponent:
INEOS Manufacturing Belgium NV
ExxonMobil Chemical Patents Inc.
Basell Polyolefine GmbH

Headword:
-

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

Keyword:
"Clarity (Main Request; Auxiliary Requests I and III): no; subject-matter claimed not unambigously defined"
"Amendments: extended subject-matter (Auxiliary request II): yes; new combination of features not directly and unambiguously disclosed in the application as filed"

Decisions cited:
G 0004/95, T 0002/81

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0482/07 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 25 August 2010

Appellant: (Patent Proprietor)
Borealis Technology Oy
P.O. Box 330
FI-06101 Porvoo (FI)

Representative:
Kador, Ulrich,
Kador & Partner
Corneliusstrasse 15
D-80469 München (DE)

Respondent: (Opponent)
INEOS Manufacturing Belgium NV
Scheldelaan 482
B-2040 Antwerpen (BE)

Representative:
Smith, Julian Philip Howard
Compass Patents LLP
120 Bridge Road
Chertsey
Surrey KT16 8LA (GB)

(Opponent)
ExxonMobil Chemical Patents Inc.
13501 Katy Freeway
Houston, TX 77079-1398 (US)

Representative:
Denness, James Edward
Abel & Imray
20 Red Lion Street
London WC1R 4PQ (GB)

(Opponent)
Basell Polyolefine GmbH
Brühler Strasse 60
D-50389 Wesseling (DE)

Representative:
Reiss, Gilles François
Basell Polyolefine GmbH
Intellectual Property
Industriepark Hoechst, B852, 3rd floor
D-65926 Frankfurt am Main (DE)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office dated 30 November 2006 and posted 20 February 2007 revoking European patent No. 1187876 pursuant to Article 102(1) EPC 1973.**

Composition of the Board:

Chairman: R. Young
Members: O. Dury
H. Preglau

Summary of Facts and Submissions

I. The mention of the grant of European patent No. EP-B-1 187 876, based on application 00935303.8, filed on 22 May 2000 in the name of Borealis Technology Oy was published on 23 April 2003 in Bulletin 2003/17.

II. In this decision, any reference to passages in the patent in suit as granted will be given underlined in squared brackets, e.g. [Claim 1]. References in underlined italics concern passages in the application as originally filed, e.g. *Claim 1*.

III. The granted patent was based on [15 claims] comprising the following independent claims:

"1. The use in injection moulding or extrusion coating of a HDPE having a density of 950 to 980 kg/m^3 and a crystallinity of 60 to 90% comprising at least two polyethylene components having different molecular weight distributions wherein at least one of said components is an ethylene copolymer.

5. An injection moulded liquids container the walls whereof are formed from a HDPE having a density of 950 to 980 kg/m^3 and a crystallinity of 60 to 90% comprising at least two polyethylene components having different molecular weight distributions wherein at least one of said components is an ethylene copolymer.

7. An injection or extrusion moulded cap or closure, which cap or closure is formed from a HDPE having a density of 950 to 980 kg/m^3 and a crystallinity of 60 to 90% comprising at least two polyethylene components

having different molecular weight distributions wherein at least one of said components is an ethylene copolymer.

9. An extrusion coated structure having at least one extruded layer formed from a HDPE having a density of 950 to 980 kg/m^3 and a crystallinity of 60 to 90% comprising at least two polyethylene components having different molecular weight distributions wherein at least one of said components is an ethylene copolymer.

12. An HDPE having a density of 950 to 980 kg/m^3 and a crystallinity of 60 to 90% for use in injection moulding or extrusion coating, comprising at least two polyethylene components having different molecular weight distributions, wherein at least one said component is an ethylene copolymer and wherein at least the component with the lowest weight average molecular weight is an ethylene homopolymer synthesised using a Ziegler-Natta or metallocene catalyst.

13. An HDPE comprising at least two polyethylene components, wherein at least one said component is an ethylene copolymer and wherein at least the component with the lowest weight average molecular weight is an ethylene homopolymer, and having the following characteristics:

- MFR_2 of from 2 to 100;
- mean weight average molecular weight of from 80 to 200 kD;
- MWD of from 5 to 100;
- weight average molecular weight of a low molecular weight fraction of 20 to 40 kD;

- weight average molecular weight of a high molecular weight fraction of 150 to 400 kD;
- weight ratio of said low molecular weight fraction to said high molecular weight fraction of 10:90 to 90:10;
- melting point 120 to 140°C;
- density 950 to 980 kg/m^3;
- comonomer content 0.2 to l0% by weight; and
- crystallinity 60 to 90%.

14. An HDPE moulding composition comprising a particulate HDPE as defined in claim 13 together with at least one additive or further polymer.

15. An injection moulded article formed at least in part from an HDPE having the following characteristics:

- MFR_2 of from 2 to 100;
- mean weight average molecular weight of from 80 to 200 kD;
- MWD of from 5 to 100;
- weight average molecular weight of a low molecular weight fraction of 20 to 40 kD;
- weight average molecular weight of a high molecular weight fraction of l50 to 400 kD;
- weight ratio of said low molecular weight fraction to said high molecular weight fraction of 10:90 to 90:10;
- melting point 120 to 140°C;
- density 950 to 980 kg/m^3;
- comonomer content 0.2 to 10% by weight; and
- crystallinity 60 to 90%."

[Claims 2-4, 6, 8 and 10-11] were dependent claims directed to elaborations of [claims 1, 5, 7 and 9], respectively.

IV. Notices of opposition against the patent were filed by

- Solvay Polyolefins Europe - Belgium (opponent 1), now Ineos Europe Ltd., on 21 January 2004 on the grounds of Art. 100 (a) EPC (lack of novelty, lack of inventive step) and Art. 100 (b) EPC;
- ExxonMobil Chemical Patents Inc. (opponent 2) on 23 January 2004 on the grounds of Art. 100 (a) EPC (lack of novelty, lack of inventive step), Art. 100 (b) EPC and Art. 100 (c) EPC;
- Basell Polyolefine GmbH (opponent 3) on 23 January 2004 on the grounds of Art. 100 (a) EPC (lack of novelty, lack of inventive step), Art. 100 (b) EPC and Art. 100 (c) EPC.

The opponents in particular raised the following objections pursuant to Art. 123 (2) EPC:

- The inclusion in [claims 1, 3, 6, 8-10, 12, 13 and 15] of the density range of 950 to 980 kg/m^3 represented an extension of subject matter beyond that disclosed in the application as filed (opponent 2);
- The amendment of [claim 12] consisting in the requirement that "the component with the lowest weight average molecular weight is an ethylene homopolymer synthesised using a Ziegler-Natta or metallocene catalyst" found no basis in the application as filed (opponent 3).

V. In its decision announced at the end of the oral proceedings held before the opposition division on

30 November 2006 and issued in writing on 20 February 2007 the opposition division revoked the patent in suit. On the basis of the decision and of the minutes of the oral proceedings, the final requests of the patent proprietor on which the decision was based were as follows (acknowledged in the terms used by the opposition division and listed according to their ranking in descending order):

(a) main request: patent as granted;

(b) first auxiliary request: main request amended during the oral proceedings of 30 November 2006 (see attachment 1 of the minutes);

(c) second auxiliary request: auxiliary request 1 as filed on 2 August 2006;

(d) new second auxiliary request: second auxiliary request modified during the oral proceedings (see attachment 2 of the minutes);

(e) auxiliary request III: as filed during the oral proceedings;

(f) new auxiliary request III: auxiliary request III as modified during the oral proceedings (see attachment 4 of the minutes);

(g) modified new auxiliary request III modified during the oral proceedings (see attachment 5 of the minutes).

According to the decision of the opposition division,

- each of the above requests (a)-(e) infringed the requirements of Art. 123 (2) EPC. The following deficiencies were in particular objected to the patent as granted:
  - [claim 12] was directed to a combination of different embodiments;

– [claim 13] required that the polyethylene component having the lowest molecular weight further has a density of 950 to 980 kg/m^3;

both of which were not directly and unambiguously disclosed in the application as filed.

– requests (f) and (g) both lacked an inventive step starting from **D19** (EP-A1-0 603 935) as closest prior art.

VI. Notice of appeal against the decision of the opposition division was filed on 20 March 2007 by the patent proprietor with simultaneous payment of the prescribed fee. In its statement of grounds of appeal received on 15 June 2007, the patent proprietor, now appellant, requested that the contested decision be set aside and the patent be maintained in its amended form according to the main request (claims 1-15) filed therewith.

Claims 1-11 of the main request corresponded to [claims 1-11], respectively, further limited by the requirement "and wherein said HDPE is prepared in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system".

Claim 12 of the main request was amended in the same terms as claims 1-11 and additionally by deleting the requirement directed to the use of a Ziegler-Natta or metallocene catalyst for preparing the component with the lowest weight average molecular weight.

Claims 13-15 were identical to [claims 13-15], respectively.

VII. In its replies to the statement of grounds of appeal received on 5 November 2007, 21 November 2007 and 7 January 2008, opponent 1, now respondent 1, requested that the appeal be dismissed and the patent be revoked because the main request comprised unallowable amendments (Art. 123 (2) EPC) and lacked an inventive step (Art. 56 EPC).

Respondent 1 argued, *inter alia*, that the amendment of claim 1 related to the "single supported Ziegler-Natta catalyst system" infringed Art. 123 EPC.

VIII. In its reply to the statement of grounds of appeal of 4 January 2008, opponent 2, now respondent 2, requested that the appeal be dismissed and the patent be revoked because of an insufficiency of disclosure (Art. 83 EPC), and because the main request comprised unallowable amendments (Art. 123 (2) EPC), lacked clarity (Art. 84 EPC), lacked novelty (Art. 54 EPC) and lacked an inventive step (Art. 56 EPC). In addition, respondent 2 objected to the admissibility of the appeal to the extent that it reintroduced [claim 12].

Respondent 2 argued in particular that the following amendments led to objections pursuant to Art. 123 (2) EPC:

- The combination of features recited in claims 3, 6, 8, 10, 12, 13 and 15;
- The amendment of claim 12 consisting in the requirement that "the component with the lowest weight average molecular weight is an ethylene homopolymer prepared in a multistage polymerisation using a single Ziegler-Natta catalyst system";

– The combination of the feature related to a density of the HDPE of 950-980 kg/m^3 with the list of other features recited in claims 3, 6, 8, 10, 13 and 15;
– The amendment of claims 1-11 "and wherein said HDPE is prepared in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system".

Respondent 2 further raised the objection that it was unclear whether, in the amendment made to the claims, the word "single" qualified either only the "catalyst system" or the "supported Ziegler-Natta catalyst system". Said amendment, thus, rendered unclear whether or not the processes defined in the claims were limited to those using only one Ziegler-Natta catalyst system as sole catalyst. The requirements of Art. 84 EPC were, thus, not satisfied.

IX. In its reply to the statement of grounds of appeal filed on 21 December 2007, opponent 3, now respondent 3, requested that the appeal be dismissed and the patent be revoked because of an insufficiency of disclosure (Art. 83 EPC), and because the main request comprised unallowable amendments (Art. 123 (2) EPC) and lacked an inventive step (Art. 56 EPC).

Respondent 3 objected in particular that the amendment "and wherein said HDPE is prepared in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system" found no support in the application as filed (Art. 123 (2) EPC).

X. On 28 May 2010 the board issued a summons to attend oral proceedings and informed the parties of its

provisional opinion. The following points were *inter alia* mentioned:

- The amendment "using a single supported Ziegler-Natta catalyst system" did not meet the requirements of Art. 84 EPC because it rendered unclear whether or not the processes claimed were limited to those using in their different polymerisation stages a single supported Ziegler-Natta catalyst as sole catalyst;
- The amendments of claims 1, 3, 5-10, 12, 13 and 15 infringed Art. 123 (2) EPC; Regarding claims 13 and 15, the appellant was in particular made aware that the board considered that the combination of features recited therein, in particular the combination of the preferred range of weight average molecular weight for the low molecular weight component with the density range of 950-980 kg/m^3, did not appear to emerge from the application as filed. The board further acknowledged that it was not clear whether Example 2 could be a valid support for the claimed combination of features because it did not disclose all the parameters recited in e.g. claims 13 or 15 (cf. end of paragraph 3.3).

XI. In its submission received on 23 July 2010 the appellant requested that Mr. H. Salminen, a long term employee of the appellant working in polymer research, be allowed "to speak at the oral proceedings (…) as technical expert".

The appellant further filed a new main request (claims 1-12) as well as auxiliary requests I (claims 1-6), II (claims 1-3) and III (claims 1-8).

Claim 1 of each of the main request, auxiliary request I and auxiliary request III corresponded to limitations of [claim 1] which contained, *inter alia*, the following amendment: "and wherein said HDPE is prepared in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system".

Claims 1-3 of auxiliary request II corresponded to [claims 13-15] further limited by the requirement that the HDPE additionally has the following characteristic: "MFR_2 of a low molecular weight fraction of 50-1000 g/10min."

The arguments of the appellant were, *inter alia*, as follows:

- Regarding Art. 123 (2) EPC:
  - The amendment "prepared in a multi-stage polymerisation process using a single supported Ziegler-Natta catalyst system" found its basis on *pages 5-6*;
  - The combination of features recited in claim 3 was derivable from the passages of *page 6, line 12 to page 7, line 14* and was further illustrated by *example 2*.
- Regarding Art. 84 EPC: considering that the specification was to be used to interpret the terms of the claims, it followed from the passage of page 5, last two lines to page 6, first paragraph of the application as filed that the expression "using a single supported Ziegler-Natta catalyst system" restricted the processes defined in the claims to those using one single Ziegler-Natta catalyst as sole catalyst.

XII. Oral proceedings were held on 25 August 2010 in the presence of the appellant and of respondents 1, 2 and 3.

Withdrawal of requests

XIII. Respondent 2 objected to Mr. H. Salminen being allowed to speak during the oral proceedings because it considered that the request made by the appellant in this regard did not fulfil the requirements of **G 4/95** (OJ EPO 1996, 412). The appellant had in particular failed to indicate on which subject matter Mr. H. Salminen would be speaking. Respondents 1 and 3 agreed with this objection.

Questioned by the board, the appellant confirmed that Mr. H. Salminen was, indeed, duly registered on the list of professional representatives maintained by the EPO (Art. 134 (1) EPC) but had been identified *on purpose* as a technical expert for the current oral proceedings. The appellant additionally requested that, for the current oral proceedings, Mr. H. Salminen should be considered as being present *as a technical expert only*, but not as a professional representative. After some discussion as to the status in the oral proceedings of Mr. Salminen, whether as technical expert or as European Patent Attorney, the appellant, then, withdrew its request that Mr. H. Salminen be allowed to speak during the oral proceedings.

XIV. Respondent 2 withdrew its request regarding the admissibility of the appeal to the extent that [claim 12] was reintroduced.

Initial requests of the parties

XV. The **appellant** (patent proprietor) requested that the decision under appeal be set aside and the patent in suit be maintained in amended form according to the main request or alternatively according to any of auxiliary requests I-III, all requests as filed on 23 July 2010.

Respondents 1, 2 and 3 (opponents 1, 2 and 3) requested that the appeal be dismissed.

XVI. The following issues were addressed during the oral proceedings:

Clarity in relation to the amendments made to the granted claims (Main request; Auxiliary requests I and III)

XVII. The discussion focussed on whether or not the amendment "using a single supported Ziegler-Natta catalyst system" met the requirements of Art. 84 EPC and in particular whether or not it limited the processes defined in the claims to those using in their different polymerisation stages a single supported Ziegler-Natta catalyst as sole catalyst.

The arguments of the appellant were as follows:

- In the context of the patent in suit, "catalyst system" was used instead of "catalyst";
- The patent distinguished clearly in paragraph [0021] between two alternatives, namely "a single catalyst system" and "a plurality of catalyst systems". It could be derived from said paragraph, in particular from the list of illustrative examples recited on

[page 3, lines 39-41], that any combination of two or more catalysts was to be considered as "a plurality of catalyst systems". The consequence was that the remaining alternative, namely "a single catalyst system", had to consist in one, and only one, catalyst. Applying this conclusion to the claims rendered it clear that the processes defined therein were limited to those using one supported Ziegler-Natta catalyst as sole catalyst. The appellant further noted that this conclusion was confirmed by the process described in example 2 of the patent, which illustrated the invention and was performed with one, unique, single supported Ziegler-Natta catalyst.

The following objections were raised by respondent 2:

- It was not clear whether the expression "Ziegler-Natta catalyst system" was restricted to a single Ziegler-Natta catalyst or also encompassed combination of several Ziegler-Natta catalysts;
- It was not clear whether "single" was directed to the "catalyst system" i.e. it meant that one, unique, supported Ziegler-Natta catalyst system was used with the exclusion of any other kind of catalyst system or was directed to the "supported Ziegler-Natta catalyst system" i.e. it meant that only one supported Ziegler-Natta catalyst system was mandatorily used, but that any other class of catalyst could also be used in combination;
- The understanding of the appellant that according to paragraph [0021] a single catalyst was used in the whole process could only have resulted from the combination of the two sentences of this paragraph.

All the features of these sentences were, however, not reflected in the amended claims;

– The expression "using a single catalyst system" as recited on [page 3, lines 38-39] was more restricted than the expression "using a single supported Ziegler-Natta catalyst system" which had been used in the amendment of the [claims].

XVIII. After deliberation the Chairman of the board announced that the main request did not meet the requirements of Art. 84 EPC because the amendment "using a single supported Ziegler-Natta catalyst system" rendered unclear the subject matter for which protection was sought in claims 1-9. The main request was, thus, refused.

XIX. The Chairman of the board further announced that the same conclusion applied to auxiliary requests I and III of the appellant, which both contained claims comprising the same amendment. These requests were, thus, refused.

Auxiliary request II (filed on 23 July 2010)

XX. The Chairman of the board clarified with the appellant that amendment (A), namely "MFR_2 of a low molecular weight fraction of 50-1000 g/10min", which had been apparently crossed out on the first page of the request, was to be maintained in the claims of auxiliary request II, as derivable from the indication in the left margin of claim 1. The appellant confirmed that the claims indeed contained said amendment (A), which was agreed to by respondents 1, 2 and 3. The discussion then continued with the assessment whether or not

claim 1, so amended, satisfied the requirements of Art. 123 (2) EPC.

The appellant indicated that the subject matter of claim 1 was supported by the combination of *page 6, line 12 to page 7, line 14* with the *paragraph bridging pages 2 and 3*. Since both passages were related to HDPE "according to the invention", they could be combined without extending the subject matter claimed beyond the content of the application as filed.
The appellant considered that the requirement related to a density higher than 965 kg/m^3 indicated on *page 6, line 19* only applied to the embodiments wherein the low molecular weight component is a copolymer and not to homopolymer(s) as claimed. This was derivable from the construction of the sentence and from the fact that the *paragraph bridging pages 2 and 3* did not give any limitation regarding the density of the homopolymer.

The respondents contested that the requirements of Art. 123 (2) EPC were met. Their arguments were as follows:

- The term "lowest" used in the claims was not disclosed in the passages of *pages 6-7* quoted by the appellant. In this regard, it should be noted that for multimodal HDPE, the "low molecular weight component" as given on *page 6*, is not obligatorily identical to the "component with lowest weight average molecular weight" recited in the claims;
- *Page 6, lines 17-19* disclosed that the low molecular weight component is preferably "a homopolymer or a copolymer with density higher than 965 kg/m^3, most preferably a homopolymer": this passage, thus, defined that the homopolymer of said component must

have a density higher than 965 kg/m^3. This requirement was, however, not reflected in the amended claims;

- The combination of the *paragraph bridging pages 2-3* with the passages of *pages 6-7* quoted by the appellant did not emerge from the application as filed;
- For compositions encompassed by the claims and comprising other components than the low molecular weight fraction and the high molecular weight fraction, the requirement disclosed on *page 6* that each of the low and high molecular weight components should make up 10-90% by weight of the total polyethylene in the composition, was not reflected by the claims;
- The combination by the appellant of a newly created range of density of 950-980 kg/m^3 with the preferred range of weight average molecular weight of a low molecular weight component of 20-40 kD represented a new selection which was not originally disclosed;
- The melting point indicated in claim 1 was not identical to the "crystalline melting point" disclosed on *page 7, line 11*. This was in particular true for multimodal HDPE;
- The paragraph bridging pages 2-3 was limited to HDPE "for use in injection moulding", which was not reflected in the claims.

The Chairman of the board furthermore pointed out that, due to the use of "a" low molecular weight fraction in amended claim 1, it was not compulsory that the requirements in terms of weight average molecular weight of 20-40 kD and of MFR_2 of 50-1000 g/10 min

concerned one and the same "low molecular weight" fraction, contrary to the disclosure of *page 6*.

XXI. Considering that new objections had been raised against auxiliary request II for the first time during the oral proceedings, the appellant requested a break to consult its technical expert, which was accorded by the board. A modified version of auxiliary request II was then filed in replacement of the preceding auxiliary request II filed on 23 July 2010.

New auxiliary request II (filed during the oral proceedings)

XXII. This new auxiliary request II consisted in claims 1-3 and comprised the following independent claims 1 and 3:

"1. An HDPE for use in injection moulding consisting of two polyethylene components, wherein one said component is an ethylene copolymer and wherein the component with the lowest weight average molecular weight is an ethylene homopolymer, and having the following characteristics:

- MFR_2 of from 2 to 100;
- mean weight average molecular weight of from 80 to 200 kD;
- MWD of from 5 to 100;
- weight average molecular weight of the low molecular weight fraction of 20 to 40 kD;
- MFR_2 of the low molecular weight fraction of 50-1000 g/10 min;
- weight average molecular weight of the high molecular weight fraction of 150 to 400 kD;

- weight ratio of said low molecular weight fraction to said high molecular weight fraction of 10:90 to 90:10;
- crystalline melting point 120 to 140°C;
- density 950 to 980 kg/m^3;
- comonomer content 0.2 to l0% by weight; and
- crystallinity 60 to 90%.

3. An injection moulded article formed at least in part from an HDPE consisting of a low molecular and a high molecular weight component having the following characteristics:

- MFR_2 of from 2 to 100;
- mean weight average molecular weight of from 80 to 200 kD;
- MWD of from 5 to 100;
- weight average molecular weight of the low molecular weight fraction of 20 to 40 kD;
- MFR_2 of the low molecular weight fraction of 50-1000 g/10 min;
- weight average molecular weight of the high molecular weight fraction of l50 to 400 kD;
- weight ratio of said low molecular weight fraction to said high molecular weight fraction of 10:90 to 90:10;
- crystalline melting point 120 to 140°C;
- density 950 to 980 kg/m^3;
- comonomer content 0.2 to 10% by weight; and
- crystallinity 60 to 90%."

XXIII. The appellant explained that the subject matter claimed was supported by the application as filed for the following reasons:

- The HDPE now claimed amounted, although not explicitly recited in the claims, to a bimodal HDPE composition comprising only two polyethylene fractions, one of which being an ethylene copolymer of high molecular weight, the other an ethylene homopolymer of low molecular weight. In this regard, it was to be noted that according to *page 3, line 28*, the terms "fraction" and "component" were equivalent and could be interchangeably used one for each other, as was done in claims 1 and 3;
- Support for claim 1 was to be found in the combination of *page 6, line 12 to page 7, line 14* with the *paragraph bridging pages 2 and 3*;
- The objection that such HDPE exhibited different melting points was contested. The appellant further considered that it had been clarified that the melting point now recited in claim 1 corresponded to that disclosed on *page 7, lines 11-12*. Hence, the requirements of Art. 84 EPC, Art. 123 (2) EPC and Art. 123 (3) EPC were met by such an amendment;
- According to EPO case law, it was allowable to combine end-points of originally disclosed ranges in order to create a new range without infringing Art. 123 (2) EPC. Hence, it was allowable to define in the claims a new range of density of 950-980 kg/m^3, which was derivable from the ranges of 940-980 kg/m^3 and 950-965 kg/m^3 disclosed on *page 7, lines 7-8*;
- The combination of this new range of density of 950-980 kg/m^3 with the other features of claims 1 and 3 did not extend the subject matter claimed beyond the application as filed but only amounted to the deletion of the lower part of the range of density of 940-980 kg/m^3 originally disclosed;

– It was derivable from the *paragraph bridging pages 2 and 3* that, according to the application as filed, there was no limitation regarding the density of the homopolymer.

The respondents contested that the requirements of Art. 123 (2) EPC were fulfilled for the following reasons:

– It was not the creation of a new range of density of 950-980 kg/m^3 which was objected to but its further combination with other features of the application as filed, in particular with the preferred range of molecular weight of the low molecular weight component of 20-40 kD. Such a combination represented a new selection of features which was not originally disclosed;
– It was not derivable from the claims per se that the "fraction" and the "component" recited therein corresponded to the same entity;
– It was not reflected in the claims that the homopolymer must have a density higher than 965 kg/m^3 as disclosed on *page 6, lines 18-19*; It was pointed out that since *page 6, line 19* read "preferably a homopolymer (…), most preferably a homopolymer", the latter option was to be read as a further limitation of the first option i.e. including the limitation on density;
– The amendment of "melting point" to "crystalline melting point" shifted the scope of protection of the claims, which was not allowable according to Art. 123 (3) EPC.

The Chairman of the board also pointed out that:

- It was questionable whether or not the two components recited in the *paragraph bridging pages 2 and 3* were identical to those defined on *pages 6-7*;
- Due to the repetition of the article "a" before "copolymer" on *page 6, line 18* it was left open whether or not the requirement of a "density higher than 965 kg/m^3" applied to the copolymer only or to both the homopolymer and the copolymer;
- Finally, the appellant was asked to clearly identify the passages of the application as filed which could serve as a support for the amendments made, in particular the combination of the preferred range of weight average molecular weight for the low molecular weight component with the density range of 950-980 kg/m^3. The appellant replied by making anew exclusively reference to *pages 6-7*.

XXIV. After deliberation the Chairman of the board announced that claim 1 of auxiliary request II contained added subject matter. Auxiliary request II was, thus, refused because it contravened Art. 123 (2) EPC.

Final requests

The **appellant** (patent proprietor) requested that the decision under appeal be set aside and the patent in suit be maintained in amended form according to the main request filed on 23 July 2010 or alternatively according to the first auxiliary request filed on 23 July 2010, or the second auxiliary request filed during the oral proceedings, or the third auxiliary request filed on 23 July 2010.

Respondents 1, 2 and 3 (opponents 1, 2 and 3) requested that the appeal be dismissed.

XXV. The board announced its decision at the end of the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

2. Clarity: Art. 84 EPC (Main request; Auxiliary requests I and III)

2.1 The subject matter of claims 1 to 9 of the main request was amended inter alia by limiting the multistage polymerisation processes defined therein to those "using a single supported Ziegler Natta catalyst system". This was done by inserting at the end of claim 1 the phrase "and wherein said HDPE is prepared in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system". Respondent 2 submitted that, as a result of this amendment, the subject matter claimed did not fulfil the requirements of Art. 84 EPC.

2.1.1 According to the jurisprudence of the boards of appeal, although an alleged lack of clarity is not a ground of opposition, the board has nevertheless the power and the duty to examine whether the patent as amended satisfies all the requirements of the EPC, as long as the objections arise out of the amendments made thereto.

2.1.2 Whilst the appellant did not dispute that the phrase "a single supported Ziegler-Natta catalyst system" constituted an amendment rendering it susceptible of examination for its compatibility with the requirements of the EPC, in particular Art. 84 EPC (clarity), it took the view that the claim including this phrase was clear (sections XI, last paragraph "Regarding Art. 84 EPC", and XVII, above).

2.2 The thrust of the appellant's argument was that a clear meaning of the phrase "a single supported Ziegler-Natta catalyst system" could be derived from a reading of paragraph [0021]. In particular it would be clear from this paragraph that, by contrast with "a plurality of catalyst systems" the term "a single catalyst system" could only be understood as referring to a single catalyst, and, in the context of the processes defined in the claim "a single supported Ziegler-Natta catalyst" could only refer to the sole use of a single Ziegler-Natta catalyst which was also a supported catalyst.

2.2.1 Thus according to the appellant the word "single" in Claim 1 applied firstly to the catalyst, implying that there was only a single catalyst on the support, and secondly to the steps of the process, implying that each step was carried out with the same single catalyst i.e. only a single catalyst was used throughout.

2.2.2 Said paragraph [0021] reads as follows:

"[0021] Typically and preferably however the HDPE will be prepared using multistage polymerization using a single catalyst system or a plurality of catalyst

systems, e. g. two or more metallocenes, one or more metallocenes and one or more Ziegler-Natta catalysts, two or more chromium catalysts, one or more chromium catalysts and one or more Ziegler-Natta catalysts, etc. Especially preferably the same catalyst system is used in the different polymerization stages, e.g. a catalyst system as described in EP-A-688794."

2.2.3 Whilst it is true that paragraph [0021] refers to both "a single catalyst system" and "a plurality of catalyst systems" it gives examples only of the latter.

2.2.4 Furthermore, the paragraph contains two constructions, one referring to the catalysts themselves and using the word "single" and one referring to the different polymerisation stages and using the phrase "the same catalyst system".

2.2.5 In the boards view, however, these are two different conditions to which the term "single" in Claim 1 cannot be held necessarily simultaneously to apply. The question is whether the term "single" in the inserted phrase (section 2.1, above) is the antecedent of the phrase "supported Ziegler-Natta catalyst system" or a subsequent qualification of "multistage polymerisation process using …".

2.3 The position of the appellant, namely that the term "single" refers both to the nature of the supported catalyst (single) and to the stages in the multistage polymerisation process in which it is applied (all of them) is by no means trivial for determining the subject matter for which protection is sought in claim 1. According to this interpretation, there is

only one catalyst on the support and this catalyst is the only one used in the multistage polymerisation process. If, on the other hand, the term "single" is to be understood simply as the antecedent of "supported Ziegler-Natta catalyst" then the claim requires the presence of a support with a single Ziegler-Natta catalyst on it but not necessarily in all stages of the multistage polymerisation process. Furthermore, if the term "single" is to be understood as the qualification of the reference to "multistage polymerisation process" then the use of a supported Ziegler-Natta catalyst is common to each stage of the multistage polymerisation process, but it need not be the only catalyst used in the multistage polymerisation process.

2.4 Since the word "single" appears only once in the inserted phrase, it is in the board's view not possible to tell which of these functions the word "single" has in the phrase "in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system".

2.4.1 As indicated above, it could be antecedent, post-qualification, or (as canvassed by the Appellant) both. Even if for the sake of argument the last one of these was the most likely one (which for the reasons given in section 2.3 above is not the case) there would still be two other possible interpretations each leading to a broader scope of claim than that canvassed by the appellant.

2.4.2 In other words claim 1 does not meet the requirements of Art. 84 EPC because it is not clear in the meaning or scope.

2.5 For this reason the main request has to be refused.

2.6 Considering that the multistage polymerisation processes defined in e.g. claim 1 of each of auxiliary request I and auxiliary request III comprise the same amendment "and wherein said HDPE is prepared in a multistage polymerisation process using a single supported Ziegler-Natta catalyst system" as in the main request, these requests are also refused because they do not meet the requirements of Art. 84 EPC.

3. Amendments: Art. 123(2) EPC (Auxiliary request II)

3.1 The respondents raised the objection that the subject matter of claim 1 of auxiliary request II contravened Art. 123 (2) EPC.

3.2 In order to assess whether or not the requirements of Art. 123 (2) EPC are met, it has to be examined whether or not the subject matter of claim 1 is directly and unambiguously derivable from the application as filed.

3.3 Claim 1 may be considered as corresponding to *claim 12*, wherein the density range was amended from "940 to 950 kg/m^3" to "950 to 980 kg/m^3". No support for this amendment, in particular for the specific combination of this new density range with the other features or parameters recited in claim 1, could, however, be identified by the board in the application as filed. This conclusion was not contested by the appellant. *Claim 12* can, thus, not be considered as providing a valid support for amended claim 1.

3.4 The appellant considered that claim 1 corresponded to the limitation to HDPE consisting of two polyethylene components of the general disclosure derived from the combination of *the paragraph bridging pages 2 and 3* (corresponding to the first part of the claim "An HDPE … homopolymer) with the passages comprised between *page 6, line 12 and page 7, line 14* (corresponding to the second part of the claims "and having the following characteristics…").

3.4.1 It was established during the oral proceedings before the board that the complete wording of *the paragraph bridging pages 2 and 3* had been incorporated into claim 1 and that the passages of the application as filed quoted by the appellant were both referring to embodiments "according to the invention". The board, thus, agrees that the combination of these passages, although originally not explicitly disclosed in combination, is nevertheless derivable from the application as filed without infringing the requirements of Art. 123 (2) EPC, at least as long as these passages remain at the same degree of generality as originally disclosed.

This is, however, not the case here. Indeed, if it is not contested that *the paragraph bridging pages 2 and 3* was fully incorporated in its unamended form into claim 1, the amendment made by the appellant is only derivable from *pages 6-7* after performing the following selections within the ambit of said more generic disclosure, namely:

- weight average molecular weight of the low molecular weight fraction of 20 to 40 kD;
- density 950 to 980 kg/m^3.

Hence, it has to be decided whether or not this specific selection of features and its further combination with the other features of claim 1 is directly and unambiguously derivable from the application as filed.

3.4.2 The appellant argued that support for the amendments of claim 1 related to the weight average molecular weight of the low molecular weight component and to the density could be found in the following passages of the application as filed, respectively (emphasis added by the board):

- *page 6, lines 16-17*, which reads as follows: "weight average molecular weight (of the low molecular weight fraction) of 5-50 kD, **preferably 20 to 40 kD**";
- *page 7, lines 7-8*, which reads: "density of 940-**980** kg/m^3, preferably 945-975 kg/m^3, in particular **950**-965 kg/m^3".

Hence, following the argumentation of the appellant, the board ascertains that the combination of the corresponding features recited in claim 1 is not disclosed as such in the application as filed and amounts in fact to the combination of:

- the **preferred range** originally disclosed for the weight average molecular weight of the low molecular weight fraction;
- a **new range** for the density of the whole HDPE composition, said range being created on the basis of both a general and a preferred range of density, by combining the preferred disclosed narrower range and the upper-part of the general density range.

The board agrees with the appellant that according to established case law of the boards of appeal of the EPO the new range of density thus created, on its own, does not contravene Art. 123 (2) EPC (see e.g. **T 2/81**, OJ EPO 1982, 394). However, the amendment submitted by the appellant goes beyond the mere creation of a new density range since it further combines this new range with the preferred range of weight average molecular weight of the low molecular weight fraction and with the other features recited in claim 1 which are derived from *the paragraph bridging pages 2 and 3*.

Hence, although each of the features recited in claim 1 may have, indeed, been **individually** disclosed, it has to be decided whether or not their **combination** was directly and unambiguously derivable from the application as filed. The board considers that, in order to establish whether or not such a multiple selection of features made within the ambit of the application as filed was originally disclosed, it is required to evaluate whether or not this multiple selection emerges from the application as filed.

The board could not identify any passage of the application as filed which could be considered as providing a valid support for claim 1. In order to clarify this point, the board had first required from the appellant in its communication annexed to the summons to oral proceedings, that it establish that said combination of features, in particular the combination of the preferred range of weight average molecular weight for the low molecular weight component with the density range of 950-980 kg/m^3, "emerges from the application as filed". The board had in particular

pointed out that it was not clear whether Example 2 could be a valid support for the claimed combination of features because it failed to disclose all the parameters recited in e.g. claims 13 and 15, which correspond to claims 1 and 3 of the present request. During the oral proceedings, the appellant was again asked by the Chairman to indicate to the board any passage of the application as filed which could provide a support for such a combination of features. As previously explained, none of these questions was convincingly answered by the appellant. Hence, in the absence of any convincing evidence or argument in this regard, the board considers that the appellant has not satisfactorily replied to this objection, although it had been explicitly foreshadowed by the board long enough before the oral proceedings.

In this respect, the board additionally points out that it has considered in its evaluation of this issue, whether or not the examples of the application as filed illustrating the invention (example 2; samples 3-5) could have provided a support for the claimed combination of features. However, since the application as filed contained no explicit information with regard to the molecular weight of the low molecular weight component and in the absence of any evidence provided by the appellant in this regard, the board was not in a position to ascertain whether or not example 2 illustrated the subject matter of claim 1. Consequently, the board could not take example 2 into account in order to assess whether or not the application as filed provided a basis for the combination of parameters recited in claim 1, in particular the combination of

parameters identified in the first paragraph of the present section.

The argument of the appellant that the amendment made amounted to the mere combination of two preferred parameters related to one and the same embodiment was not accepted by the board because the density range set out in claim 1 does not correspond to any of the preferred ranges originally disclosed but represents a new range which was not originally disclosed as such.

Similarly, the argument of the appellant that the amendment made amounted to the mere deletion of the lower part of the broadest density range originally disclosed was rejected. The board, indeed, considers that in addition to that deletion, one would further have to combine the thus remaining range both with the preferred range of weight average molecular weight of the low molecular weight component and with the other features derived from *the paragraph bridging pages 2 and 3*. The original application contains, however, no support for such a combination.

3.4.3 Hence, the board considers that the combination of the range of weight average molecular weight of the low molecular weight component, the density of the whole HDPE, with the further features recited in *the paragraph bridging pages 2 and 3* recited in claim 1 amounts to a new combination of features which contravenes Art. 123 (2) EPC.

3.5 The subject matter of claim 1, thus, extends beyond the content of the application as filed. Auxiliary

request II is, thus, not allowable because it does not meet the requirements of Art. 123 (2) EPC.

4. The Board comes to the following conclusions:

- The main request, auxiliary request I and auxiliary request III of the appellant do not fulfil the requirements of Art. 84 EPC;
- Auxiliary request II of the appellant contravenes Art. 123 (2) EPC.

Since none of the requests of the appellant (patent proprietor) is allowable, the patent in suit is to be revoked. Further consideration of the other objections raised by the respondents and/or of the issues addressed in the communication of the board dated 28 May 2010, namely Art. 83 EPC, Art. 54 EPC and Art. 56 EPC is, thus, superfluous.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

E. Görgmaier R. Young