

Internal distribution code:

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

**Datasheet for the decision
of 26 May 2021**

Case Number: T 1626/17 - 3.3.03

Application Number: 10157879.7

Publication Number: 2368921

IPC: C08F10/06, C08F2/00,
C08F297/08, C08L23/14,
C08F210/06

Language of the proceedings: EN

Title of invention:

PROCESS FOR THE PREPARATION OF FLOWABLE COMONOMER RICH
POLYPROPYLENE

Patent Proprietor:

Borealis AG

Opponent:

Basell Poliolefine Italia S.r.l.

Relevant legal provisions:

EPC Art. 56
RPBA Art. 13(1), 13(3), 12(4)
RPBA 2020 Art. 25(2), 25(3)

Keyword:

Late submitted material
Inventive step - Main and auxiliary request (no)



Beschwerdekammern

Boards of Appeal

Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1626/17 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 26 May 2021

Appellant: Basell Poliolefine Italia S.r.l.
(Opponent) Via Pontaccio 10
20121 Milano (IT)

Representative: LyondellBasell
c/o Basell Poliolefine Italia
Intellectual Property
P.le Donegani 12
44122 Ferrara (IT)

Respondent: Borealis AG
(Patent Proprietor) IZD Tower
Wagramerstraße 17-19
1220 Vienna (AT)

Representative: Maiwald Patent- und Rechtsanwalts-gesellschaft mbH
Elisenhof
Elisenstraße 3
80335 München (DE)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
23 May 2017 concerning maintenance of the
European Patent No. 2368921 in amended form.**

Composition of the Board:

Chairman D. Semino
Members: D. Marquis
W. Ungler

Summary of Facts and Submissions

I. The appeal of the opponent lies from the decision of the opposition division posted on 23 May 2017 concerning maintenance of the European patent No. 2 368 921 in amended form according to the first auxiliary request.

II. The decision of the opposition division was based on the granted claims as the main request and on the first auxiliary request filed by letter of 8 May 2017.

III. Claim 1 of the first auxiliary request read:

"1. Process for producing a polypropylene composition (PPC-F), wherein said composition (PPC-F) is a heterophasic propylene copolymer (HECO) and comprises units derived from
(i) propylene and
(ii) at least one C2 to C20 α -olefin other than propylene in an amount of at least 4.0 wt.-% measured by Fourier transform infrared spectroscopy and given in wt.-%, and
said process comprises the steps of
(a) producing in at least one first reactor (R-1) a first polypropylene (PP-1) having a xylene cold soluble (XCS) content measured according to ISO 6427 not exceeding 4.0 wt.-%,
(b) transferring said first polypropylene (PP-1) in a second reactor (R-2),
(c) producing in the second reactor (R-2) in the presence of the first polypropylene (PP-1) a second polypropylene (PP-2) thereby obtaining a first polypropylene composition (PPC-1), wherein

(c1) said second polypropylene (PP-2) comprises units derived from

- (i) propylene and
- (ii) at least one C2 to C20 α -olefin other than propylene in an amount of at least 9.0 wt-%,

(c2) said first polypropylene composition (PPC-1) has a comonomer content in the amorphous fraction (AM) of the xylene cold soluble (XCS) fraction measured by Fourier transform infrared spectroscopy of at least 25 wt.-%,

(d) transferring said first polypropylene composition (PPC-1) to a third reactor (R-3),

(e) producing in the third reactor (R-3) in the presence of the first polypropylene composition (PPC-1) a third polypropylene (PP-3) thereby obtaining the polypropylene composition (PPC-F), wherein the intrinsic viscosity (IV) of the amorphous part (AM) of the xylene cold soluble (XCS) fraction of the third polypropylene (PP-3) is at least 3.0 dl/g".

IV. The decision of the opposition division was based *inter alia* on the following documents:

D1: WO 2005/113672 A1

D3: Proprietor's response during examination of application EP 10157879.7 of 27 September 2012

D4: EP 1588843 A1

D7: Experimental report from Mr. Grazzi dated 10 March 2017

V. As far as it is relevant to the present appeal, the decision of the opposition division can be summarized as follows:

- The subject-matter of granted claim 1 extended beyond the content of the application as originally filed.
- D7, a late filed experimental report, did not provide details about the polymerization reaction of the rework of example 2 of D1. Also, the values of most of the parameters relating to the produced polymers differed from those provided in D1. It was thus doubtful whether D7 could be seen as a truthful rework of example 2 of D1. On that basis D7 lacked relevance and was not admitted into the proceedings.
- The patent in suit provided sufficient guidance in the form of a formula for the calculation of the properties of the polymers PP-2 and PP-3.
- Since D1 did not disclose the intrinsic viscosity of the amorphous part of the xylene cold soluble fraction of the polymer PP-3 directly and unambiguously, the process of claim 1 of the first auxiliary request was novel over examples 1 and 2 of D1.
- D4 and not D1 was the closest prior art document since D1 did not address the problem of stickiness mentioned in the patent in suit. In any case the subject-matter of claim 1 of the first auxiliary request involved an inventive step both when choosing D4 and when choosing D1 as the starting point.
- Claim 1 of the first auxiliary request differed from D4 in the third step of the polymerization and

in particular in the intrinsic viscosity of the amorphous part of the xylene cold soluble fraction of the polymer PP-3. Since the patent in suit did not contain a meaningful comparison with D4, the problem was to provide an alternative method for the provision of free-flowing polymer powders. D4 relied on the use of metallocene catalysts to avoid the formation of a polymer fraction of low molecular weight that was responsible for the stickiness of the polymer powder. The patent in suit followed a different approach based on the use of Ziegler-Natta catalysts and it addressed the stickiness of the produced polymer powder by introducing a third polymerization step. There was no hint towards that approach in D4. D1 did not render the claimed solution obvious either since it was silent about the characteristics of the produced polymer powders. Claim 1 of the first auxiliary request was thus inventive over D4.

- Claim 1 of the first auxiliary request differed from D1 at least in the intrinsic viscosity of the amorphous part of the xylene cold soluble fraction of the third polypropylene PP-3. The comparison in the patent in suit of example 2 which represented claim 1 of the first auxiliary request and example 1 which fairly represented a process according to D1 showed a reduction in the time that it takes for a polymer powder sample to flow through a funnel from 15.1 s to 12.1 s. This reduction in flowing time represented an improvement of the flowability of the polymer powder. The comparison of examples 1 and 2 was valid even if the morphology and the size of the produced powders was unknown. The problem was thus the provision of a polymerisation process that results in polymer powders of increased

flowability. The solution to this problem was to prepare in the third step of the polymerisation a polymer PP-3 having an intrinsic viscosity of the amorphous part of its cold xylene soluble fraction of at least 3.0 dl/g. That solution was not rendered obvious by the cited prior art.

VI. The opponent (appellant) lodged an appeal against the decision of the opposition division. With the statement of grounds of appeal the appellant also filed:

D8: Rides, M., Allen, C., Omloo, H., Nakayama, K., Cancelli, G. Interlaboratory comparison of melt flow rate testing of moisture sensitive plastics. Polymer Testing 2009, 28, 572-591

D9: Experimental Report dated 29 September 2017

D10: Affidavit of Ljiljana Jeremie dated 3 June 2014

VII. The patent proprietor (respondent) filed three requests as first to third auxiliary requests with the reply to the statement setting out the grounds of appeal.

VIII. By letter of 15 May 2020, the respondent withdrew the first to third auxiliary requests submitted with the reply to the statement setting out the grounds of appeal and filed a new auxiliary request. Claim 1 of that request differed from claim 1 of the main request (corresponding to claim 1 of the first auxiliary request filed on 8 May 2017) in that the amount of C2 to C20 α -olefin other than propylene defining the heterophasic propylene copolymer (HECO) was limited to 9.0 to 20 wt.-% and at the end of the claim it was added that "said heterophasic polypropylene (HECO) comprises further
(a) said first polypropylene (PP-1) being a first propylene homopolymer (H-PP1),

(b) said second polypropylene (PP-2) being a first elastomeric propylene copolymer (EPP1), said elastomeric propylene copolymer (E-PP1) has a xylene cold soluble (XCS) content of at least 90.0 wt-%,

(c) said third polypropylene (PP-3) being a second elastomeric propylene copolymer (EPP2), said second elastomeric propylene copolymer (E-PP2)

(α) comprises units derived from

(i) propylene and

(ii) at least one C2 to C20 α -olefin other than propylene

and

(β) has an intrinsic viscosity (IV) of the amorphous phase (AM) of the xylene cold soluble (XCS) fraction of 8.0 to 15.0 dl/g".

IX. Oral proceedings were held on 26 May 2021, the parties being present by videoconference. At the oral proceedings, the respondent amended the requests in that the auxiliary request submitted by letter of 15 May 2020 became the main request and the first auxiliary request submitted by letter of 8 May 2017 during opposition proceedings (previously main request in appeal) became the auxiliary request.

X. The appellant's arguments, insofar as relevant to the present decision, may be summarised as follows:

Admittance of the main request, D3 and D7 to D10

- The main request was filed late into the proceedings and it was also not *prima facie* allowable. In particular, the question as to whether the patent examples could be meaningfully compared to one another that was raised in paragraph 9.14 of the preliminary opinion of the

Board was not clearly overcome by the newly filed request. That issue was not new to the appeal proceedings since it had already been discussed in the opposition proceedings and was raised again with the statement setting out the grounds of appeal. The main request should thus not be admitted into the appeal proceedings.

- D3 and in particular the table contained on page 3 should not be admitted into the proceedings as that document had been filed late and only used to present calculations that could be done without that table.
- D7 should be admitted into the proceedings. The opposition division had not properly applied their discretion in not admitting D7. That document was *prima facie* relevant since it explicitly indicated that example 2 of D1 had been repeated.
- D8-D10 should be admitted into the proceedings as these documents were relevant to the discussion of novelty in view of the content of D7 and as a consequence could be relevant to the discussion of inventive step as well.

Inventive step

- Starting from example 2 of D1 as the closest prior art, there were two differences with claim 1 of the main request, namely i) the ethylene content of the amorphous fraction of the xylene cold soluble fraction of the first polypropylene composition (PPC-1) and ii) the intrinsic viscosity (IV) of the amorphous part (AM) of the xylene cold soluble

(XCS) fraction of the third polypropylene (PP-3).

- Only example 4 of the patent in suit was according to operative claim 1 of the main request, assuming *arguendo* that the value of the intrinsic viscosity regarding the third polypropylene (PP-3) (11.6 dl/g) that was calculated by the respondent with the formula disclosed on pages 9/10 of the patent in suit was correct.

- The comparison of the processes disclosed in examples 3 and 4 of the patent in suit was not a fair comparison because these two processes differed in many more parameters than the distinguishing features i) and ii) over operative claim 1. These further differences had an influence on the properties and thus on the flowability of the obtained polypropylene composition. In particular, the amounts of the three components in examples 3 and 4 were different as shown by the matrix split (loop split of the first reactor) in example 3 in Table 1 on page 18 (29 wt.-%) vs example 4 (35 wt.-%). That difference was significant for the polypropylene composition. Also, the GPR-3 split in the third reactor in example 3 (24 wt.-%) differed from that of example 4 (16 wt.-%). The compositions of the second rubber were also different in examples 3 and 4. That implied that a different second rubber was obtained in these two examples which was reflected by the amount in solubles of the final product (GPR3 XS of 36 wt.-% in example 3 and 30 wt.-% in example 4), a difference of 20% for the composition of example 4 which also impacted the flowability of the composition. In addition, the intrinsic viscosity of the amorphous part in the second reactor (GPR2

Viscosity of AM) in example 3 (3.2 dl/g) differed significantly from that of example 4 (4.1 dl/g).

- Since the comparison of examples 3 and 4 did not establish the presence of an effect resulting from one or both of the distinguishing features i) or ii) of operative claim 1 over D1, the problem had to be defined as the provision of an alternative process.

- The selection of features i) and ii) in the ranges of operative claim 1 was merely arbitrary and therefore obvious in view of the prior art. D1 itself taught in the passage of page 3, lines 12/13 that the intrinsic viscosity of the elastomeric copolymer component could be varied. Example 1 of D1 also provided an indication that the intrinsic viscosity of the second rubber could be raised to 3.5 dl/g. The skilled person therefore knew that both features i) and ii) could be varied in order to obtain alternative compositions.

- D4 was also concerned with the problem of avoiding stickiness of the composition and taught that to that extent one had to consider high molecular weight compositions (paragraph 100 and 153). In that respect it was obvious to the skilled person that the adjustment of the last step of the process was most favourable to achieve compositions of high molecular weights.

- Claim 1 of the main request lacked therefore an inventive step over D1 as closest prior art. The same arguments applied to claim 1 of the auxiliary request.

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

Admittance of the main request, D3 and D7 to D10

- The main request was filed in reply to the point first raised in the preliminary opinion of the Board regarding the lack of a valid comparison between the examples of the patent in suit and the closest prior art. Inventive step was discussed in the statement setting out the grounds of appeal but the question of the comparability of the examples of the patent in suit was not raised there. The main request should therefore be admitted into the proceedings.
- D3 should be admitted into the proceedings since it was relevant to the question of inventive step of the main request.
- The opposition division had correctly ruled that D7 did not meet the standard of *prima facie* relevance, as the reaction conditions of the repetition were not given and three values showed deviations with respect to D1. In addition to that, the opposition division correctly ruled out that D7 did not fill the gap as intended. D7 should thus not be admitted into the proceedings.
- D8 was not *prima facie* highly relevant as it dealt primarily with MFR testing of moisture sensitive plastics. That document should not be admitted into the proceedings.
- Experimental report D9 was also not *prima facie* highly relevant as it evaluated the ethylene of EPR

versus ethylene of the amorphous fraction "AM" for a heterophasic polypropylene, i.e. an evaluation of HECOs were made. The report was silent as regards the amount of homopolymer and the variation of said amount. That document should not be admitted into the proceedings.

- The content of paragraph 100 of the opposed patent had not been incorporated into the claims. D10 insofar was not *prima facie* highly relevant. That document should not be admitted into the proceedings.

Inventive step

- Starting from example 2 of D1 as closest prior art, the differences with operative claim 1 were i) the ethylene content of the amorphous fraction of the xylene cold soluble fraction of the first polypropylene composition (PPC-1) and ii) the intrinsic viscosity (IV) of the amorphous part (AM) of the xylene cold soluble (XCS) fraction of the third polypropylene (PP-3).
- Inventive step relied primarily on feature ii). The formula disclosed in the patent in suit for the calculation of the intrinsic viscosity regarding the third polypropylene (PP-3) reflected the high molecular weight of the polymer produced in the last stage of the process. The presence of this high molecular weight polymer in contact with the growing particles in the course of the process led to a composition with reduced stickiness.
- The loop split difference in the processes of examples 3 and 4 of the patent in suit concerning

the matrix component was not relevant for the effect sought for in the composition according to operative claim 1. There was a difference in GPR3 split between examples 3 and 4 (24% in example 3 vs. 16% in example 4) but it reflected an improvement in that a smaller quantity of the decisive fraction was needed to achieve the desired result. The comparison of examples 3 and 4 was therefore valid. With regard to the ethylene amount in the third fraction (GPR3 Ethene of AM in example 3 of 39 wt.-% vs 47 wt.-% in example 4) it was actually unfavourable for the process according to example 4 which represented operative claim 1. In that regard, the higher amount of ethylene content observed in the third fraction in example 4 only showed to which extent the process according to operative claim 1 was effective at reducing stickiness since even with a lower amount of ethylene in the third fraction, the composition of the comparative process of example 3 was more sticky than that of example 4. As to the difference in the amount of xylene solubles of the third polypropylene (PP-3) (GPR3 XS of 36 wt.-% in example 3 and 30 wt.-% in example 4) it had to be noted that it only reflected the increase in molecular weight of the third component which was the feature that was varied in the composition according to operative claim 1. The comparison between examples 3 and 4 of the patent therefore was suitable to show an improvement with respect to example 2 of D1.

- The problem had therefore to be defined as the provision of an improved process yielding a polypropylene composition having better

flowability.

- There was no pointer in D1 towards values of intrinsic viscosity regarding the third polypropylene (PP-3) in the range of 8.0-15.0 dl/g to solve that problem. Arriving at that range in view of the prior art required hindsight. The teaching of D4 was also not relevant as that document did not provide a motivation to modify the intrinsic viscosity of the third polypropylene (PP-3) to reduce stickiness of the produced compositions. In that respect D4 rather pointed at the selection of the catalyst.
- Claim 1 of the main request was thus inventive over D1 as closest prior art. The same arguments applied to claim 1 of the auxiliary request.

XII. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

XIII. The respondent requested that the patent be maintained on the basis of the auxiliary request filed with letter of 15 May 2020 (in the following "main request"), alternatively that the patent be maintained on the basis of the claims of the first auxiliary request filed with letter of 8 May 2017 (in the following "auxiliary request").

Reasons for the Decision

1. Admittance of the main request and D3, D7 to D10
 - 1.1 The main request was filed by the respondent with letter of 15 May 2020. Claim 1 of that request corresponds to a combination of claims 1 and 11 of the

request maintained by the opposition division, the limitation in claim 1 addressing a question raised by the Board in section 9.14 of the preliminary opinion regarding the lack of a meaningful comparison with D1 based on the examples of the patent in suit, a question that had not been addressed in the same terms in the course of the opposition proceedings and that was not part of the argumentation of the appellant in the statement setting out the grounds of appeal. While the requests of the respondent in the reply to the statement of grounds of appeal already contained first to third auxiliary requests, these requests did not constitute a valid fall back position for the respondent since several objections under Article 123(2) EPC and 56 EPC were found relevant against them in the preliminary opinion of the Board as well. Furthermore, the amendments performed in claim 1 of the main request do not diverge from the subject-matter that was already present in claim 11 of the main request maintained with the reply to the statement of grounds of appeal. Thus, the Board finds that the amendments performed in the main request did not raise issues that could not be expected to be dealt with by the parties without adjournment of the oral proceedings (Article 13(3) RPBA 2007 which applies in view of Article 25(3) RPBA 2020). In view of this, the Board finds that the main request was legitimately filed as a reaction to the preliminary opinion of the Board so that the Board finds it appropriate to exercise the discretion under Article 13(1) RPBA 2007 (which also applies in view of Article 25(3) RPBA 2020) to admit the main request into the proceedings.

- 1.2 D3 was filed with the notice of opposition and was thus part of the opposition proceedings from its outset. The information contained in D3, in particular that in the

table on page 3 of that document, corresponds to examples and data already present in the patent in suit completed by calculations performed on that data, the validity of which was not contested by the appellant. In that regard, the Board does not find a legal basis to exclude D3 from the proceedings from which it was already part.

1.3 D7 was filed on 10 March 2017 after the expiry of the nine-months period for opposition and no justification for the late filing of D7 was provided by the appellant. D7 is an experimental report of the appellant concerning a rework of example 2 of D1. It is apparent from the contested decision that the opposition division exercised its discretion under Article 114(2) EPC not to admit D7 into the proceedings on the grounds that D7 lacked relevance because it did not provide any experimental details of the rework and because the parameters and properties that were measured in the course of the process differed from those disclosed for example 2 in D1. It is apparent therefrom that the opposition division applied the correct principles when assessing the admittance of D7 into the opposition proceedings. In that regard, the Board does not find a reason to overturn the decision of the opposition division not to admit D7.

1.4 As to the admittance of D7 on the grounds that it was filed at the outset of the appeal proceedings, the reasoning of the opposition division for not admitting D7 as given in section 3 of the contested decision, namely that D7 could not be considered *prima facie* as a valid repetition of example 2 of D1, was not addressed by the appellant in appeal so that the objection of the opposition division against its admittance remains unanswered. Under these circumstances, the Board does

not find appropriate to use its discretion under Article 12(4) RPBA 2007 (which applies in view of Article 25(2) RPBA 2020) to admit D7 into the proceedings. In addition, the Board does not see how D7 could be relevant as a document filed in reaction to the present main request since the intrinsic viscosity of the second elastomeric propylene copolymer (PP-3) according to claim 1 of the present main request was limited to the range of 8,0 to 15.0 dl/g, a range that is well above the value of 3.43 dl/g calculated for the corresponding component of the composition according to example 2 of D1. The appellant did also not provide reasons as to how D7 could be seen as being relevant for the main request filed with letter of 15 May 2020. D7 is therefore not admitted into the proceedings.

1.5 D8-D10 were filed with the statement of grounds of appeal and are documents used in the context of the discussion of D7 which is not part of the present appeal proceedings. The appellant did also not provide a reasoning as to why these documents should be admitted into the proceedings and the question of the extent to which these documents could additionally be relevant to the question of inventive step of the main request was never raised prior to the oral proceedings before the Board and no convincing arguments in that respect were provided at that stage. Under these circumstances, the Board finds it appropriate to exercise its discretion under Article 12(4) RPBA 2007 (which applies in view of Article 25(2) RPBA 2020) by not admitting D8-D10 into the proceedings.

2. Inventive step

2.1 Novelty of the main request filed on 15 May 2020 was not contested in appeal. With regard to inventive step,

while the decision under appeal identified D4 as the closest prior art, it also provided a full assessment of inventive step starting from D1. With regard to that assessment the conclusion was reached that claim 1 of the then main request was inventive starting from D1 as the closest prior art.

2.2 With regard to the assessment of inventive step of the present main request starting from D1 and in view of the decision to be revised, the first question that needed to be answered was not which of D1 or D4 was the closest to operative claim 1 but whether D1 was such that it could not have been considered as a reasonable starting point for the assessment of inventive step. Only if that were the case, the inventive step attack starting from D1 analysed in the decision and maintained by the appellant in appeal could have been disregarded.

2.3 The closest prior art for the purpose of assessing inventive step is generally that which corresponds to a purpose or technical effect similar to that of the invention and requiring the minimum of structural and functional modifications (Case Law of the Boards of Appeal, 9th edition 2019, I.D.3.1).

2.4 With respect to the purpose of the invention, operative claim 1 concerns a process for producing a polypropylene composition (PPC-F), wherein said composition (PPC-F) is a heterophasic propylene copolymer (HECO) that contains two elastomeric components (second and third elastomeric polypropylenes). One learns from paragraph 3 of the patent in suit that the problem of flowability of HECO powders (the powders are disclosed as being sticky) is specific to HECOs comprising high amounts of

elastomeric material used to impart high impact properties.

2.5 D1 concerns heterophasic polyolefin compositions based on propylene and ethylene with balanced properties of stiffness and impact (claim 1 and page 1, fifth paragraph) that imply a sufficient amount of elastomeric materials in the composition. The polypropylene compositions according to D1 also contain two elastomeric copolymers (claim 1). D1 therefore concerns the same type of HECOs as those described in the patent in suit. These copolymers are also used in D1 to produce materials for which the impact properties are important (first paragraph on page 1 and seventh paragraph on page 3). Even if D1 does not address the specific problem of the flowability of the compositions, that document relates to the type of copolymers (HECOs) that are also the subject matter of claim 1 of the main request. D1 is therefore in the same technical field of heterophasic polypropylenes (HECOs) and addresses the same general problem of providing HECOs with high impact properties. In view of this the choice of D1 as the closest prior art is a reasonable one and the presence of an inventive step can only be acknowledged if the conclusion of the opposition division with respect to D1 is maintained.

2.6 The starting point within D1 that was considered by both parties was the process disclosed in example 2. The parameters of that process as well as the composition of the copolymers produced in the course of that process are disclosed in Tables 1-3 of D1. The parties concurred that the process according to claim 1 of the main request differed from that of example 2 of D1 i) in the comonomer content of the amorphous fraction (AM) of the xylene cold soluble (XCS) fraction

of the first polypropylene composition which is defined as being at least 25 wt.-% in operative claim 1 (the first polypropylene composition corresponds to the mixture of propylene homopolymer and first ethylene-propylene elastomeric copolymer and the specific value is not disclosed in example 2 of D1) and ii) in the intrinsic viscosity (IV) of the amorphous part (AM) of the xylene cold soluble (XCS) fraction of the third polypropylene which is defined as being between 8.0 and 15.0 dl/g in operative claim 1 (the third polypropylene corresponds to the second ethylene-propylene elastomeric copolymer and the specific value is not disclosed in example 2 of D1). The Board has no reason to deviate from the common position of the parties.

2.7 As to the problem solved over the closest prior art, paragraph 10 of the patent in suit sets out that a comonomer rich polypropylene being free flowing can be obtained in a sequential polymerization process when in the last reactor of the polymerization sequence a polymer fraction is produced having either a low xylene cold soluble (XCS) content or an amorphous fraction with a rather high intrinsic viscosity (IV). In that regard, the respondent submitted at the oral proceedings in appeal that the effect of an improved flowability only relied on distinguishing feature ii), namely the selection of the intrinsic viscosity (IV) of the amorphous part (AM) of the xylene cold soluble (XCS) fraction of the third polypropylene in the range of 8.0 to 15.0 dl/g as defined in claim 1 of the main request and relied on examples 3 and 4 of the patent as evidence of that effect.

2.8 Table 1 of the patent in suit contains examples of processes for the preparation of polypropylene compositions for which the intrinsic viscosity

regarding the third polypropylene (PP-3) was later calculated by the respondent (page 3 of D3). According to that calculation which was not disputed by the appellant, example 4 is the only example of the patent in suit in which the intrinsic viscosity regarding the third polypropylene (PP-3) is in the range of 8.0 to 15.0 dl/g (11.6 dl/g) and is therefore according to operative claim 1. Example 3 (for which the intrinsic viscosity regarding the third polypropylene (PP-3) was 4.867 dl/g according to D3) was considered by the respondent as representative of the prior art and a comparison between the two examples should in their view establish the presence of improved flowability properties.

- 2.9 According to the Board, however, these examples cannot be meaningfully compared to one another since the processes they disclose differ significantly from one another in several other critical parameters such as the amounts of the polymer components present in the composition (as shown by the different loop splits in the first reactor which is 29 wt.-% in example 3 and 35 wt.-% in example 4 and in the third reactor with a GPR-3 split of 24 wt.-% in example 3 and 16 wt.-% in example 4) and the composition of the second elastomeric component whose ethylene content (GPR3 Ethene of AM) is much lower in example 3 (39 wt.-%) as compared to example 4 (47 wt.-%). In that regard, the several identified differences were not shown to be linked only to the variation of the intrinsic viscosity regarding the third polypropylene (PP-3) so as to render it possible to attribute a possible effect to distinguishing feature ii).
- 2.10 The respondent submitted that these differences would not have an impact on the flowability of the

polypropylene composition without however supporting that argument by any appropriate evidence. It is also not a plausible argument in view of the teaching of the patent in suit itself which sets out in its introduction that the amount of elastomeric material in polypropylene compositions (HECO) causes the side effect of the powder being sticky (last sentence of paragraph 3). It is therefore not credible that substantial variations in the splits and in the compositions do not have a relevant effect on stickiness and flowability.

2.11 It follows that examples 3 and 4 relied upon by the respondent to establish the presence of an improved flowability are not truly comparable and as such they cannot establish a causality between the distinguishing feature ii) (the intrinsic viscosity regarding the third polypropylene (PP-3)) and the purported effect (flowability of the polypropylene composition powder). Under these circumstances, the alleged advantage to which the respondent referred without offering sufficient evidence to support the comparison with the closest prior art cannot be taken into consideration in determining the problem underlying the invention (Case Law, *supra*, I.D.4.2).

2.12 With regard to the comonomer content of the amorphous fraction (AM) of the xylene cold soluble (XCS) fraction of the first polypropylene composition which is defined as being at least 25 wt.-% in operative claim 1 (distinguishing feature i), the respondent did not claim that it was instrumental to the flowability of the polypropylene composition, nor to any other effect. The Board has therefore no reason to analyse a possible effect of this feature in any further detail.

- 2.13 The technical problem is therefore to be defined as the provision of further polypropylene compositions.
- 2.14 The question of obviousness was whether the skilled person would have taken into consideration a polypropylene composition analogous to that of example 2 of D1 satisfying features i) and ii) as an alternative composition.

With regard to feature i), it was not disputed that the range of at least 25 wt.-% of comonomer content in the amorphous fraction (AM) of the xylene cold soluble (XCS) fraction of the first polypropylene composition in claim 1 of the main request was common in the art and thus that that feature would have been easily adjustable within the range of that claim. Also, it was made plausible by the appellant that the variation of feature ii), the intrinsic viscosity of the amorphous phase (AM) of the xylene soluble fraction, was common in the art on the basis of D1 (fifth paragraph on page 3). It was not shown by the respondent with respect to that feature that the range of 8.0 to 15.0 dl/g for feature ii) defined in claim 1 of the main request was in anyway special as such or in combination with the range defined for feature i) or that it would not have been considered by the skilled person starting from the composition of example 2 of D1 and merely set to provide an alternative composition. It was also not shown that special technical measures were needed in order to obtain said intrinsic viscosity and said combination of features. No convincing arguments in this respect were provided by the respondent in case the presence of an effect were not acknowledged. Under these circumstances, the Board concludes that claim 1 of the main request lacks an inventive step over D1.

- 2.15 Claim 1 of the auxiliary request in appeal corresponds to claim 1 of the auxiliary request found allowable by the opposition division. Claim 1 of that request was broader than claim 1 of the present main request and fully included its subject-matter. In view of this the reasoning and conclusion reached for claim 1 of the main request also apply to claim 1 of the auxiliary request. Both parties did not provide further arguments for that request and relied exclusively on their arguments provided for the main request. The Board concludes therefore that claim 1 of the auxiliary request lacks an inventive step for the same reasons as outlined for claim 1 of the main request.
3. As the subject-matter of claim 1 of all requests on file does not involve an inventive step starting from D1 as the closest prior art, there is no need for the Board to decide on any other issue and the patent is to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



B. ter Heijden

D. Semino

Decision electronically authenticated