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Datasheet for the decision of 24 September 2025

Case Number: T 1044/23 - 3.3.03

Application Number: 15728901.8

Publication Number: 3161066

IPC: C08L23/06

Language of the proceedings: EN

Title of invention:
POLYETHYLENE COMPOSITION FOR INJECTION MOULDING

Patent Proprietor:
Basell Polyolefine GmbH

Opponent:
The Dow Chemical Company

Relevant legal provisions:
RPBA 2020 Art. 12(6) sentence 2
EPC Art. 54(2), 56

Keyword:
Late-filed evidence - should have been submitted in first-instance proceedings (yes)
Novelty - public prior use - state of the art - availability to the public
Inventive step - closest prior art - non-obvious modification

Decisions cited:
G 0001/23, T 1464/05, T 0660/16, T 2463/22

Catchword:
Decision G 0001/23 does not exclude that a non reproducible product be selected as the closest prior art. Instead the specific circumstances of the case should be analysed.

The extent to which a non-reproducible product must be modified to obtain the claimed subject-matter, and the level of knowledge about that product and its manufacture required to achieve it, are not yet relevant for determining whether the product can be regarded as the closest prior art. These aspects instead relate to later stages of the problem-solution approach, namely identifying the distinguishing features between the product and the claimed subject-matter and/or assessing whether the skilled person, starting from that product, would have been able to obtain the claimed one (Reasons 5.1.3 to 5.1.11).

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Case Number: T 1044/23 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 24 September 2025

Appellant: (Opponent)	The Dow Chemical Company 2211 H.H. Dow Way Midland MI 48674 (US)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Respondent: (Patent Proprietor)	Basell Polyolefine GmbH Brühler Strasse 60 50389 Wesseling (DE)
Representative:	LyondellBasell c/o Basell Poliolefine Italia Intellectual Property P.le Donegani 12 44122 Ferrara (IT)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 17 April 2023 rejecting the opposition filed against European patent No. 3161066 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	D. Semino
Members:	M. Barrère
	L. Basterreix

Summary of Facts and Submissions

I. The appeal of the opponent lies from the decision of the opposition division rejecting the opposition against European Patent number 3 161 066.

II. The following documents were *inter alia* cited in the decision of the opposition division:

D1: Technical information on DMDA-8904 NT7 published in June 2009
D2: Invoice 27999240 dated 3 June 2010
D3: Certificate of analysis 4871731 dated 3 June 2010
D4: Declaration of Ryan Hall dated 17 August 2021
D4a: Declaration of Ryan Hall dated 22 August 2022
D5: Declaration of Robert Reib dated 17 August 2021
D6: US 7,300,988 B2
D7: US 8,344,068 B2
D9: Technical information on DMDA-8907 NT7 published in September 2005
D10: Invoice 58047795 dated 26 July 2010
D11: Certificate of Analysis 4935693 dated 26 July 2010
D12: Certificate of Analysis 4935694 dated 26 July 2010
D13: Declaration of Robert Reib dated 21 July 2022
D14: EP 1 332 179 B1

III. The contested decision, as far as it is relevant to the present appeal, can be summarised as follows:

- The commercial products DMDA-8904 NT7 and DMDA-8907 NT7 were not prior art under Article 54(2) EPC because their manufacture was not enabled.

- The subject-matter of claim 1 as granted involved an inventive step over documents D6 or D7 each alternatively taken as the closest prior art.

The opposition was therefore rejected.

IV. The opponent (appellant) filed an appeal against said decision and submitted the following document with their statement of grounds of appeal:

D15: US 5,534,472

V. With the rejoinder to the statement of grounds of appeal, the patent proprietor (respondent) filed six sets of claims as auxiliary requests I to VI.

VI. Oral proceedings were held before the Board on 24 September 2025.

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

The respondent requested dismissal of the appeal and maintenance of the patent as granted (main request). In the alternative, the respondent requested maintenance of the patent in amended form on the basis of one of auxiliary requests I to VI filed with the rejoinder to the statement of grounds of appeal.

VIII. Claim 1 as granted (main request of the respondent) read as follows:

"1. Polyethylene composition having the following features:

1) density of from 0.950 to 0.970 g/cm^3, determined according to ISO 1183 at 23°C;

2) MIE from 1 to 30 g/10 min.;

3) ratio MIF/MIE from 15 to 30, in particular from 20 to 29 or from 22 to 29, where MIF is the melt flow index at 190°C with a load of 21.60 kg, and MIE is the melt flow index at 190°C with a load of 2.16 kg, both determined according to ISO 1133;

4) ER values from 0.40 to 0.52."

Claim 1 of auxiliary request I differed from granted claim 1 in that:

the melt flow index (MIE) of the composition was from 1 to **25** g/10 min (modifications in **bold** here and in the following request).

Claim 1 of auxiliary request II differed from granted claim 1 in that:

the density of the composition was between **0.955** and 0.970 g/cm^3.

The remaining claims of these requests, as well as those of auxiliary requests III to VI, are not relevant to this decision.

IX. The parties' submissions, in so far as they are relevant to the present decision, can be derived from the reasons for the decision set out below. They essentially concerned the following issues:

- the admittance of document D15 into the proceedings (point 1. of the reasons);

- the novelty of the subject-matter of claim 1 as granted and claim 1 of auxiliary request I in view of the commercial resins DMDA-8904 NT7 and DMDA-8907 NT7 (points 2. and 3. of the reasons); and

- whether the subject-matter of claim 1 of auxiliary request II involved an inventive step starting from any of documents D6 and D7 or the commercial resins DMDA-8904 NT7 and DMDA-8907 NT7 each alternatively taken as the closest prior art (point 5. of the reasons).

Reasons for the Decision

1. Admittance of document D15

1.1 D15 was filed by the appellant with the statement of grounds of appeal. Its admission to the proceedings, which is contested by the respondent, is subject to the discretionary power of the Board in accordance with Article 12 paragraphs (4) to (6) RPBA.

1.2 According to the appellant, this document was directed to providing more information on the rheological polydispersity (characterised by the ER value) as defined in the opposed patent (statement of grounds of appeal, page 2, third full paragraph). It was filed in reaction to the surprising rejection of the opposition by the opposition division, and its reliance on the ER value as a non-arbitrary feature under inventive step (see contested decision, page 13, point 21.3 of the reasons). The appellant further argued that there was no reason to discuss inventive step at an earlier stage since the preliminary opinion of the opposition division was that the subject-matter of granted claim 1 lacked novelty in view of the commercial product DMDA-8904 NT7 and it was expected that the same conclusion would apply to auxiliary request I in view of the commercial product DMDA-8907 NT7 (whose details were filed after the preliminary opinion of the opposition division). Consequently the appellant held that there was no reason to file D15 in support of an inventive step objection during opposition proceedings (appellant's letter dated 30 January 2024, page 1, second paragraph).

1.3 According to the respondent, the preliminary opinion of the opposition division indicated that the ER value was considered the main distinguishing feature over D6 and was associated with a technical effect (rejoinder, page 1, third paragraph). For that reason, the contested decision could not be seen as surprising and the appellant should have filed D15 during the opposition proceedings (rejoinder, page 2, first full paragraph).

1.4 The Board concurs with the respondent that the opposition division's preliminary opinion clearly indicated that the ER parameter could be of significant relevance to the assessment of inventive step (see page 6, points 13.1 to 13.4 of the preliminary opinion). Consequently, document D15 — which was filed to clarify the meaning of the ER value — could and should have been submitted in response to that opinion, if the appellant (then opponent) intended to rely on that. This is particularly true given that D15 is expressly cited in paragraph [0057] of the opposed patent, making its potential relevance in this context immediately apparent. Although the opponent chose to pursue a different line of argument after the preliminary opinion of the opposition division, focusing on a further novelty objection based on additional evidence of prior use, the Board considers that the need to address inventive step could not have been ruled out. Therefore, D15 should have been filed during opposition proceedings, at least as a precautionary measure, if the appellant (then opponent) intended to rely on that.

1.5 Under these circumstances, the Board finds it appropriate to exercise its discretion under Article 12(6), second sentence RPBA by not admitting document D15 into the proceedings.

Main request (patent as granted)

2. Novelty over resins DMDA-8904 NT 7 and DMDA-8907 NT 7

2.1 In the decision under appeal (see points 19 to 19.5 of the reasons), the opposition division found that commercial products DMDA-8904 NT7 and DMDA-8907 NT7 were not prior art under Article 54(2) EPC because the manufacture of these products was not enabled.

2.2 This conclusion was disputed by the appellant on the grounds that:

(i) in line with decision G 0001/23, the reproduction requirement was no longer a valid criterion to exclude a commercial product from the prior art within the meaning of Article 54(2) EPC (letter of the appellant dated 22 July 2025, page 1, last paragraph);

(ii) resins DMDA-8904 NT 7 and DMDA-8907 NT 7 were publicly available before the filing date of the opposed patent (statement of grounds of appeal, page 4, fifth paragraph to page 5, first paragraph and page 6, first to third paragraph);

(iii) the evidence on file showed that the compositions of resins DMDA-8904 NT 7 and DMDA-8907 NT 7 fell within the scope of granted claim 1 (statement of grounds of appeal, page 5, second to fifth paragraph and page 6, fourth to last paragraph).

For these reasons, the subject-matter of granted claim 1 was not novel in view of each of resins DMDA-8904 NT 7 and DMDA-8907 NT 7.

2.3 In the following, the Board addresses separately the three points raised by the appellant and analyses whether they justify departing from the conclusions of the opposition division.

2.4 Reproducibility requirement

2.4.1 As mentioned above, the opposition division's decision regarding novelty centred on the question of whether the commercially available resins DMDA-8904 NT 7 and DMDA-8907 NT 7 could be reproduced (contested decision, point 19.5 of the reasons).

2.4.2 The reproducibility criterion was recently reassessed by the Enlarged Board of Appeal in decision G 0001/23. In that decision, the Enlarged Board of Appeal found that:

> "*I. A product put on the market before the date of filing of a European patent application cannot be excluded from the state of the art within the meaning of Article 54(2) EPC for the sole reason that its composition or internal structure could not be analysed and reproduced by the skilled person before that date.*" (see order, point I)

2.4.3 Following the ruling of G 0001/23, it is clear to the present Board that the reproducibility requirement is no longer a valid condition to assess whether a product put on the market before the date of filing of the opposed patent is state of the art within the meaning

of Article 54(2) EPC. This was also not disputed by the respondent during the oral proceedings.

2.5 Public availability of the DMDA resins

2.5.1 As reproducibility is no longer a criterion for determining the prior art status of commercial products, the next step is to evaluate whether the DMDA resins were publicly available before the effective filing date of the opposed patent (i.e. before 24 June 2014 assuming that the priority is valid).

2.5.2 The appellant argued that both the DMDA-8904 NT 7 and DMDA-8907 NT 7 resins had been made publicly available before the priority date of the opposed patent (statement of grounds of appeal, page 4, fifth paragraph to page 5, first paragraph and page 6, first to third paragraph).

Regarding DMDA-8904 NT 7, the appellant relied on invoice D2 and certificate of analysis D3, both dated 3 June 2010, which documented a sale of the resin to "Entec Polymers LLC". The two documents corresponded to the same transaction, as they contained matching details — including the product designation ("DOW DMDA-8904 NT 7 High Density Polyethylene Resin bulk"), the same quantity (approximately 194,800 pounds), customer name, purchase order number, delivery note, vehicle identification, and date. Since certificates of analysis were typically sent to the buyer together with, or shortly after, the product shipment, these documents were said to demonstrate that the DMDA-8904 NT 7 resin was sold and thus made publicly available in June 2010.

Similarly, for the DMDA-8907 NT 7 resin, the appellant referred to invoice D10 and certificates of analysis D11 and D12, all dated 26 July 2010, documenting a sale to "Pelex SA Peliculas Extruidas". These documents contained identical details confirming that they referred to the same transaction: the product name ("DOW DMDA-8907 NT 7 High Density Polyethylene Resin bulk"), the delivered quantity (880 bags, twice), customer name, customer order number, delivery note, vehicle identification, and date. Given that the certificates of analysis accompanied or closely followed the shipment, the appellant concluded that the DMDA-8904 NT 7 resin was likewise sold and made publicly available in July 2010.

The appellant further pointed out that the process for preparing the DMDA resins had not changed from 2009 to 2015, as stated in declarations D5 and D13 (statement of grounds of appeal, page 5, fifth paragraph and page 7, first paragraph).

2.5.3 The public availability of the DMDA resins was contested by the respondent for the following reasons (see rejoinder, paragraph bridging pages 4 and 5):

- the certificates of analysis of DMDA-8904 NT7 (D3) and DMDA-8907 NT7 (D11/D12) referred to specific batches of the products (YE1744Q72F and YE1955P84D respectively). However, the invoices (D2 and D10) did not report any batch number;

- declarations D5 and D13 in relation to the commercial products were mere statements that conveyed a personal belief rather than a proof of facts.

Therefore, the respondent considered that the commercialisation of the specific batches had not been proven to the hilt.

2.5.4 The respondent's contention is not convincing. While it is true that the invoices (D2 and D10) for the DMDA resins do not specify the batch numbers, they do indicate the customer name and order number, the product name, the quantities shipped, the delivery note numbers, the vehicle numbers and the dates, all of which correspond to the information contained in the certificates of analysis (D3 and D11). Therefore, in the Board's view, there is no reasonable doubt that batch numbers YE1744Q72F and YE1955P84D (whose analytical data were provided in D3 and D11/D12) correspond to the resins supplied to customers as evidenced by D2 and D10.

2.5.5 As to declarations D5 and D13, the Board is not convinced that the information provided therein is presented as personal belief. Instead these documents include clear statement of facts such as:

> "*in the timeframe of 2009 through 2015 ... the process for making the DMDA-8904 NT 7 resin, as well as the resin itself did not change*"
>
> "*DMDA-8904 NT 7 product is a Ziegler-Natta catalyzed high density polyethylene resin that was sold during the years 2010 - 2014 into injection molding applications without any confidentiality restrictions to customers across different countries*" (see D5, second and third paragraph and the analogous statements in D13, second and third paragraph).

In any event, the Board does not consider that D5 and D13 provide any additional information that would be decisive to conclude that the DMDA resins were publicly available before the priority date of the opposed patent, as this conclusion can be reached on the basis of the other documents provided by the appellant.

2.5.6 The Board is therefore of the opinion that the evidence on file (specifically D2 to D3 and D10 to D12) clearly shows that the resins DMDA-8904 NT7 and DMDA-8907 NT7 were commercialised before the priority date of the opposed patent. Accordingly, these resins are state of the art within the meaning of Article 54(2) EPC.

2.6 Composition of resins DMDA-8904 NT 7 and DMDA-8907 NT 7

2.6.1 Throughout the appeal proceedings, the respondent did not contest that the compositions of the resins DMDA-8904 NT 7 and DMDA-8907 NT 7 fell within the scope of claim 1 as granted. The Board has no reason to dispute this either, given the convincing evidence on file (D3 and D4 for DMDA-8904 NT 7, and D11/D12 and D4a for DMDA-8907 NT 7). With regard to the different features of granted claim 1, reference is made to the analysis provided in the statement of grounds of appeal (on page 5, second to fifth paragraph and on page 6, fourth to last paragraph), which the Board endorses.

2.7 Consequently, given that the commercial resins DMDA-8904 NT 7 and DMDA-8907 NT 7 belong to the state of the art within the meaning of Article 54(2) EPC, the Board concludes that the subject-matter of granted claim 1 lacks novelty with respect to these resins.

Auxiliary request I

3. Claim 1 of auxiliary request I differs from granted claim 1 in that the melt flow index (MIE) of the composition is from 1 to **25** g/10 min (instead of 1 to **30** g/10 min). As the appellant noted, the MIE of the DMDA-8907 NT 7 resin is 7.08 g/10 min (statement of grounds of appeal, page 6, fourth paragraph with reference to the melt index reported in D11 or D12). It follows that the MIE range defined in present claim 1 is not a distinguishing feature compared with this resin. Thus, the amendment of claim 1 of auxiliary request 1 is not suitable to overcome the previous objection of lack of novelty in view of the DMDA-8907 NT 7 resin.

Auxiliary request II

4. Claim 1 of auxiliary request II differs from granted claim 1 in that the density of the composition is between **0.955** and 0.970 g/cm^3 (instead of **0.950** to 0.970 g/cm^3). The only objections raised by the appellant against this request were objections of lack of inventive step (letter dated 30 January 2024, page 2, last paragraph to page 3, third full paragraph and letter dated 22 July 2025, page 2, last paragraph).

5. Inventive step

5.1 Choice of the closest prior art

5.1.1 The appellant considered that, for the purpose of assessing inventive step, D6, D7 and the DMDA resins (DMDA-8904 NT 7 and DMDA-8907 NT 7) could each be taken as the closest prior art (letter dated 30 January 2024, page 3, third full paragraph and letter dated

22 July 2025, page 2, last paragraph). During the oral proceedings, the appellant argued that the DMDA resins were used in the same technical field as the claimed invention, making them a realistic starting point for further development. Furthermore, the ability of the skilled person to reproduce these resins was irrelevant to the choice of the closest prior art. The decisive point was whether the skilled person had access to them or could produce a resin with similar properties.

5.1.2 According to the respondent, D6 was a suitable starting point for the purpose of inventive step (rejoinder, page 6, "inventive step over D6"). However, D7 did not relate to the same technical field as the present invention, making it an unrealistic starting point (rejoinder, page 7, fourth full paragraph). As regards the DMDA resins, the respondent argued that, in light with G 0001/23, there might be good reasons to disregard commercial products within the framework of inventive step. In the present case, the methods to prepare the DMDA resins were not publicly available and the skilled person could not figure out how to reproduce them. These resins were therefore not a suitable starting point for assessing inventive step.

5.1.3 In the following the Board addresses first the suitability of the commercial DMDA resins as the closest prior art. The central point of dispute between the parties was whether a non reproducible product can be selected as the closest prior art for assessing inventive step. In that regard, it will be assumed (for the benefit of the party arguing that the DMDA resins cannot be selected as the closest prior art) that these resins could not be reproduced by a skilled person before the effective filing date of the opposed patent. The assessment of reproducibility will, however, be

addressed separately as part of the analysis of obviousness (see point 5.2.3 below).

5.1.4 It is not in dispute that a public prior use may be selected as the closest state of the art for the assessment of inventive step. This finding is supported by the case law, such as T 1464/05 (point 5.2.2 of the reasons), T 0660/16 (point 7.2 of the reasons) or T 2463/22 (points 6.4 to 6.6.3 of the reasons). The question is, however, whether this also applies to commercial products which cannot be reproduced by the skilled person.

5.1.5 Decision G 0001/23 provides guidance in that regard. In particular, it is mentioned in sections 95 and 96 of the reasons, that

> "*[...] the skilled person may have good reasons for disregarding some prior art, for example because of insufficient information attached to it. The technical teaching relevant to the skilled person must always be determined in the light of the circumstances of each case. Depending on the circumstances, also a non reproducible product may be considered to represent the closest prior art or just a source of a complementary technical teaching, suitable for combination with the closest prior art.*"

> "*There are no formal and strict rules as to how a non-reproducible but publicly available product or any of its properties can be taken into account when inventive step is examined. The relevant technical teaching that a skilled person would take from such a product is always case specific - it*

depends on both the product in question and the invention under examination."

5.1.6 Thus decision G 0001/23 does not exclude that a non reproducible product be selected as the closest prior art. Instead the specific circumstances of the case should be analysed.

5.1.7 As noted by the appellant, it was known from documents D1 and D9 that commercial resins DMDA-8904 NT 7 and DMDA-8907 NT 7 were polyethylene compositions which could be used for injection moulding and were characterised by good impact stress crack resistance and processability (D1, page 1, overview; D9, page 1, bullet points). These characteristics correspond to the technical field and the alleged advantages of the compositions claimed in the opposed patent (see page 1, paragraphs [0001] and [0005]). In the Board's view, this information makes commercial resins DMDA-8904 NT 7 and DMDA-8907 NT 7 immediately relevant for a skilled person working in the present technical field and wishing to provide alternative or even improved compositions.

5.1.8 Even assuming that the skilled person would not know how to reproduce these resins, the Board does not consider this point to be a sufficient reason to disregard them as closest prior art. First, the DMDA resins being commercially available (see point 2.5 above), the skilled person could use them as such or modify these resins, within the limits of its competence, to obtain different properties. This situation essentially corresponds to the example in G 0001/23, according to which:

> "*Adding some lemon juice to a glass of Coca-Cola for a less sweet taste may not be inventive simply because the recipe for Coca-Cola is secret and therefore the original taste of Coca-Cola is considered as unattainable.*" (point 96 of the reasons)

In the alternative, the skilled person could have analysed the internal composition of the DMDA resins and, within certain limits, attempted to reproduce some of their properties. In any case, there is no apparent reason why the skilled person would have considered *a priori* (before identifying the differences and establishing the objective technical problem solved) that any further improvement necessarily required a modification of the specific synthesis conditions employed for the preparation of the commercial product, which were not known, and excluded the product as a possible starting point on that basis. Accordingly, even if the DMDA-8904 NT 7 and DMDA-8907 NT 7 resins were not fully reproducible, they are nevertheless a realistic starting point for further developments in the present technical field.

5.1.9 In this regard, it should be noted that a non-reproducible commercial product is not comparable to a defective or speculative disclosure in the sense of the case law (Case Law of the Boards of Appeal, 11th edition 2025; hereafter referred to as "Case Law", I.D. 3.8.1 and I.D.3.8.3). Indeed, the former is a physical, tangible product that the skilled person can use, analyse and modify, whereas the latter are non-concrete disclosures lacking the necessary technical reality.

5.1.10 The Board understands from the respondent's line of argument that the knowledge of the method used to

obtain the DMDA resins would be essential in order to achieve a resin composition as defined in operative claim 1. While this may indeed be the case in the present context (a point that will be addressed at a later stage of the problem-solution approach), the Board does not regard this consideration as a valid criterion for the selection of the closest prior art. In this respect, the extent to which a non-reproducible product must be modified to obtain the claimed subject-matter, and the level of knowledge about that product and its manufacture required to achieve it, are not considered relevant for determining whether the product can be regarded as the closest prior art. These aspects instead relate to later stages of the problem-solution approach, namely identifying the distinguishing features between the product and the claimed subject-matter and/or assessing whether the skilled person, starting from that product, would have been able to obtain the claimed one.

5.1.11 Under these circumstances, the Board considers that commercial resins DMDA-8904 NT 7 and DMDA-8907 NT 7 can be selected as starting point for assessing inventive step.

5.1.12 The same applies to D6, the choice of which as the closest prior art was not disputed by the parties. As for D7, the issue of whether it could be seen as the closest prior art was not central to the present decision, since the conclusion regarding inventive steps starting from D6 also applied to D7 (see point 5.4 below).

5.2 Inventive step starting from the DMDA resins

5.2.1 Distinguishing feature

The parties agreed that the subject-matter of claim 1 of auxiliary request II differed from resins DMDA-8904 NT 7 and DMDA-8907 NT 7 in that:

the density of the polyethylene composition was between 0.955 and 0.970 g/cm^3 (instead of 0.952 g/cm^3 for the DMDA resins, as reported in documents D1 and D9).

The Board has no reason to depart from that view.

5.2.2 Problem to be solved

The appellant argued that examples 1 and 2 of the opposed patent provided direct evidence that increasing the composition density to a value within the range defined in claim 1 resulted in poorer properties, in particular reduced environmental stress crack resistance and impact strength of the composition (letter dated 22 July 2025, page 2, last paragraph). Therefore, the problem to be solved should, at best, be formulated as the provision of an alternative composition.

During the oral proceedings, the respondent agreed with that formulation of the objective technical problem and the Board has also no reason to depart therefrom.

5.2.3 Obviousness of the claimed solution

(a) It remains to evaluate whether it was obvious for a skilled person starting from the DMDA resins and wishing to provide an alternative composition to increase the density of the polyethylene

composition and thereby obtain a composition according to operative claim 1.

(b) According to the appellant (statement of grounds of appeal, page 7, last full paragraph to page 10, third full paragraph), it was common general knowledge that the density of a polyethylene composition could be easily increased for instance by reducing the amount of comonomer units in the polyethylene chain. Furthermore, paragraph [0052] of D14 revealed that DMDA resins, such as DMDA-8907, were produced using a Ziegler-Natta (ZN) catalyst in a gas-phase fluidised-bed reactor as part of the UNIPOL™ process. The nature of the comonomers could also easily be identified. On that basis, the skilled person could reproduce any of the DMDA resins using that process, or at least obtain resins with similar properties, and adjust the density. For that purpose, it would not be necessary to know the exact nature of the ZN catalyst used for the DMDA resins, as all ZN catalysts behave similarly.

The appellant further argued that the MIE, MIF and ER values defined in operative claim 1 were all dependent on the polyethylene molecular weight, which the skilled person would have no difficulty to adjust independently of the density.

(c) The respondent argued that the two commercial polymer grades (DMDA-8904 and DMDA-8907) could not be reproduced by the skilled person without undue burden, due to the lack of crucial information about the catalysts and process conditions used in their manufacture (rejoinder, page 2, third full paragraph to page 4, fifth paragraph). Contrary to

the appellant's view, reverse engineering these products would not allow the skilled person to reconstruct the precise manufacturing process, as industrial polymer grades depended on complex and proprietary manufacturing methods involving specific interactions between a catalyst, process parameters, and polymerisation unit.

The mechanical and structural properties of the polymers were governed by these intricate interdependencies. Without knowledge of the exact catalyst composition and its structural characteristics, it would be impossible to reliably obtain the resins. For these reasons, the respondent concluded that the DMDA resins were not reproducible.

Moreover, even if it were assumed that the skilled person could have reproduced the DMDA resins before the filing date of the opposed patent, further modifications would still have been required to increase the density without substantially altering other key parameters such as MIE, MIF, and ER values. The appellant, however, failed to demonstrate that such an adjustment was feasible. This point was particularly relevant for the ER value, which was close to 0.5 for both DMDA resins — i.e. at the upper limit of the range defined in operative claim 1.

During the oral proceedings, the respondent further argued that the skilled person would have no motivation to modify a commercial product since the resulting product would require (re)certification.

Under these circumstances, it was not obvious for a skilled person starting from the DMDA resins as the closest prior art to obtain a composition according to claim 1 of auxiliary request II.

(d) With regard to the question of obviousness, the Board concurs with the respondent's conclusion, though not necessarily with all of their arguments. The reasons are set out below.

(e) As a preliminary remark, the assessment of what the skilled person would have done in light of the prior art depends to a large extent on the technical result sought to be achieved (Case Law, I.D.5). In the present case, the problem to be solved is to provide a further polyethylene composition. In such a situation, no particular pointer in the prior art would be required to arrive at the claimed subject-matter — specifically, to increase the density of the DMDA resins — since the motivation would simply stem from the wish to provide an alternative composition. Contrary to the respondent's view, (re)certification constitutes merely a formal step that a company must fulfil before commercialising any new product for a specific application, but it is irrelevant to the assessment of obviousness.

(f) As noted above (see point (b)), the appellant argued that the skilled person would know how to reproduce the DMDA resins and could then adjust the density within the range defined in operative claim 1. The question of reproducibility of the DMDA resins was therefore central to the assessment of obviousness. Indeed, even if the selection of parameters defined in operative claim 1 (density,

MIE, MIF and ER values) is considered arbitrary, it would still be necessary to establish that the preparation of a polyethylene composition meeting those parameters was itself obvious. The decisive issue is thus whether the skilled person, relying on the information available in the prior art and, if necessary, on common general knowledge, would have been able to identify the measures leading to a composition that fulfils the parametric definition of claim 1, without resorting to undue experimental effort.

(g) As the respondent pointed out, the exact processes by which the DMDA resins are prepared are not disclosed in the prior art and are likely to constitute confidential know-how of the manufacturer (the appellant in the present case). Although the appellant explained in general terms which practical steps could be followed - such as the use of a Ziegler-Natta catalyst in a gas-phase fluidised-bed reactor as part of the UNIPOL™ process - it has not been shown that, by following these indications and with only routine experimentation, the skilled person would have been able to reproduce the DMDA resins or obtain materials having comparable properties. In fact, as noted by the respondent, the comparative examples of the opposed patent were all obtained using a ZN catalyst and yet the characteristics of the polymers obtained (in particular the ER value) fall outside the scope of the present invention (see opposed patent, paragraphs [0079] to [0081] and table 1). This already shows that the choice of any ZN catalyst would not be sufficient to achieve a composition according to claim 1. The same applies to the process where multiple process parameters

need to be adjusted (even if one assumes the use of a UNIPOL™ process). It follows that it has not been made credible that the skilled person would have known how to reproduce the DMDA resins or obtain analogous materials with at least the parameters relevant for operative claim 1 without having to resort to an undue amount of experimental work.

(h) In addition, the appellant took the view that the skilled person would know how to adjust the density of the DMDA resins while maintaining the other properties (MIE, MIF and ER values) within the ranges defined in operative claim 1. Although the Board accepts that a skilled person could indeed increase the density of a polyethylene, the evidence on file does not allow to conclude that a person skilled in the art would have no difficulty in maintaining the other characteristics of the polymer. This is all the more problematic given that the ER value of DMDA resins (0.50 for DMDA-8904 NT 7 and 0.49 for DMDA-8907 NT 7) is relatively close to the upper limit of the range defined in claim 1 (0.40 to 0.52). However, the appellant did not provide evidence of what a person skilled in the art would have concretely done to adjust this parameter. The appellant merely stated that the MIE, MIF and ER values were related to the molecular weight of the polymer. However, a direct correlation between the ER value and the MIE and MIF parameters cannot be derived from the examples of the patent in suit (see opposed patent, table 1). It follows that it has also not been made credible that the skilled person would have known how to modify the DMDA resins in order to obtain a resin according to operative claim 1.

(i) For these reasons, whether the person skilled in the art would be able to identify the measures which would, starting from the DMDA resins, lead to a polyethylene composition that meets the parametric definition of claim 1 without having to resort to an undue amount of experimental work remains a matter of conjecture.

5.2.4 Conclusion

In view of the foregoing, the invention defined by the subject-matter of claim 1 of auxiliary request II has not been shown to be obvious to a person skilled in the art starting from any of the DMDA resins as the closest prior art. This objection is therefore rejected.

5.3 Inventive step starting from document D6

5.3.1 Distinguishing feature

The parties agreed that the subject-matter of claim 1 of auxiliary request II differed from the composition of runs 4 or 5 of D6 in that the polyethylene composition was characterised by:

an ER value between 0.40 and 0.52 (the ER value of the resins of D6 is not disclosed).

The Board has no reason to depart from that view (statement of grounds of appeal, page 16, last paragraph; rejoinder, page 6, last two paragraphs).

5.3.2 Problem to be solved

(a) A first point of dispute was, however, whether a technical effect could be linked to the ER value as distinguishing feature.

(b) The appellant essentially argued that the comparative examples provided in the opposed patent were not suitable to show any such effect (statement of grounds of appeal, page 13, penultimate paragraph to page 15, fourth full paragraph).

(c) The respondent, in agreement with the opposition division, contended that the comparison between examples 1 and 2 and comparative examples 1 to 3 of the opposed patent provided evidence that when the ER value was within the range defined in claim 1, the FNCT parameter (stress crack resistance) was improved while maintaining at the same level the impact resistance (Charpy) (rejoinder, page 5, last full paragraph). The respondent further stated that the processability was also good (rejoinder, page 6, first full paragraph).

(d) In this respect, the Board does not dispute, on the basis of the data provided in Table 1 of the patent, that the main discernible difference between examples 1 and 2 on the one hand and the comparative examples 1 to 3 on the other hand is the ER value. Said value is within the range defined in claim 1 for the inventive examples and above that range for the comparative examples. It is not contested by the parties that the other properties defined in granted claim 1 do not constitute a distinguishing feature between these examples. However, although these examples would appear suitable to show an effect of the ER value

alone on the mechanical properties of polyethylene based compositions, the Board concurs with the appellant that the nature of the comparative examples is not clearly defined. Indeed comparative examples 1 to 3 are described as commercial products obtained by an undefined slurry process in the presence of an undisclosed ZN catalyst (opposed patent, paragraphs [0079] to [0081]). It is, however, not known whether, apart from the ER value, the resins of these comparative examples include other structural or compositional differences which could explain the effect on the mechanical properties of the composition. For instance, as noted by the appellant, while the compositions of examples 1 and 2 appear to be bimodal, it is not known whether the commercial products of comparative examples 1 to 3 are mono or multimodal (statement of grounds of appeal, page 11, fourth paragraph). The Board is therefore not convinced that the comparative examples can be relied upon to show an effect linked to the ER value alone.

(e) Under these circumstances, the Board considers that the objective problem to be solved should be formulated as the provision of an alternative polyethylene composition.

5.3.3 Obviousness

(a) It remains to be evaluated whether it was obvious for a skilled person wishing to solve the above problem to provide polyethylene compositions characterised by an ER value between 0.40 and 0.52.

(b) In that respect, it was not argued that the prior art documents on file contained any teaching allowing the skilled person to adjust the ER value of a polymer (in particular within the range of 0.4 to 0.52). Even if admittedly the ER value is related to the "high-molecular-weight-end polydispersity" (opposed patent, paragraph [0019]), the relevant question for the Board is whether the skilled person would have known how to modify the teaching of D6 in order to obtain a polyethylene composition according to claim 1.

(c) The appellant argued that the ER value of 0.4 to 0.52 in a unimodal resin design such as the one of D6 could be targeted "via the chain termination agent and molecular weight" of the polymer (statement of grounds of appeal, page 9, first paragraph, last sentence and page 17, third full paragraph). While this may in principle be true, the appellant has not provided any evidence thereof nor shown that, starting from D6 as the closest prior art, it was possible to achieve an ER value of 0.4 to 0.52. In addition, as pointed out in the context of the DMDA resins, it would not be sufficient to show that the skilled person would know how to adjust the ER value of the resins of D6 but also that s/he could do it while maintaining the parameters of claim 1 within the defined ranges (see point 5.2.3 (h) above). In the absence of evidence, the Board is not convinced that is was obvious for a skilled person to obtain a composition as defined in operative claim 1.

5.3.4 Conclusion

In view of the foregoing, the invention defined by the subject-matter of operative claim 1 has not been shown to be obvious to a person skilled in the art starting from D6 as closest prior art. This objection is therefore rejected.

5.4 The appellant's arguments regarding D7 were identical to those based on D6 as the closest prior art - the distinguishing feature and the argument of obviousness being the same (statement of grounds of appeal, page 17, last paragraph). Consequently, the Board has no reason to reach a conclusion different from the one stated above (point 5.3.4).

6. As all objections against auxiliary request II fail, the patent is to be maintained on the basis on this request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the claims of auxiliary request II filed with the rejoinder to the statement of grounds of appeal and a description to be adapted if necessary.

The Registrar: The Chairman:

D. Hampe D. Semino

Decision electronically authenticated