

Publication in the Official Journal ~~Yes~~ / No

File Number: T 396/89 - 3.3.3

Application No.: 80 301 722.7

Publication No.: 0 021 605

Title of invention: High tear strength ethylene-based hydrocarbon polymers,  
film formed from such polymers, and process for making  
such polymers

Classification: C08F 210/16

D E C I S I O N  
of 8 August 1991

Proprietor of the patent: UNION CARBIDE CORPORATION

Opponent: (1) BASF Aktiengesellschaft  
(2) Dow Chemical Co.  
(3) NV DSM

Headword:

EPC Arts. 54, 107

Keyword: "Novelty (affirmed) - no requirement for formal cross-appeal -  
important concessions to be minuted - proof of an inevitable  
result"

Headnote



Case Number : T 396/89 - 3.3.3

DECISION  
of the Technical Board of Appeal 3.3.3  
of 8 August 1991

Appellant :  
(Proprietor of the patent)

UNION CARBIDE CORPORATION  
39 Old Ridgebury Road  
Danbury  
Connecticut 06817 (US)

Representative :

Baverstock, Michael George Douglas  
BOULT, WADE & TENNANT  
27 Furnival Street  
GB - London, EC4A 1PQ (GB)

Respondent :  
(Opponent)

BASF Aktiengesellschaft, Ludwigshafen  
- Patentabteilung - C6-  
Carl-Bosch-Straße 38  
W - 6700 Ludwigshafen (DE)

Representative :

THE DOW CHEMICAL COMPANY  
2030 Abbott Road  
Dow Center  
Midland, Michigan 48640 (US)

Representative:

Weickmann, Heinrich, Dipl.-Ing.  
Patentanwälte Dipl.-Ing. H. Weickmann  
Dipl.-Phys. Dr. K. Fincke  
Dipl.-Ing. F.A. Weickmann  
Dipl.-Chem. B. Huber  
Dr.-Ing. H. Liska  
Dipl.-Phys. Dr. J. Prechtel  
Postfach 86 08 20  
W - 8000 München 86

**Opponent:** Naamloze Vennootschap DSM  
Het Overloon 1  
NL - 6411 TE Heerlen (NL)

**Representative:** Hoogstraaten, Willem Cornelis Roeland  
OCTROOIBUREAU DSM  
Postbus 9  
NL - 6160 MA Geleen

**Decision under appeal :** Decision of Opposition Division of the European  
Patent Office of 1 March 1989, issued on  
17 April 1989 revoking European patent  
No. 0 021 605 pursuant to Article 102(1) EPC.

**Composition of the Board :**

**Chairman :** F. Antony  
**Members :** R.A. Lunzer  
R.L.J. Schulte

## Summary of facts and submissions

I. European patent No. 0 021 605 was granted on 29 January 1986 on the basis of application No. 80 301 722.7 filed on 23 May 1980, having a priority date of 18 June 1979 derived from US Application No. 49555.

II. Oppositions were lodged by:

BASF AG, the First Opponent, on 2 October 1986,  
Dow Chemical Company, the Second Opponent, on  
28 October 1986, and by  
NV DSM, the Third Opponent on 27 October 1986,

on the ground of Article 100(a) EPC, alleging lack of novelty (Article 54 EPC), and/or lack of inventive step (Article 56 EPC), relying in particular on the following documents:

- (1) EP-A-0 010 428 (published 30.04.80)
- (5) US-A-3 645 992.

III. Claim 1 of the patent, as proposed to be amended in the opposition, and Claim 6, were in the following form:

"1. An ethylene-based hydrocarbon polymer, in granular and fluidizable form, comprising ethylene, a  $C_a$  monomer and a  $C_b$  monomer, wherein the  $C_a$  monomer is propylene or butene-1 or a mixture thereof, and the  $C_b$  monomer is one or more  $C_5$  to  $C_8$  alpha monoolefins which contain no branching closer than the fourth carbon atom, wherein:

the molar ratio in the polymer of  $C_a/C_2$

is from 0.006 to 0.9 and the molar ratio of  $C_b/C_2$

is from 0.003 to 0.7, and

the branch chain factor is from 0.2 to 0.8, and wherein:

The polymer is heterogeneous and has a density of from 910 to 940  $\text{kg/m}^3$ ,  
n-hexane extractables content at 50°C of less than about 5.5 weight percent,  
melt index of from 0.5 to 5.0 dg/min,  
 $M_w/M_n$  of from 2.7 to 4.3,  
melt flow ratio of from 22 to 36,  
bulk density of 224 to 497  $\text{kg/m}^3$  (14 to 31 pounds per cubic foot) and  
an average particle size of 0.127 mm to 1.78 mm (0.005 to 0.17 inches).

6. Film formed from a polymer as claimed in any one of the preceding claims."

IV. By its decision, given orally on 1 March 1989 and issued in writing on 17 April 1989, the Opposition Division revoked the patent. It found that while Claims 1 to 5 were novel on the basis of the features that the product had to be in granular and fluidizable form, with the specified bulk density and average particle size, those features did not apply to the film made in accordance with Claim 6, which consequently lacked novelty having regard to the disclosure of Examples 55 and 56 of Document (5). The questions of whether the alleged inventions in accordance with Claims 1 to 6 had any inventive step, and the patentability of Claims 7 to 24 were left undecided.

- V. An appeal against that decision was lodged on 19 June 1989, the appeal fee was paid on the same day, and the Grounds of Appeal were filed on 16 August 1989. In the Statement of Grounds of Appeal, and during oral proceedings held on 8 August 1991, the Appellant argued that Document (5) was not a prior disclosure of a composition in accordance with Claim 6, because it lacked certain essential features of Claim 1, imported by reference into Claim 6, notably, the proportion of hexane extractables of less than 5.5%, the ratio  $M_w/M_n$  within the range 2.7 to 4.3, and the melt flow ratio (MFR) of 22 to 36.
- VI. The First Opponent (First Respondent) did not file any written statement on appeal, but was represented nonetheless at the oral proceedings. The Second and Third Opponents, (hereinafter the Second and Third Respondents) argued in their Counterstatements, filed respectively on 28 February 1990, and 6 March 1990, and during the oral proceedings, that the finding of lack of novelty having regard to document (5) should be upheld, alternatively that there was a lack of novelty in the light of document (1). Furthermore, they attacked the finding by the Opposition Division that Claims 1 to 5 inclusive were novel, seeking a reversal of that part of the decision.
- VII. In response to the attack on that finding, the Appellant contended that it was not open to the Respondents in the present appeal, in the absence of an explicit cross-appeal on their part, to attack the findings of the Opposition Division, such as by challenging the novelty of Claims 1 to 5.
- VIII. The Appellant requested that the decision under appeal be set aside, and the case remitted to the Opposition Division with the order to continue the examination on the basis of Claim 1, filed on 4 January 1989, and Claims 2 to

24 as granted (Main Request); or the same Claims without Claim 6 (Auxiliary Request). The Respondents requested that the appeal be dismissed.

### Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC, and is admissible.
2. Matters in issue on the appeal
  - 2.1 The Board indicated at the opening of the oral proceedings that it did not propose to exclude argument directed to the novelty of Claims 1 to 5, which matter had been in issue, and had been decided in the Appellant's favour by the Opposition Division. In contrast with the legal practice in the United Kingdom, which normally requires separate documents to identify the matters in issue, the argument directed to those issues, and supporting evidence of fact, the European Patent Office does not require any such formal separation. If an appeal is filed against a decision revoking a patent, the whole case is before the Board of Appeal, and the Board is not bound by any finding of the decision under appeal. It was therefore open to the Respondent to re-argue matters which had clearly been in issue before the Opposition Division (cf. Decision T 73/88, para. 1.3; to be published; Headnotes not covering this point in OJ EPO 1990, No. 5).
  - 2.2 In general, a Respondent is entitled to re-argue matters which were put in issue before the first instance, and were decided against it, without needing to file any formal notice of its intention to challenge any adverse finding incidental to the overall outcome in its favour, provided that the opposing party has had an opportunity to

present its comments. Both parties had this opportunity during the oral proceedings before the Board. No party could have been taken by surprise by novelty of all claims being discussed before the Board, because this issue had been decided by the Opposition Division.

3. Admissibility of amendments

3.1 As found by the Opposition Division at page 7 paragraph 2 of its decision, the proposed amendments introduce further parameters relating to bulk density and average particle size, and the polymer is described as being "in granular and fluidizable form". These features are to be found at page 4 lines 19 - 23 of the printed patent specification (page 8 lines 28 to page 9 line 6 of the application as originally filed), and therefore the amendments are permissible for the purposes of Articles 123(2) and 123(3).

4. Novelty in relation to document (1)

4.1 The Respondents did not allege that there is any written disclosure of a product having the properties here in issue, but instead they relied on the well established alternative basis for asserting lack of novelty; viz. that the inevitable result of carrying out an example in accordance with a document forming part of the state of the art is that the product has all the properties of the alleged invention, as defined in its claims.

4.2 In the present case, an Experimental Report of an alleged repetition of Example 4 of document (1) was submitted by the Second Respondent in its Statement of Opposition filed on 28 October 1986. It is not disputed by the Appellant that the polymer obtained had the properties of the polymer as claimed, before the introduction of the



amendment mentioned above. However, what was disputed by the Appellant, both before the Opposition Division and on appeal, was the validity of the repetition for the purposes of proving an inevitable result. In particular, attention was drawn by the Appellant to what it alleged were significant differences in both the composition and concentration of the catalyst, and of the residence time, which, so it contended, affected the properties of the end product.

4.3 The Respondents did not dispute the existence of these differences, but they denied their significance, contending that insofar as there was any departure in the repetition of Example 4 from that Example as actually described in document (1), those variations fell clearly within the general teachings of that document. The Board rejects this argument as being inconsistent with the logical basis of the test of "inevitable result". The word "inevitable" is used to convey the sense that one result, and one result only, is obtainable from the repetition of a given example. As soon as an element of option is introduced into an alleged repetition, inevitability disappears.

4.4 It may be easy, given a knowledge of a later invention, to select from the general teachings of a prior art document certain conditions, and apply them to an example in that document, so as to produce an end result having all the features of the later claim. However, success in so doing does not prove that the result was inevitable. All that it demonstrates is that, given knowledge of the later invention, the earlier teaching is capable of being adapted to give the same result. Such an adaptation can not be used to attack the novelty of a later patent.

- 4.5 An opponent relying on inevitable result as a ground of invalidity must do one of two things; either reproduce the earlier example so closely that there is no scope for serious challenge to the validity of the repetition, or, if some material deviation is unavoidable, show convincingly that the deviation is not material to the end result.
- 4.6 In attempting to justify the use of modified conditions of its experiment, the Second Respondent explained that it had had to carry out its attempted repetition of Example 4 on a pilot scale plant, with the result that not all the conditions of the Example could be reproduced exactly. In those circumstances it argued in its written statement of 28 February 1990 at page 8 that, "it cannot be expected of an opponent to construct a new pilot plant with the exact vessel size and configuration specified in an example of a reference".
- 4.7 As to that argument, the Board observes that a party attacking the validity of a patent is free to choose his weapons of attack to suit his own convenience, taking into account relevant considerations of cost and effectiveness. If he seeks to establish that an example taken from a prior art document inevitably produces a given result, he thereby assumes the burden of performing his own repetition in such a way as to demonstrate that the repetition is valid. In the light of all the material before it, the Board is not satisfied that a valid repetition of Example 4 of document (1) would lead inevitably to a product falling within Claim 1, and the objection of lack of novelty based on this citation therefore fails.

5. Novelty in relation to document (5)

5.1 The issue of lack of novelty based on this citation, and on which the Opposition Division found in the Respondents' favour, turns on whether a film made in accordance with Examples 55 and 56 of document (5) has the same properties as a film in accordance with Claim 6 of the patent in issue. The burden of proof of showing that all 12 or more integers of the Claim are satisfied by the product of these Examples rests again on the Respondents. As to the majority of those integers, it is not disputed by the Appellant that they are satisfied.

5.2 In fact, on appeal, attention has been concentrated on three integers; i.e. the physical condition of the product (introduced by way of amendment); the hexane extractable content of less than 5.5%; and the molecular weight distribution. This last integer is in fact defined by two separate but related parameters, MW/Mn of 2.7 to 4.3, and a melt flow ratio (MFR) of 22 to 36. The equivalence of these two parameters is indicated in the specification at page 3 lines 57 to 59, as is also agreed by the parties. Of the three integers, attention was mainly directed to the parameters relating to molecular weight distribution, i.e. MW/Mn, and the related MFR.

5.3 Existence of an alleged concession by the Appellant

5.3.1 In the decision of the Opposition Division, the issue of molecular weight distribution was dealt with as follows:

"The patentee did not contest the submissions of Opponent II concerning the molecular weight distribution of the polymers prepared in (5) advanced at the oral proceedings." (Decision page 10 paragraph 4)

5.3.2 In conformity with the usual practice of Opposition Divisions, there is no detailed record of what was said in the oral proceedings. The issue of whether the molecular weight distribution was the same or different was argued, but by no means proved, in the parties' written submissions filed prior to the oral proceedings before the Opposition Division. On appeal, the Appellant denies having made any oral concession on this issue, and the Respondents have not sought to rely on the existence of such a concession.

5.3.3 If a clear concession is made during oral proceedings, the Opposition Division is entitled to rest its decision on the basis of that concession, unless it is convinced that the concession is not true. However, if an important matter of fact is conceded, that concession ought to be carefully recorded in the minutes of the hearing, by the Opposition Division in any event, and equally by a Board of Appeal if a case is to be remitted. There is no such record in the present case.

#### 5.4 Molecular weight distribution

5.4.1 Turning now to the facts and arguments in relation to the molecular weight distribution, in its Statement of Grounds of Appeal, the Appellant drew attention to the parameter Stress Exponent (SE), which is given in respect of most of the compositions included as Examples in document (5), and has attempted to show that it is related to MFR by the equation:

$$\text{MFR} = 10\text{SE}.$$

On this basis of this formula, the Appellant sought to demonstrate that the MFRs of Examples 55 and 56 fall outside the claimed limits.

- 5.4.2 The Board has been helped by the Appellant's calculations directed to this matter, although in so doing it has unnecessarily assumed the burden of disproving a fact, which in contrast the Respondents needed to prove positively in order to succeed in the present opposition (or appeal). In principle, it would have sufficed for the Appellant to have pointed to the integers  $M_w/M_n$  and MFR expressed in Claim 1, and to have observed that the Respondents had not demonstrated that the products of Examples 55 and 56 fell within the specified ranges. Then, unless the contrary were demonstrated convincingly by the Respondents, the appeal would have had to be allowed.
- 5.4.3 Applying the above formula to the SE values of 1.16 and 1.15 given respectively for examples 55 and 56, (document (5) col. 13 Table 8) the Appellant calculates the MFR values for these two examples as being 14.5 and 14.1, i.e. well below the claimed range of 22 to 36. The Respondents have challenged the validity of the Appellant's calculations. In particular the Second Respondent has performed tests on a series of nine ethylene-octene copolymers, in an attempt to demonstrate that MFR as measured is significantly higher than MFR as calculated using the Appellant's above formula.
- 5.4.4 From these figures the Second Respondent reached the conclusion that the above equation can not be used as a reliable guide for the calculation of MFR from SE. However, it is not enough for the Respondents to show that the Appellant's formula is unreliable. It is up to the Respondents to demonstrate positively to the Board that Examples 55 and 56 relied on had the relevant property.
- 5.4.5 In reply to the Respondents' arguments, the Appellant drew attention to the fact that the nine copolymers tested

all consisted of two monomers, thus they are not terpolymers, and they can not be relied on as a guide to the corresponding figures for terpolymers. Further, it drew attention to the fact that the difference between the measured and calculated values did not show so large a discrepancy as would justify the conclusion that the calculated values of 14.1 and 14.5 ought in fact to be increased to such an extent as to bring them into the claimed range of 22 to 36.

- 5.4.6 As the Respondents have not shown that the properties of the products of Examples 55 and 56 of Document (5) include one of the essential integers of Claim 1 now in issue, they fail to establish lack of novelty on the basis of document (5).

6. Conclusion

As the Respondents have failed to substantiate the allegation of lack of novelty, it follows that the present appeal must be allowed, and the matter remitted to the Opposition Division to deal with the inventiveness of claims 1 to 6 (their novelty being now finally decided), and to deal with the process claims 7 to 24. As the issue of inventiveness remains open, the Board prefers not to comment on other integers of Claim 1. As the Main Request is allowed, the Board has no need to deal with the Auxiliary 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 continue the opposition procedure on the basis of Claims 1 to 24 in accordance with the Main Request.

**The Registrar:**



E. Goergmaier

**The Chairman:**



F. Antony