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**D E C I S I O N**  
**of 28 October 2002**

**Case Number:** T 0982/99 - 3.3.3

**Application Number:** 89309521.6

**Publication Number:** 0367396

**IPC:** C08L 23/12

**Language of the proceedings:** EN

**Title of invention:**  
Polypropylene molded article

**Patentee:**  
SUMIMOTO CHEMICAL COMPANY LIMITED

**Opponent:**  
(01) Ciba Späzialitätenchemie Holding AG  
(02) Basell Polyolefine GmbH  
(03) MONTELL NORTH AMERICA INC.

**Headword:**

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**Relevant legal provisions:**  
EPC Art. 100(c), 107, 123(2), 123(3)  
EPC R. 64

**Keyword:**  
"Opposition grounds - extension of subject-matter"  
"Parties to appeal"  
"Amendments added subject-matter (yes)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0982/99 - 3.3.3

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.3**  
**of 28 October 2002**

**Appellant:** MONTELL NORTH AMERICA INC.  
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**Decision under appeal:** Interlocutory decision of the Opposition Division of the European Patent Office dated 29 June 1999 and issued in writing on 18 August 1999 concerning maintenance of European patent No. 0 367 396 in amended form.

**Composition of the Board:**

**Chairman:** R. Young  
**Members:** A. Däweritz  
J. De Preter

## Summary of Facts and Submissions

I. The grant of European patent No. 0 367 396 in respect of European patent application No. 89 309 521.6, filed on 19 September 1989 and claiming priority of 19 September 1988 of an earlier application in Japan (234 385/88), was announced on 6 March 1996 (Bulletin 1996/10) on the basis of five claims reading as follows:

- "1. A polypropylene molded article containing traces of hexane, heptane, or a mixture thereof and 2,4-dimethyl-1-heptene; wherein the amount of hexane, heptane or the mixture present is less than 5 ppm; the amount of 2,4-dimethyl-1-heptene present is less than 5 ppm; and the total amount of volatile components is less than 30 ppm; the polypropylene from which the article was made being stabilized, to have a melt flow rate ratio  $MFR_2/MFR_0$  less than 5.0, wherein  $MFR_0$  is the melt flow rate of the polypropylene after a single pelletization at 280EC and  $MFR_2$  is the melt flow rate of the polypropylene after repeated pelletization (twice) at 280EC, by the inclusion of 0.01 to 5 parts by weight (per 100 parts by weight of polypropylene) of one or more antioxidants selected from phenol-type antioxidants, phosphorus-containing antioxidants and tocopherols."
2. A polypropylene molded article according to claim 1, wherein the total content of hexane, heptane or the mixture thereof is less than 3 ppm.
3. A polypropylene molded article according to

claim 1, wherein the content of 2,4-dimethyl-1-heptene is less than 3 ppm.

4. A polypropylene molded article according to claim 1, wherein the total amount of volatile components therein is less than 25 ppm.
  5. A method of making a molded polypropylene article wherein polypropylene, containing traces of hexane, heptane or a mixture thereof less than 5 ppm, 2,4-dimethyl-1-heptene less than 5 ppm and with a total content of volatile components of less than 30 ppm, is stabilized by inclusion therein of 0.01 - 5 parts by weight per 100 parts by weight of the polypropylene of one or more antioxidants selected from phenol-type antioxidants, phosphorus-type antioxidants and tocopherols, and the article is molded therefrom, the polypropylene being dried at a temperature higher than 50°C for longer than 2 hours, and being stabilized by the antioxidant(s) to a level whereat it has a melt flow rate ratio  $MFR_2/MFR_0$  less than 5.0,  $MFR_0$  being its melt flow rate after a single pelletization at 280°C and  $MFR_2$  its melt flow rate after repeated pelletization (twice) at 280°C."
- II. Notices of Opposition were filed by Opponent 01 (O-01) on 4 December 1996, Opponent 02 (O-02) on 6 December 1996 and Opponent 03 (O-03) on 6 December 1996, in which revocation of the patent in its entirety was requested on the grounds of Article 100(a) EPC (all Opponents), namely lack of novelty within the meaning of Article 54 (1) and (2) EPC (O-01) and lack of inventive step within the meaning of Article 56 EPC

(all Opponents), as well as insufficiency of disclosure under Article 100(b) EPC (O-01) and extension of the subject-matter beyond the content of the application as filed (Article 100(c) EPC) (O-01). The Oppositions of Opponents O-01 and O-02 were transferred to other companies in the course of the opposition procedure. The objections under Article 100(a) EPC were supported by eight documents, including:

D1: "Taschenbuch der Kunststoff-Additive", 2<sup>nd</sup> edition, R. Gächter, H. Müller (Editors), Carl Hanser Verlag München Wien, 1983, pages 22 to 24.

In the course of the opposition proceedings, the above wording of the claims was maintained as the main request, and seven auxiliary requests were submitted by the Proprietor.

The first four auxiliary requests, dated 16 July 1998, differed from the main request by the following modifications in Claims 1 and 5:

Auxiliary request 1: The expression "traces of" was deleted from both claims. Furthermore, in Claim 1, the expression "mixture present" was replaced by "mixture thereof present", in Claim 5, "and containing" was inserted at the end of line 3.

Auxiliary request 2: In both claims, hexane, heptane or a mixture thereof was required to be present in a "positive amount less than 5 ppm". The same wording was used with respect to the presence of **DMH** (2,4-dimethyl-1-heptene). This wording replaced the reference to "traces" in each case.

Auxiliary request 3: In both claims, additional

reference was made to the article and polypropylene, respectively, as "having been prepared by slurry polymerisation, bulk polymerisation or gas-phase polymerisation using a Ziegler-Natta catalyst and a hydrocarbon medium of hexane or heptane, wherein the amount of hexane, heptane or mixture thereof present in the article is less than 5 ppm". The reference to "traces" was deleted from both claims.

Auxiliary request 4: In both claims, the contents of the said hydrocarbons were limited to a range of 0.66 ppm to less than 5 ppm; that of DMH was restricted to a range of 0.4 ppm to less than 5 ppm, whilst the expression "traces of" was deleted.

Each of auxiliary requests 5 to 7, submitted during oral proceedings on 29 June 1999, was limited to a single method claim. The claim of auxiliary request 5 was identical to Claim 5 of the main request (section I, above). The claim of auxiliary request 6 read as follows:

"A method of making a molded polypropylene article wherein polypropylene containing traces of hexane, heptane and 2,4-dimethyl-1-heptene is dried and stabilized to contain hexane, heptane or a mixture thereof in an amount less than 5 ppm, 2,4-dimethyl-1-heptene in an amount of less than 5 ppm and a total content of volatile components in an amount of less than 30 ppm, the polypropylene being stabilized by inclusion therein of 0.01 - 5 parts by weight per 100 parts by weight of the polypropylene of one or more antioxidants selected from phenol-type antioxidants, phosphorus-type antioxidants and tocopherols, and before the article is molded from the polypropylene,



the polypropylene is dried at a temperature higher than 50EC for longer than 2 hours, the polypropylene being stabilized by the antioxidant(s) to a level whereat it has a melt flow rate ratio  $MFR_2/MFR_0$  less than 5.0,  $MFR_0$  being its melt flow rate after a single pelletization at 280EC and  $MFR_2$  its melt flow rate after repeated pelletization (twice) at 280EC."

The claim of auxiliary request 7 had the following wording:

"A method of making a molded polypropylene article including the steps of:

- a) providing a polypropylene prepared by slurry polymerisation or bulk polymerisation using a Ziegler-Natta catalyst and a hydrocarbon medium such as hexane or heptane;
- b) stabilising the polypropylene produced in step a) by inclusion of 0.01 to 5 parts by weight of one or more antioxidants selected from phenol-type antioxidants, phosphorus-type antioxidants and tocopherols;
- c) drying the stabilised polypropylene of step b) at a temperature higher than 50°C for longer than 2 hours; and
- d) molding the polypropylene article therefrom;

wherein the polypropylene in the molded article contains traces of hexane and/or heptane less than 5 ppm, contains traces of 2,4-dimethyl-1-heptene less than 5 ppm, and a total content of volatile components

less than 30 ppm and being stabilised in step b) to a level where the melt flow ratio  $MFR_2/MFR_0$  is less than 5.0, where  $MFR_0$  is the melt flow rate after a single pelletization at 280EC and  $MFR_2$  its melt flow rate after repeated pelletization (twice) at 280EC."

III. By an interlocutory decision announced orally on 29 June 1999 and issued in writing on 18 August 1999, the Opposition Division allowed neither the main request nor auxiliary requests 1 to 6, but held that the grounds of opposition did not prejudice the maintenance of the patent in amended form according to auxiliary request 7, because, taking into consideration the amendment made, the patent and the invention to which it related met the requirements of the EPC.

(i) In substance, the Opposition Division took the view that the claimed subject-matter was disclosed in the patent in suit in a manner sufficiently clear and complete for a skilled person to carry it out (Article 100(b) EPC).

(ii) Claim 1 of the main request was deemed to meet the requirements of Article 123(2) EPC. The wording of Claim 1 in each of auxiliary requests 1 to 4 was considered merely to constitute a rewording of the subject-matter of Claim 1 of the main request filed in response to objections raised under Article 123(2) EPC without changing the scope of the claim. The amended claim according to auxiliary request 7 would comply with Article 123(2) and (3) EPC.

(iii) Claims 1 of the main request and of auxiliary requests 1 to 4, all of which related to

polypropylene moulded articles and were considered to have the same scope in spite of their different wording, were deemed to be anticipated by three of the cited documents.

- (iv) The method claims according to any one of auxiliary requests 5 and 6 were found not to comply with Article 84 EPC for lack of clarity.
- (v) Novelty of auxiliary request 7 was acknowledged, because none of the eight citations mentioned the combination of the features in this claim.
- (vi) According to the interlocutory decision, the patent in suit aimed at a method of making a polypropylene moulded article having greatly lowered level of odour which was caused by residual contents of (i) volatile solvents used in the polymerisation of propylene, (ii) additives such as antioxidants and (iii) decomposition products resulting from the further processing of the polypropylene. Since the closest state of the art was not concerned with the above technical problem and the remaining documents were not directed to its solution, an inventive step was acknowledged.

IV. Notices of Appeal were filed (i) by the Proprietor (Appellant I; appeal I) on 15 October 1999 and (ii) by Opponent 03 (Appellant II; appeal II) on 26 October 1999, respectively, against this interlocutory decision. The respective prescribed fees were paid on the same dates.

- (i) In its Notice of Appeal, as amended by letter of

10 November 1999, Appellant I requested that the interlocutory decision be set aside and that the patent be maintained in its granted form or, alternatively, based on one of the auxiliary requests 1 to 6 as on file, a new auxiliary request 7 or the previous auxiliary request 7, renumbered "8". The respective single claims according to auxiliary requests 7 and 8 were enclosed to the first version of the Notice of Appeal.

The single claim of new auxiliary request 7 was based on the claim of previous auxiliary request 7 (see section II, above) with the modification of feature a) to read:

"providing a polypropylene prepared by slurry polymerisation, bulk polymerisation or gas-phase polymerisation using a Ziegler-Natta catalyst and a hydrocarbon medium such as hexane or heptane;"

In its Notice of appeal and in its Statement of Grounds of Appeal, received on 24 December 1999, Appellant I argued that there were clear differences between the various resin compositions disclosed in the prior art, on the one hand, and the composition according to Claim 1 of the patent in suit, on the other.

The reasons given in the interlocutory decision in favour of inventive step of former auxiliary request 7, renumbered 8, would be generally correct and would be valid for all the requests as on file.

In a further letter dated 27 July 2000 in reply to appeal II, it argued that that appeal did not comply with Rule 64 EPC, because neither in the Notice of Appeal nor in the Statement of Grounds of Appeal the address of Appellant II was given. Additionally, it further elaborated its arguments as to patentability of its auxiliary request 7 and disputed the arguments provided by Appellant II.

- (ii) In a letter dated 25 October 1999 in reply to appeal I and in its Statement of Grounds of Appeal, received on 16 December 1999, Appellant II supported the reasons in the decision under appeal as to the main request and auxiliary requests 1 to 6, but disputed the finding of the Opposition Division with respect to auxiliary request 7, as maintained in the decision under appeal, on the basis of three documents, and the arguments submitted by Appellant I.
- (iii) The arguments of Appellant I were also contested by the two Respondents/other Parties as of right O-01 (letter dated 22 September 2000) and O-02 (letters dated 27 July 2000 and 12 September 2000). Both requested furthermore that appeal I be dismissed.
- (iv) In auxiliary requests, oral proceedings were requested by all parties. However, Appellant I withdrew this request with a letter dated 14 November 2001.

V. On 12 July 2002, the parties were summoned to attend

oral proceedings and, in an annex to the summons, the Board made preliminary, provisional remarks, wherein serious doubts were expressed whether any independent claim of any request on file complied with Article 123(2) EPC and whether this non-compliance could be removed by amendment without contravening Article 123(3) EPC.

In reply to the summons, further letters with the following dates were submitted by the parties:

24 July 2002: Respondent/other Party O-01 informed the Board that it intended to use German in the oral proceedings.

24 July 2002: Appellant I (Proprietor) withdrew its appeal and informed the Board that it would not attend the oral proceedings.

6 August 2002: Appellant II (O-03) withdrew its auxiliary request for oral proceedings and informed the Board that it would not attend these proceedings.

12 August 2002: Appellant II (O-03) maintained *expressis verbis* its appeal, but confirmed its withdrawal of the request for oral proceedings.

9 September 2002: Respondent/other Party O-02 withdrew its request for oral proceedings.

- VI. On 17 October 2002, the oral proceedings were cancelled.
  
- VII. According to the written file, Appellant II requested that the decision under appeal be set aside and that

the patent be revoked in its entirety, whilst the Respondent (former Appellant I) requested, implicitly, that appeal II be not admitted or, alternatively, be dismissed.

The other Parties O-01 and O-02 supported the request of Appellant II.

### **Reasons for the Decision**

1. Former appeal I was withdrawn by letter dated 24 July 2002 (section V, above). Consequently, former Appellant I is now the Respondent in these appeal proceedings which concern exclusively former appeal II, referred to below as "the appeal". Former Appellant II (Opponent O-03) and former Opponents O-01 and O-02 are addressed below as "the Appellant" and "the other Parties", respectively.
2. *Admissibility of the Appeal*
  - 2.1 In its letter dated 27 July 2000, the Respondent challenged the admissibility of the appeal, because neither the Notice of Appeal nor the Statement of Grounds of Appeal mentioned the address of the Appellant. Therefore, it argued that the appeal by did not comply with Rule 64 EPC.
  - 2.2 Article 107 EPC identifies the persons entitled to appeal and to be parties to appeal proceedings. The article requires that the said persons or parties who file an appeal against a decision must be adversely affected thereby. "Any other parties to the proceedings shall be parties to the appeal proceedings as of

right."

- 2.3 In the opposition proceedings, besides the Proprietor, three opponents were involved who identified the number and title of the patent opposed, the number of the patent application and the Proprietor as well as their respective names and addresses in their Notices of Opposition. The Notice of Opposition of Opponent 03 was submitted by a professional Representative, identified by his name and address, who acted on behalf of "MONTELL NORTH AMERICA, INC., 2801 Centerville Road, Newcastle County, Delaware, USA".

On 26 October 1999, the same Representative, again identified by his name and address, filed (i) a first statement (dated 25 October 1999) referring to former appeal I of the Respondent and (ii) a Notice of Appeal (dated 26 October 1999), both on behalf of "MONTELL NORTH AMERICA, INC.". In the Notice of Appeal, reference was made to the Appeal Number, both the patent and application numbers of the patent in suit and the date of issue of the contested interlocutory decision.

- 2.4 The Boards of Appeal have, on a number of occasions, considered an objection similar to that raised by the Respondent (see Case Law of the Boards of Appeal of the EPO, 4<sup>th</sup> ed., 2001, chapter VII. D.7.4.1a). In their decisions on these cases, the Boards have found that, provided sufficient information was available to identify the Appellant in each case, the appeal was admissible.

- 2.5 In view of the particulars in the Notice of Appeal submitted by the Appellant and in consideration of the



above facts, the Board sees no reason to come to a different conclusion in the present case. Hence, the appeal is admissible.

3. *Procedural matters*

3.1 The withdrawal of former appeal I necessarily implies that the main request and the auxiliary requests 1 to 6, which had already been pending before the Opposition Division, and the amended claim according to new auxiliary request 7, submitted by the Respondent with its Notice of Appeal, are withdrawn. The Respondent is primarily restricted during the appeal proceedings to defending the patent in the form in which it was maintained by the Opposition Division in its interlocutory decision.

3.2 Consequently, the claim, submitted as auxiliary request 8 on 15 October 1999, which is identical to the claim according to auxiliary request 7 identified in section II (above) and allowed by the Opposition Division, forms the basis of this decision.

4. *Wording of the claim and Articles 100(c) and 123(2) EPC*

4.1 The sole claim under dispute, on which the decision under appeal was based (see section 3.2, above), relates to a method of making a moulded polypropylene article. The method is defined in terms of not only process steps (a) to (d) but also mandatory functional features of the product to be obtained by these steps.

4.2 In step (a), polypropylene is prepared by means of a slurry or bulk polymerisation using a Ziegler-Natta catalyst and a hydrocarbon medium such as hexane or

heptane. The polymer is then stabilised in step (b) by inclusion of 0.01 to 5 parts by weight of one or more of specific antioxidants, subsequently, in step (c), dried at a temperature higher than 50°C for longer than 2 hours and finally, in step (d), moulded to the polypropylene article.

- 4.3 The resulting article is defined in terms of the maximum contents of volatiles (ie solvents and degradation products of the polymer) and the level of stability required (last paragraph of the claim; and page 3, lines 16 to 47 of the description).
- 4.4 The reduced solvent contents are achieved in step (c) by "drying the stabilised polypropylene of step b) at a temperature higher than 50°C for longer than 2 hours".
- 4.5 The amount of antioxidant(s) necessary "to reduce the degradation products" is specified in two ways, (i) in terms of a certain concentration range, relative to the polymer (see section 4.2, above), which in itself is not a sufficient limitation as demonstrated by comparative Example 2 in the patent in suit, and (ii) in terms of the stability thus achieved, defined by the ratio  $MFR_2/MFR_0$  of "less than 5" of two melt flow rates (MFR) of the polypropylene (see the single claim under consideration; patent specification: Claim 1 and page 3, line 48).

Thus, the claim under consideration refers to  $MFR_0$  as being measured "after a single pelletization at 280°C", and  $MFR_2$  as being measured "after repeated pelletization (twice) at 280°C", which clearly means a total of three pelletizations (cf. the findings as regards Example 1, section 4.7, below).

4.6 Further processing always imparts thermal and mechanical stress on the polymer which, hence, partly decomposes (cf. page 2, lines 54/55 of the patent in suit). It is well known in this art that such a processing at 280°C puts a distinctly higher thermal stress on the polymer than the same treatment at 230°C and that the effects of repeated thermal stress on polymers accumulate. A thermally pre-stressed or pre-damaged polymer deteriorates or degrades more easily upon further thermal stress than a polymer not having the same thermal history. Document D1 demonstrates the influence of repeated thermal stress on the MFR (page 23, Figure 1). Thermal stress depends not only on the temperature but will increase, the longer the treatment at high temperatures lasts. This has not been disputed by the parties.

4.7 In Example 1 of the patent, a *composition* obtained by admixture of stabilisers to the polypropylene was pelletized at 230°C and gave the MFR<sub>0</sub> value. Then, *after an intermediate drying step, pellets* underwent repeated pelletization twice at 280°C with subsequent measurement of the MFR<sub>2</sub> (page 4, lines 41 to 46). The other examples and comparative examples are either silent in this respect or they refer to the procedure of Example 1. Hence, the examples clearly require three pelletization runs at different temperatures, which fact is in compliance with the terms "MFR<sub>2</sub>" and "MFR<sub>0</sub>". These temperature conditions are, however, evidently inconsistent with those in definition (ii) of the thermal stability in the claim (point 4.5, above). Consequently, the amounts of antioxidant(s) necessary to fulfil the stability requirement expressed in terms of "MFR<sub>2</sub>/MFR<sub>0</sub> less than 5" differ from each other, depending on whether pelletization was carried out, on

the one hand, three times at 280°C or, on the other, once at 230°C and twice at 280°C.

- 4.8 Furthermore, the passage at lines 48 to 55 of page 3, which was apparently used as the basis for the amendment of Claim 1 during the examination (letter of 20 December 1993), does not support the present wording of Claim 1 with regard to the requirements of Article 123(2) EPC.

The formulation in that passage "where  $MFR_0$  denotes an MFR of a polypropylene sample which has undergone pelletization only once, and  $MFR_2$  denotes an MFR of the same polypropylene sample which has undergone repeated pelletization at a specified temperature (say, twice at 280°C)" does not specify the temperature used in the single pelletization before the determination of the  $MFR_0$  value, but refers only to the temperature during the "repeated pelletization" (ie in two runs) before the measurement of  $MFR_2$ , which is in accordance with the above findings concerning the examples.

In view of these facts and findings, the limit of "less than 5.0" of the said MFR ratio, as defined in the claim (all pelletizations at 280°C), has a meaning which is different from "less than 5.0", measured under less stringent conditions (eg, first, at 230°C and only thereafter at 280°C as in the examples).

It follows that, in the claim under consideration, the skilled person is presented with information which is not directly and unambiguously derivable from that presented by the application as originally filed.

- 4.9 This definition of  $MFR_0$  as being the melt flow rate of

the polypropylene after a single pelletization at 280°C was included in all the independent product and method claims of the patent in suit, as granted, and is also a mandatory feature of the claim under consideration. It is based on an amendment of the disclosure of the application documents which extends the subject-matter beyond the content of the application as originally filed. Consequently, and to this extent, the single claim under consideration contravenes the provisions of Article 123(2) EPC. Nor would it be possible to delete the reference to a simple pelletization at 280°C, or replace it with a reference to a single pelletization at, say 230°C, without contravening Article 123(3) EPC.

- 4.10 Furthermore, the description on page 3, lines 40/41 of the patent specification, which is based on page 6, lines 23/24 of the application as originally filed, refers to "drying the polypropylene molded article" rather than "drying polypropylene" *per se*. It follows that the reference to this feature in the claim also comprises added subject-matter in the sense of Article 123(2) EPC.
- 4.11 These objections, which relate to a ground of opposition (Article 100(c) EPC) already raised and substantiated in a Notice of Opposition, were notified to the parties in a communication accompanying the summons to oral proceedings (cf. sections II and V, above).
- 5. Consequently, the patent in suit cannot be upheld and is therefore revoked in accordance with Articles 102(1) and 111(1) EPC.
- 6. Taking into account the requests and declarations of

all the parties (see sections IV.iv) and V, above),  
there was no need to hold oral proceedings.

**Order**

**For these reasons it is decided:**

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

The Registrar:

The Chairman:

E. Görgmaier

R. Young