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D E C I S I O N
of 15 February 2006

Case Number: T 0908/04 - 3.3.03

Application Number: 97952591.2

Publication Number: 0948567

IPC: C08L 23/14

Language of the proceedings: EN

Title of invention:

Stretched-thinned films comprising low crystallinity polymers and laminates thereof

Patentee:

KIMBERLY-CLARK WORLDWIDE, INC.

Opponent:

SCA Hygiene Products AB

Headword:

-

Relevant legal provisions:

EPC Art. 83, 84, 102(3), 123(2), 123(3)
EPC R. 29(6)

Keyword:

"Clarity - main request (no)"

"Sufficiency of disclosure - auxiliary request (no)"

Decisions cited:

T 0301/87, T 0805/93, T 0988/02

Catchword:

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Case Number: T 0908/04 - 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 15 February 2006

Appellant I: SCA Hygiene Products AB
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Appellant II: KIMBERLY-CLARK WORLDWIDE, INC.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office dated
12 May 2004 and posted 25 May 2004 concerning
maintenance of European patent No. 0948567 in
amended form.

Composition of the Board:

Chairman: R. Young
Members: C. Idez
E. Dufrasne

Summary of Facts and Submissions

I. The grant of the European patent No. 0 948 567 in the name of Kimberley-Clark Worldwide, Inc. in respect of European patent application No. 97 952 591.2 filed on 18 December 1997 and claiming priority of the US patent application No. 777504 filed on 30 December 1996 was announced on 27 February 2002 (Bulletin 2002/09) on the basis of 22 claims.

Independent Claims 1, 10, 17 and 19 read as follows:

- "1. An absorbent article comprising a thin, elastomeric film having improved strength in the cross machine direction, the film comprising at least one low crystallinity polymer, wherein the crystallinity of said polymer is less than 30%.
10. A process of producing an absorbent article including a thin, elastomeric film having improved strength in the cross machine direction, comprising the steps of:
providing at least one low crystalline polymer, wherein the crystallinity of said polymer is less than 30%;
mixing said polymer with a filler;
heating the polymer/filler mixture;
extruding said mixture into a monolayer or multilayer film; and
incorporating the film into an absorbent article.
17. A personal care absorbent article comprising a liquid permeable liner and an outer cover with an absorbent core disposed there between, wherein

said outer cover includes a thin, elastomeric film comprising at least one low crystallinity polymer, wherein the crystallinity of said polymer is less than 30%.

19. A personal care absorbent article comprising a liquid permeable liner and an outer cover with an absorbent core disposed therebetween, wherein said outer cover includes the film made according to claim 10."

Claims 2 to 9, 11 to 16, 18 and 20 to 22 were dependent claims.

- II. A Notice of Opposition was filed against the patent on 26 November 2002 by SCA Hygiene Products AB.

The Opponent requested the revocation of the patent as a whole on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC), insufficiency of disclosure (Article 100(b) EPC) and extension of subject-matter (Article 100(c) EPC).

The grounds of opposition were supported *inter alia* by the following documents:

D3: EP-A-0 697 436;

D6: GB-A-1 151 321; and

D7: US-A-5 539 056.

- III. By a decision announced orally on 12 May 2004, and issued in writing on 25 May 2004, the Opposition

Division held that the grounds of opposition did not prejudice the maintenance of the patent in amended form.

The decision was based on Claims 1 to 19 as main request, and on Claims 1 to 9 as first auxiliary request, both submitted by the Patent Proprietor during the oral proceedings of 12 May 2004.

Claim 1 of the main request differed from Claim 1 as granted in that it had been indicated that the absorbent article was a personal care absorbent article and that the low crystallinity polymer was selected from the group consisting of low crystallinity propylene homopolymers, copolymers and blends thereof.

According to the decision, the main request met the requirements of Article 123(2), 123(3), and 83 EPC. According to the decision the subject-matter of Claim 1 of the main request was novel in view of D7, but lacked inventive step over that document.

Claim 1 of the first auxiliary request differed from Claim 1 of the main request by the indication that the personal care absorbent article comprised an outer cover, said outer cover including the specific thin elastomeric film.

Concerning the first auxiliary request, it was stated in the decision that Claims 1 to 9 thereof met the requirements of Article 123(2) and (3) EPC. Its subject-matter was considered as novel over D7. Concerning inventive step, it was held in the decision that the films according to D7 could not be suitable as outer cover of a personal care absorbent article, since

they showed a very high elasticity as reported in Table 10 of D7 wherein the elongation was at least 1750% and the elastic recovery no less than 72%.

According to the decision, document D6 represented a general teaching which, taken alone or in combination with that of D7, was useless when considering the inventive step, and the remaining documents had never been taken into account by the Opponent when dealing with Article 56 EPC.

Thus, the Opposition Division came to the conclusion that the subject-matter of the first auxiliary was based on an inventive step.

IV. Notices of Appeal were filed on 21 July 2004 by the Opponent (Appellant I), and on 3 August 2004 by the Patent Proprietor (Appellant II). The prescribed fees were paid on the same day, respectively.

V. With the Statement of Grounds of Appeal filed on 24 September 2004, Appellant I submitted the following document:

D8: US-A-4 731 066.

It also argued substantially as follows:

(i) Concerning novelty:

(i.1) D7 disclosed blends of amorphous polypropylene and isotactic polypropylene, which exhibited unusual elastomeric properties.

(i.2) D7 described in column 27, last paragraph, that diaper waist bands could be produced using elastic films made from the polymeric composition.

(i.3) A diaper waist band formed a part of the outer cover of a diaper.

(i.4) The preferred amorphous polypropylene of D7 exhibited a crystallinity below 30% (column 18, lines 8 to 14).

(i.5) The issue was whether D7 disclosed diaper waist bands made from elastic films comprising at least one low crystallinity polypropylene having a crystallinity of less than 30%.

(i.6) From D7 (column 27, starting from line 42; Examples) it was clear that diaper waist bands could be made from elastic films produced from polymeric blends comprising amorphous polypropylene having a low crystallinity, wherein the preferred amorphous polypropylenes had a crystallinity of less than 30%.

(i.7) Thus the subject-matter of Claim 1 lacked novelty over D7.

(ii) Concerning inventive step:

(ii.1) According to the decision under appeal, the elastic films of D7 could not be suited as outer cover of a personal care absorbent article.

(ii.2) While the blends of Example 6 which were presented in Table 10 had an elongation of at least

1750%, polymeric blends of other examples in D7 as presented in Tables 1, 3, 6 and 7 had a considerably lower elongation, of around 700-900%.

(ii.3) Furthermore, a film suited as an elastic waist band in a diaper would certainly be suitable as an outer cover in a diaper, since the tensile forces to which it was exerted were considerably higher in the waist area.

(ii.4) It was not possible to compare the elastic recovery disclosed in D7 and that mentioned in the patent in suit.

(ii.5) It was not understood how a low elastic recovery, which meant that the film would deform upon elongation, would be an indication of a good dimensional stability.

(ii.6) In any case, the patent-in-suit did not claim any values of the elastic properties.

(ii.7) Thus, the conclusion in the decision under appeal that the films of D7 could not be suitable as an outer cover of a personal care absorbent article was unfounded.

(ii.8) Document D8 showed that the same elastic film is used in the waist area as in the rest of the diaper, and that the film was extensible from about 400-3000%.

(ii.9) Thus, it would have been obvious that the film of D7 also would be suited as an outer cover in other parts of the diaper than in the waist area.

(ii.10) Document D6 disclosed a diaper having a liquid impervious backsheet of a thermoplastic film e.g. polypropylene.

(ii.11) Thus, the person skilled in the art trying to improve the elastic properties and strength of the film would have found a solution to this problem in D7.

(ii.12) Thus D6 in combination with D7 rendered the claimed subject-matter obvious.

VI. With the Statement of Grounds of Appeal filed on 4 October 2004, Appellant II submitted two sets of claims representing a main request and a first auxiliary request. As second auxiliary request, it requested the maintenance of the patent in the form considered as allowable by the Opposition Division.

It also argued essentially as follows:

(i) In its decision the Opposition Division had considered:

(i.1) that D7 disclosed the use of "low crystallinity" polymers as the amorphous component of the D7 compositions.

(i.2) that D7 disclosed the use of products made from the D7 compositions in personal care products; and

(i.3) that films made from D7 compositions would inherently display the same physical properties and as such solve the problem underlying the patent in suit,

i.e. provision of improved strength in the cross machine direction.

(ii) D7 referred to polymers having a crystallinity (as measured by ^{13}C NMR), of 30% or less of isotactic and syndiotactic pentads combined, preferably 20% or less.

(iii) The crystallinity according to the patent in suit was determined by differential scanning calorimetry (DSC).

(iv) Crystallinities measured by these two methods were by no means comparable.

(v) A crystallinity of 30% or less in D7 corresponded to an (essentially) amorphous polymer when measured by DSC.

(vi) The amorphous polymers of D7 might exhibit some melt enthalpy, up to an upper limit of 10 J/g.

(vii) In contrast the low crystallinity polypropylenes according to the patent in suit had melting enthalpies of the order of magnitude of about 50 J/g.

(viii) Thus, D7 had no disclosure or suggestion whatsoever relating to the use of low crystallinity polymers in order to improve strength in the cross machine direction.

(ix) Thus, the subject matter of the main request accordingly was inventive over D7.

VII. With its letter dated 18 February 2005, Appellant I submitted the following documents:

D9: S. Sosnowski; "Poly(L-Lactide) microspheres with controlled crystallinity", *Polymer*, 42, (2001), pages 637-643;

D10: W. Xu et al "Poly(propylene)-Poly(propylene)-Grafted Maleic Anhydride-Organic Montmorillonite (PP-PP-g-MAH-Org-MMT) Nanocomposites. II. Nonisothermal Crystallization Kinetics.", *Journal of Applied Polymer Science*, vol. 88 (2003), pages 3093-3099;

D11: G.Höhne et al "Differential Scanning Calorimetry, An Introduction for Practitioners"; Springer Verlag Berlin Heidelberg 1996, page 114; and

D12: US-A-4 726 807.

It also argued essentially as follows:

(i) Concerning novelty and inventive step:

(i.1) ^{13}C NMR and DSC gave almost identical results as shown by D9.

(i.2) ^{13}C NMR gave values of crystallinity which were closed to the true crystallinity values.

(i.3) The claims of the Main Request failed to specify that the percentage of crystallinity was determined by

DSC. Thus, all methods should be considered as equally applicable.

(i.4) Claim 1 of the Main Request failed to specify a lower limit to the crystallinity.

(i.5) The patent in suit made no mention of the melting enthalpies of the polymers described therein and this feature was not in the claims.

(i.6) The cited value of about 50 J/g had no basis in the application as filed.

(i.7) No actual values of the degree of crystallinity of the exemplified polymers had been provided. No technical effect of the limit of 30% crystallinity had been shown.

(i.8) The claims of the main request were therefore not novel or inventive over document D7.

(ii) Concerning sufficiency of disclosure:

(ii.1) The patent in suit had to indicate clearly how the crystallinity of the polymer should be measured.

(ii.2) At the oral proceedings before the Opposition Division, the Patentee had argued that the rate of cooling was not important, as it would not considerably influence the measurement of crystallinity (see Minutes of the Proceedings of 12/05/2004, page 3, first paragraph).

(ii.3) Document D10 undoubtedly showed the large difference in the DSC patterns for polypropylene obtained at various cooling rates.

(ii.4) Since this value was not disclosed, the patent in suit suffered from an insufficiency of disclosure.

(ii.5) It was further unclear what was meant by "second DSC scan" (patent in suit, paragraph [0007]).

(ii.6) According to document D11, the relative degree of crystallinity could be obtained if the area of the melting peak was compared with that of the completely crystalline material of the same type.

(ii.7) The method described in the patent in suit (dividing the heat of fusion by the approximate crystallinity of pure polypropylene = 185 Joules per gram) was only relevant when one was using pure polypropylene, and would not be valid for unspecified homopolymers and copolymers.

VIII. With its letter dated 20 June 2005, Appellant II submitted a new main request and three auxiliary requests, as well as the document

D13: J.C. Randall "Polymer Sequence Determination. Carbon-13 NMR Method"; Academic Press New York, 1977; pages 7 to 11.

It also argued essentially as follows:

(i) Concerning DSC measurements:

(i.1) Paragraph [0007] of the patent in suit referred to a "second DSC scan".

(i.2) It was usual in the art to first melt the sample to eliminate the thermal history of the sample (cf. also D10).

(i.3) This first heating treatment was referred to as the first DSC scan, as implied in paragraph [0007].

(i.4) In order to calculate the percent crystallinity, the heat of fusion, as determined in the second DSC scan, was divided by the approximate crystallinity of polypropylene, i.e. 185 Joules per gram.

(ii) Concerning the crystallinity:

(ii.1) From document D13, it was evident that the NMR measurements were made in solution.

(ii.2) Any measurement in solution obviously would eliminate crystallinity completely. The term as used in document D7 would refer to the "concentration of isotactic and syndiotactic pentads".

(ii.3) Thus, D7 did not teach or suggest polymers having a low crystallinity within the meaning of the patent in suit.

(iii) Concerning documents D9 to D11:

(iii.1) Document D9 described the determination of the degree of crystallinity of poly(L-lactide) by ¹³C CP-MAS NMR measurements.

(iii.2) The NMR signal measured in D9 was the carbonyl region (page 638, right column, first paragraph). The NMR method used was not the one described in D7.

(iii.3) In D10 the data in this DSC measurement were collected when cooling the sample, as opposed to the usual DSC measurements.

(iii.4) According to D11, the "relative crystallinity" was the relation between the crystallinity of a sample due to its thermal history and the theoretical crystallinity of the sample.

(iii.5) Consequently documents D9 to D11 were irrelevant.

(iv) Concerning sufficiency of disclosure:

The objections of the Appellant I were moot in view of the arguments presented in respect of D9 to D11 and to the DSC method.

(vi) Concerning novelty:

(vi.1) In the light of D13, it was evident that the polymers of D7 were amorphous polymers, and not low crystallinity polymers.

(vi.2) The subject-matter of Claim 1 was clearly novel over D7.

(vii) Concerning inventive step:

(vii.1) As shown from document D13, D7 did not teach or suggest low crystallinity polypropylenes.

(vii.2) It failed in particular to teach or suggest a personal care article including a thin elastomeric film comprising such low crystallinity polypropylenes.

(vii.3) Thus, the subject-matter of the Main Request was novel and inventive over the cited prior art.

IX. In its letter dated 19 October 2005, Appellant I argued essentially as follows:

(i) Concerning the amendments made in the claims:

Including the definition of DSC without the feature of the second DSC scan was an intermediate generalisation, and was thus contrary to Article 123 EPC.

(ii) Concerning novelty:

(ii.1) The measurement of the concentration of isotactic/syndiotactic pentads led to a value of crystallinity.

(ii.2) Isotactic polypropylene was the most crystalline form.

(ii.3) The distribution of isotactic/syndiotactic/atactic forms was maintained, even when the polypropylene was dissolved (cf. D13, pages 9 and 10).

(ii.4) The term "crystallinity" used in D7 had its true and commonly accepted meaning.

(ii.5) According to the Patent Proprietor the crystallinity was defined as being "the heat of fusion determined by DSC divided by 185 J/g.

(ii.6) According to Claim 4 of D7 the amorphous polypropylene had a heat of fusion of 10 J/g. This would correspond hence to a crystallinity of 5.4%.

(ii.7) Thus the subject-matter of Claim 1 of the main request was not novel over D7.

(iii) Concerning sufficiency of disclosure:

(iii.1) According to the Patent Proprietor, the DSC measurement comprised the following steps:

- a. heating the sample to eliminate thermal history;
- b. cooling the sample; and
- c. heating of the sample again (the second scan) and measurement of the heat of fusion.

(iii.2) D10 proved that the rate of cooling had a vast effect on the heat of fusion obtained.

(iii.3) As a cooling step was necessary, and no values had been provided for the rate of cooling, the patent in suit was insufficient in that respect.

(iii.4) The rate of heating would also have a substantial effect on the enthalpy of fusion.

(iii.5) The patent in suit failed to disclose the rate at which the polymer was heated during DSC measurement.

(iii.6) There was no standard method or standard heating/cooling rate which the skilled person could rely upon to fill the gaps in the teaching of the patent in suit.

(iii.7) In contrast D7 and D3 specified the values for the heating and cooling rates.

X. Oral proceedings before the Board were held on 15 February 2005.

(i) Following preliminary observations from the Board under Article 84 EPC and Article 123(2) EPC concerning the set of claims of the main request submitted with letter dated 20 June 2005, Appellant I submitted two sets of 8 claims representing a new main request and a new first auxiliary request.

Claim 1 of the main request reads as follows:

"A personal care absorbent article comprising a liquid-permeable liner and an outer cover with an absorbent core disposed there between, said outer cover including a thin, elastomeric film having improved strength in the cross machine direction, the film comprising at least one low crystallinity polymer selected from the group consisting of low crystallinity propylene

homopolymers, copolymers and blends thereof, and wherein the crystallinity of said polymer is less than 30%, said crystallinity being the heat of fusion of the second DSC scan, determined by differential scanning calorimetry, divided by 185 Joules per gram."

Dependent Claims 2 to 8 correspond to Claims 3 to 9 as granted.

Claim 1 of the first auxiliary request differed from Claim 1 of the main request by the further indication that the film is thinned by stretching in the machine direction.

Claims 2 to 8 corresponded to Claims 2 to 8 of the main request.

The arguments presented by the Parties concerning the allowability of the main request under Article 123 EPC may be summarized as follows:

(i.1) By Appellant I:

(i.1.1) There was no support in the application as originally filed for a personal care absorbent article in which the outer cover included a film having the specific features defined in dependent Claims 2 to 8.

(i.1.2) Claim 17 as granted was an independent claim and did not refer to the specific features set out in present Claims 2 to 8. Claim 18 as granted which was dependent on Claim 17 merely indicated that the low crystallinity polymer was selected from the group

consisting of low crystallinity propylene homopolymers, copolymers and blends.

(i.2.3) Consequently, Claims 2 to 8 infringed Article 123(2) EPC.

(i.2) By Appellant II:

(i.2.1) Although original Claim 17 was an independent claim, it was evident that the thin, elastomeric film comprising at least one low crystallinity polymer corresponded to the film according to original Claim 1.

(i.2.2) Thus, films according to original Claim 1 and exhibiting the preferred embodiments set out in original Claim 2 to 9 could also be used in the manufacture of the specific personal care absorbent article according to original Claim 17.

(ii) The Board having informed the Parties that the Claims of the main request met the requirements of Article 123(2) and 123(3) EPC, the discussion moved then to the question of the clarity of Claim 1 of the main request. The arguments presented by the Parties in that respect may be summarized as follows.

(ii.1) By Appellant I:

(ii.1.1) According to Claim 1 the crystallinity of the propylene polymers was defined by reference to their heat of fusion as determined by DSC.

(ii.1.2) The DSC method comprised a first heating step, a cooling step and a second heating step.

(ii.1.3) It was evident that the cooling rate in the cooling step as well as the heating rate in the second heating would influence the value of the heat of fusion measured in the second step.

(ii.1.4) In that respect document D10 (Figure 1) clearly showed that the exothermic crystallization peak, and hence the level of crystallinity in the cooled polypropylene was dependent on the cooling rate.

(ii.1.5) These different levels of crystallinity obtained would inevitably have an influence on the heat of fusion determined in the second heating step. Different cooling rates and different heating rate would lead to different results in terms of crystallinity.

(ii.1.6) There was no standard method in the art fixing the cooling rate and the heating rates in differential scanning calorimetry applied for propylene polymers. This was further shown by documents D7 (cf. column 20, line 58 to column 21, line 4) and D3 (page 4, lines 27 to 30), which referred to the use of DSC for characterizing propylene polymers but used different cooling rates and heating rates.

(ii.1.7) Thus, in the absence of any indication of the cooling rate and the heating rate which should be applied for determining the heat of fusion of the propylene polymer, the skilled person would not know how to determine the crystallinity of the propylene polymer to be used in the thin elastomeric film included in the outer cover of the personal care absorbent article according to Claim 1.

(ii.2) By Appellant II:

(ii.2.1) It was admitted that the cooling rate and the heating rate applied were important parameters in the DSC measurement.

(ii.2.2) There was no objection to the introduction of document D10 into the proceedings.

(ii.2.3) Even if D10 showed that the level of crystallinity was dependent on the cooling rate, the skilled person would use a cooling rate which enabled to obtain a complete crystallization of the propylene polymer.

(ii.2.4) Furthermore, the cooling rate of 10°C per minute would appear as an usual cooling rate in the art.

(iii) The Board having informed the Parties that the main request did not meet the requirements of Article 84 EPC, Appellant II withdrew its previous first auxiliary request and replaced it by a new set of Claims 1 to 8. Claim 1 of the first auxiliary request reads as follows:

"A personal care absorbent article comprising a liquid-permeable liner and an outer cover with an absorbent core disposed therebetween, said outer cover including a thin, elastomeric film having improved strength in the cross machine direction, the film comprising at least one low crystallinity polymer selected from the group consisting of low crystallinity propylene

homopolymers, copolymers and blends thereof, and wherein the crystallinity of said polymer is less than 30%."

Dependent Claims 2 to 8 correspond to Claims 3 to 9 as granted.

Concerning this auxiliary request, the discussion focussed on its compliance with Article 83 EPC.

Appellant I submitted that the arguments presented in support of the objection under Article 84 concerning the method of determination of the crystallinity of the propylene in respect of Claim 1 of the main request would also be relevant in support of an objection of insufficient disclosure, since the patent in suit did not teach how to determine this essential feature of the claimed invention.

Appellant II, having observed that the objection under Article 84 EPC in respect to the method of determination of the crystallinity of the propylene polymer which had led to the refusal of the main request was closely related to the objection under Article 83 EPC, indicated only that it referred to the arguments presented in the written phase of the appeal.

XI. Appellant I requested that the decision under appeal be set aside and the European patent No. 948 567 be revoked.

Appellant II requested that the patent be maintained on the basis of the main request or in the alternative on

the basis of the first auxiliary request, both filed during the oral proceedings.

Reasons for the Decision

1. The appeals are admissible.

Main request

2. *Article 123(2) EPC and 123(3) EPC*
 - 2.1 Claim 1 of the main request finds its origin in independent Claim 17 of the application as originally filed (WO-A-98/29503).
 - 2.2 Although this original independent Claim 17 does not expressly refer to the films according to original Claims 1 to 9, it is evident in view of page 3, lines 26 to 29 of the application as originally filed referring to the use of the relevant films in personal care absorbent articles, that these films can also be used in such an application.
 - 2.3 This has firstly for consequence that Claim 1 must be considered as supported by original Claim 17, read in combination with original Claim 2 and page 2, lines 32 to 34 of the application as originally filed.
 - 2.4 This has further for consequence that Claims 2 to 8 must be must also be considered as supported by original Claims 3 to 9.

2.5 It thus follows that the requirements of Article 123(2) EPC are met by all the claims.

2.6 No objection under Article 123(3) EPC has been raised by the Appellant I against the claims of the main request. The Board is also satisfied that the requirements of Article 123(3) are met by all the claims.

3. *Article 84 EPC*

3.1 When amendments are made to a patent during an opposition, Article 102(3) EPC requires consideration as to whether the amendments introduce any contravention of any requirement of the Convention, including Article 84 EPC.

3.2 In the present case Claim 1 differs from granted Claim 17, in particular, in that it contains the feature that the crystallinity is the heat of fusion of the second DSC scan, determined by differential scanning calorimetry, divided by 185 Joules per gram.

3.3 Thus, it follows, that this amendment is susceptible to objections being raised under Article 84 EPC and that it must be checked whether this amendment complies with Article 84 EPC.

3.4 As can be understood from the description of the patent in suit (page 2, lines 38 to 40) and from the arguments presented by the Appellant II in the course of the appeal proceedings (cf. Section VIII (ii.3) above), the level of crystallinity of the propylene polymers is the characterizing feature relied on for a distinction over

the prior art, and that its role in indicating the limits of the claimed subject-matter, or, in other words, in defining the matter for which protection is sought, is hence a crucial one.

- 3.5 According to Article 84 EPC, the claims shall define the matter for which protection is sought (first sentence) and for this purpose they shall, *inter alia*, be clear and supported by the description (second sentence). This implies that the claims must be clear in themselves when being read with the normal skills, but not including any knowledge derived from the description of the patent application (cf. decision T 0988/02 of 30 October 2003, not published in OJ EPO; Reasons point 3.3.1).
- 3.6 In the Board's view, the unambiguous characterization in a claim of a product by a parameter (here the level of crystallinity) necessarily requires that the parameter can be clearly and reliably determined. It thus follows that the knowledge of the method and conditions of determination of the parameter is necessary for the unambiguous definition of the parameter. In that context, the Board further notes that Appellant II has also stressed the importance of the method for determining the crystallinity and that crystallinity determined by different methods do not lead to comparable results (cf. Section VI (ii), (iii) and (iv) above).
- 3.7 Thus, in order to allow the matter for which protection is sought to be defined, it must be clear from the claim itself when being read by the person skilled in the art exactly how the crystallinity should be

- determined.
- 3.8 This would imply that the method of determination and the conditions of measurement which might have an influence on the value of the crystallinity should be indicated in the claim, either expressly or, if appropriate, by way of reference to the description according to Rule 29(6) EPC. Such indication would only become superfluous, provided it could be shown that the skilled person would know from the outset which method and conditions to employ because, for instance, this methodology was the methodology commonly used in the technical field, or that all the methodologies known in the relevant technical field for determining this parameter would yield the same result within the appropriate limit of measurement accuracy.
- 3.9 In the present case, Claim 1 indicates that the crystallinity is the heat of fusion of the second DSC scan, determined by differential scanning calorimetry, divided by 185 Joules per gram, and it has been admitted by all the Parties that the differential scanning calorimetry method comprises the step of first heating the propylene polymer sample (first scan) to its melting point to eliminate thermal history, the step of cooling the sample, and the step of heating the sample again to its melting point (second scan) in order to determine the heat of fusion.
- 3.10 In this connection, the Board firstly notes that Appellant I has submitted that the cooling rate and the heating rate in the second scan are important features of the DSC measurement, and that this has been acknowledged by Appellant II at the oral proceedings

before the Board. This is also corroborated by document D10 (page 3094, Figure 1; left hand column, paragraph Experimental), which shows that the DSC crystallization patterns from the melt for polypropylene clearly depend on the cooling rate applied. This has for consequence, that the level of crystallinity obtained at the end of the cooling step is dependent on the cooling rate applied, and that, conversely, different heating rates would inevitably lead to different melting patterns.

- 3.11 It must therefore be concluded that the crystallinity value determined by the heat of fusion in the second scan is inevitably dependent on the cooling rate applied after the first melt and on the heating rate in the second scan, and that, therefore, the knowledge of the exact conditions of cooling and heating in these steps are essential to a clear and reliable determination of the crystallinity, and hence, to the unambiguous definition of the crystallinity.
- 3.12 Thus, the question of the unambiguous characterization of the claimed product by the use of the crystallinity of the propylene polymer used in its manufacture boils down to the question of whether the skilled person would inevitably know which cooling rate and which heating rate should be applied when determining the crystallinity of the propylene polymer.
- 3.13 Whilst it might have been argued that the skilled person would rely on common general knowledge on these issues, the Board notes that Appellant I has submitted that there was no accepted standard in the art concerning the heating rate and the cooling rate to be applied when using DSC for determining thermal

properties of propylene polymers such as heat fusion or crystallization, and that this has not been challenged by the Appellant II. This is also supported by a comparison between documents D7 and D3 in that respect. While document D7 (cf. column 20, line 58 to column 21, line 4) prescribes a cooling rate of 10°C/min and a heating rate of 10°C/min, document D3 (page 4, lines 27 to 30) indicates a cooling rate and a heating rate both of 20°C/min.

3.14 The Board cannot also accept the argument of Appellant II that the skilled person would select a cooling rate sufficient for obtaining a complete crystallization, since this ultimate level of crystallization is as such not known to the skilled person, and, in view of the submissions of Appellant II that other methods would not give the same results as the DSC method prescribed in the patent in suit, could not even be assessed by other means. Nor could the further argument of Appellant II be accepted that the skilled person would use the usual rate of 10°C/min in both the heating and cooling step, since, as indicated above in paragraph 3.13, there is no such commonly accepted standard in the art.

3.15 The Board further notes that, in contrast to documents D3 and D7 which clearly define the conditions under which the DSC measurement should be carried out, the description of the patent in suit gives absolutely no information on the cooling rate and heating rate applied in the determination of the crystallinity by DSC, quite apart from which the examples of the patent in suit do not disclose the crystallinity of the propylene polymers used therein, so that a reference in

Claim 1 to the description according to Rule 29(6) EPC could not even be envisaged.

3.16 Consequently, the Board can only come to the conclusion that there is a lack of information regarding the exact conditions, in particular the cooling rate and the heating rate in the second scan, under which the parameter crystallinity in Claim 1 is to be determined.

3.17 This lack of information results in uncertainty as to the definition of the parameter crystallinity, and that therefore that the crystallinity of the propylene polymer cannot limit the subject-matter of Claim 1 in any clear way. In other words, Claim 1 is not clear as required by Article 84 EPC.

3.18 Since Claim 1 does not comply with Article 84 EPC, the main request must be refused.

First auxiliary request

4. *Wording of the claims*

4.1 Claim 1 of the first auxiliary request differs from Claim 1 of the main request in that the indication that the crystallinity is the heat of fusion of the second DSC scan, determined by differential scanning calorimetry, divided by 185 Joules per gram is cancelled. Claims 2 to 8 correspond to Claims 2 to 8 of the main request.

4.2 No objection under Article 123(2) and 123(3) EPC have been raised by Appellant I in respect of this set of claims. The Board is also satisfied that the requirement of these articles are met by all the claims.

4.3 As indicated above in paragraph 3.1, when amendments are made to a patent during an opposition, Article 102(3) EPC requires consideration as to whether the amendments introduce any contravention of any requirement of the Convention, including Article 84 EPC. Article 102(3) EPC, however, does not allow objections to be based upon Article 84 EPC, if such objections do not arise out of the amendments made (cf. also decision T 301/87, OJ EPO 1990, 335).

4.4 Since Claim 1 is based on granted Claim 17 which already contained the reference to a crystallinity of the polymer of less than 30%, it follows that the presence of this parameter in Claim 1 of the first auxiliary request is not objectionable under Article 84 EPC.

5. *Sufficiency of disclosure*

5.1 Claim 1 of the first auxiliary request refers to a personal care absorbent article comprising a liquid-permeable liner and an outer cover with an absorbent core disposed there between, said outer cover including a thin, elastomeric film having improved strength in the cross machine direction, the film comprising at least one low crystallinity polymer selected from the group consisting of low crystallinity propylene homopolymers, copolymers and blends thereof, wherein the crystallinity of said polymer is less than 30%.

- 5.2 It is thus clear that the essential feature of the claimed personal care absorbent article resides in the crystallinity of the propylene polymer used in the manufacture of the film included in its outer cover.
- 5.3 In this connection, the Board further observes that Appellant II has consistently argued that the crystallinity referred to in Claim 1 is determined by DSC, and that crystallinity determined by such a method is by no means comparable with crystallinity determined by a method such as ^{13}C NMR.
- 5.4 Consequently, it must be considered that the crystallinity referred to in Claim 1 which is essential feature for selecting the propylene polymer in order to carry out the claimed invention is a very specific one, i.e. a crystallinity determined by DSC measurement. In other words, it is the method of determination by DSC which gives its technical significance to the feature "crystallinity" for the implementation of the claimed invention.
- 5.5 This inevitably implies that the person skilled in the art would know the essential operating conditions in order to determine this parameter by DSC, since he would otherwise be left in considerable doubt when choosing the propylene polymer to be used in the film included in the outer cover of the claimed personal care absorbent article (cf. decision T 805/93 of 20 February 1997, not published in OJ EPO, Reasons point 5).

- 5.6 While it is true that the description of the patent in suit (page 2 paragraph [0007]) discloses that the crystallinity should be determined using differential scanning calorimetry by taking the heat of fusion of the second scan and dividing it by 185 Joules per gram, it is nevertheless evident that the patent in suit is totally silent on the cooling rate and the heating rate in the second scan which should be used in the DSC method for the determination of the crystallinity of the propylene polymers. Furthermore, it has not been contested by Appellant II that there is no commonly accepted standard in the art in that respect.
- 5.7 As indicated above in paragraph 3.11, the value of the crystallinity obtained by a DSC method is dependent on the cooling rate and the heating rate in the second scan under which the DSC is carried out. In other words, different cooling rates and different heating rates would lead to different values of measured crystallinity for the same propylene polymer.
- 5.8 While some level of uncertainty can be permissible when it comes to sufficiency of disclosure, this would however presuppose that it can be shown that this uncertainty does not jeopardize the validity of the measured parameter for the solution of the technical problem, i.e. obtaining personal care absorbent article having an outer cover including a film having an improved strength in the cross machine direction.
- 5.9 In this connection, the Board however observes that no limitation of this degree of uncertainty has been established or argued by Appellant II.

- 5.10 Nor can the Board find adequate instructions in the specification in order to compensate the uncertainty in the determination of the crystallinity of the propylene polymers by DSC.
- 5.10.1 In that respect, the Board notes that the crystallinity of the commercially available propylene polymers used in the examples is not disclosed, so that the skilled person could not even try to reproduce or at least to approach the conditions under which the crystallinity of these polymers have been measured.
- 5.10.2 The Board further notes that the patent in suit does not even quantify what should be understood by the expression "improved strength" in the cross machine direction, so that the deficiency of information on the determination of the required crystallinity cannot even be reduced by some guidance on the level of strength to be achieved by an appropriate crystallinity of the propylene polymer.
- 5.10.3 Nor could other methods used in the art for determining the crystallinity of polymers (e.g. ^{13}C NMR) be of any assistance for reducing this uncertainty, since as indicated by the Appellant II, the measured values of crystallinity are not comparable.
- 5.11 Under these circumstances, the Board can only come to the conclusion that the patent in suit does not disclose the method for determining the crystallinity of the suitable propylene polymers in a manner which reliably retains the validity of the parameter for the solution of the technical problem.

5.12 Consequently, the first auxiliary request must be refused for non compliance with Article 83 EPC.

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:

E. Görgmaier

R. Young