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Datasheet for the decision of 20 February 2008

Case Number: T 0020/07 - 3.2.06

Application Number: 00932226.4

Publication Number: 1180995

IPC: A61F 13/15

Language of the proceedings: EN

Title of invention:
Disposable absorbent article having reduced impact on surface tension of acquired liquid

Patentee:
THE PROCTER & GAMBLE COMPANY

Opponent:
Paul Hartmann AG
Kimberly-Clark Worldwide, Inc.
SCA Hygiene Products AB

Headword:
-

Relevant legal provisions:
EPC Art. 83

Relevant legal provisions (EPC 1973):
-

Keyword:
"Sufficiency (no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0020/07 - 3.2.06

D E C I S I O N
of the Technical Board of Appeal 3.2.06
of 20 February 2008

Appellant: (Patent Proprietor)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 10 November 2006 revoking European patent No. 1180995 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. Alting Van Geusau
Members: G. L. de Crignis
K. Garnett

Summary of Facts and Submissions

I. European Patent No. 1 180 995, granted on application No. 00 932 226.4, was revoked by the opposition division by decision announced during the oral proceedings on 10 October 2006 and posted on 10 November 2006.

II. The decision of the opposition division was based on the finding that the subject-matter of claim 1 was not sufficiently disclosed (Article 100(b) EPC) with respect to the features referring to the test method for measuring the surface energy of the liquid handling structure, the features referring to the test method for measuring the caliper of the liquid handling structure and the features referring to the test method for measuring the surface tension reduction of the liquid handling structure.

III. On 29 December 2006 the Appellant (patent proprietor) both filed a notice of appeal against this decision and paid the appeal fee. The statement of grounds of appeal was filed on 20 March 2007 together with a request to set aside the decision of the opposition division and to maintain the patent as granted. At the same time, the following documents were filed:

E36 Annex I letter from Augustine Scientific to Dr. Lipic of 19 March 2007

E37 Annex II Test report - Uncompressed Caliper of a Liquid Handling Structure

E38 Wettability Studies for porous solids including powders and fibrous materials, Application Note 402; C. Rulison; Augustine Scientific

IV. In a communication in preparation for oral proceedings according to Article 11(1) of the Rules of Procedure of the Boards of Appeal dated 8 November 2007 the Board raised doubts in respect of the requirements of Article 100(b) EPC.

With its letter of 6 February 2008 the appellant announced that it would not be represented at the oral proceedings and maintained its request to set aside the decision under appeal and to maintain the patent as granted. With letters of 11 and 13 February 2008 respectively, respondents II and I indicated that they would also not be represented at the oral proceedings but maintained their requests for dismissal of the appeal.

V. Oral proceedings were held on 20 February 2008. The only present party, respondent III, requested that the appeal be dismissed.

Claim 1 as granted reads:

"A disposable absorbent article comprising a liquid pervious topsheet, a liquid impervious backsheet at least partially peripherally joined to said topsheet a liquid handling structure positioned intermediate said topsheet and said liquid storage structure said liquid handling structure substantially being made from a hydrophobic, polymeric material,
said liquid handling structure comprising a hydrophilizing agent in an amount sufficient to increase the surface energy of the liquid handling structure to at least 40 mN/m,

said liquid handling structure having a basis weight to uncompressed caliper ratio of less than 100 grams per square meter per millimetre,
characterised in that
said liquid handling structure has a surface tension reduction of less than 15 mN/m according to the surface tension reduction test disclosed therein."

VI. The appellant essentially relied upon the following submissions:

There was sufficient disclosure present for the skilled person to obtain the claimed absorbent article (Article 83 EPC) and it was clear how to measure in particular the surface tension of the claimed liquid handling structure.

It belonged to the general well-known knowledge of the skilled person how to determine the surface energy of a liquid handling structure. This general knowledge included a determination method based upon a two-step process, in which the contact angles of different reference liquids were measured in a first step, and in a second step the surface energy was calculated from the measured contact angles via a theoretical model.

Regarding the first step of surface energy determination, even though there were several methods for measuring contact angles, the skilled person would automatically choose the Washburn method, which is a vertical wicking method. This method would allow the material's evaluation with only minimal sample manipulation. It was based upon mass uptake versus time, which would be an advantage over the equilibrium

wicking height methodology, which required longer times to establish the liquid sample equilibrium and relied on determining the exact height of the liquid front, which is usually difficult. Alternative methods existed but suffered from liquid evaporation effects and needed a certain time to reach equilibrium, added to which the determination of the exact height of the liquid front was usually difficult.

Regarding the second step of surface energy determination, there were several theoretical models for calculating the surface energy of a given material from experimentally measured contact angles. These models included the Zisman, the Owens-Wendt, the van Oss, and the Fowkes theory. It was common general knowledge that the choice of the appropriate model should be determined by the specific physico-chemical surface properties of the material to be investigated. For a porous material the skilled person would either use the Owens-Wendt or the Fowkes theory. The other models would not be seriously contemplated by the skilled person.

In order to prove the reliability and reproducibility of such test methods and calculation models, the tests performed by an independent laboratory provided evidence that a 60 gsm, 6 - 9 den, resin-bonded PET, 1 ply, Fibertech liquid handling structure from Fiberweb plc gave identical results for the surface energy, whether calculated by the Fowkes calculation method or according to the Owens-Wendt theory after the contact angle measurement according to the Washburn method.

Regarding the "basis weight to uncompressed caliper ratio" feature, different techniques for determining the "uncompressed caliper" would not lead to significantly different results.

Regarding the surface tension reduction test, no ambiguity was present as to how to carry out this test. The patent should be maintained as granted.

VII. The respondents essentially argued:

No test method was disclosed in the patent in suit for determination of the surface energy. This determination relied upon two steps: the determination of a contact angle with a known test liquid and subsequent calculation of a surface energy value. For both steps a number of different measurement techniques and mathematical models existed.

During the opposition proceedings, the patentee's position was that the skilled person would naturally use the "Wilhelmy"-method, which is concerned with single fibers and thus not appropriate for a liquid handling structure. Furthermore, different test liquids could lead to different results.

The patentee's current position contradicted this previous position and alleged that the skilled person would naturally use the "Washburn"-method in combination with the mathematical calculations according to the "Owens-Wendt" theory. Support for this position was evidenced only by the expertise of one selected expert. No evidence was present that any "skilled person" would choose such a combination.

Furthermore, the questions of which test liquid to use or how to define the samples of liquid handling members including other elements or coatings, as well as which design of sample holders to use, were not answered.

Hence, the requirements of Article 100(b) EPC were not met and the appeal should be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. Sufficiency with regard to the test procedure to determine the surface energy of the liquid handling structure

2.1 The sole disclosure in the patent in suit concerning the issue of surface tension and energy is present in paragraph [0056]. It states that "*the effects of surface tension and surface energies of fluids and wetted materials on fluid transport properties have been widely discussed such as in Chatterjee "Absorbency"*."

2.2 This reference thus concerns a textbook which refers in its chapter IV to "Experimental aspects of fibre wetting and liquid movement between fibers" (pages 121 to 146). It states in the respective introductory passage on page 121 that "*There has been for many years a general vagueness regarding what should be measured and how to measure it. In consequence, this chapter has been prepared as a critical discussion of the several*

aspects that, based on a large number of formal or informal contacts over may years, appear to this writer to require clarification, elaboration or critical re-examination." So this reference explicitly does not aim to disclose an experimental method but rather contains a discussion of critical aspects.

In this textbook, the experimental data for contact angles are discussed in relation to fibres, crimped or flexible filaments of nylon, polyester, polypropylene when tested with four liquids (ethanol, toluene, ethylene and water), obtained for advancing and receding wetting, and with regard to geometric and surface properties of the fabric. The Wilhelmy wetting force technique is considered as "*an effective tool for studying fiber-liquid interactions*", although "*the Wilhelmy equation is based on an assumption that may not be absolutely correct.*" (page 127). No clear and unambiguous reference to a method for determination of the surface energy of a liquid handling structure can be derived from this disclosure.

This finding is thus consistent with the text in the reference in paragraph [0056].

2.3 A method of measurement is necessary for the unambiguous determination of a claimed parameter and, as a rule, this should be specified in the claims.

2.4 In view of the various cited methods/theories, there is no convincing evidence that the Washburn method should be chosen as alleged by the appellant. Even accepting that the common general knowledge of the skilled person would include a determination method based upon a two-

step process, in which the contact angles of different reference liquids were measured in a first step, and in which in a second step the surface energy was calculated from the measured contact angles via a theoretical model, this common general knowledge does not lead to a single method which would clearly and unambiguously be chosen.

2.5 Concerning the first step, various options exist regarding the choice of the reference liquids, the sample configuration, the design of the sample holder as well as the basic method/theory (Washburn/Wilhelmy). Concerning the second step, a proper mathematical model has to be chosen and various models according to Zisman, Owens-Wendt, Fowkes, van Oss or Wu could be applied.

2.6 For this reason alone, there is no clear and unambiguous teaching for the skilled person to establish a claimed article according to which the liquid handling structure comprises a hydrophilizing agent in an amount sufficient to increase the surface energy of the liquid handling structure to at least 40 mN/m, and therefore the requirements of Article 100(b) EPC are not met.

2.7 The patentee referred to the statements and declarations filed by experts. However, the point at issue is not whether these "skilled persons" have any difficulty in carrying out specific test methods and measurements. In fact the Board accepts from the declarations that a skilled person would be able to find a manner of carrying out such test methods. The point is whether such measurement and calculation, which as explained involve some arbitrary choices,

always lead to the same results in a reliable manner, and in this respect the declarations are silent.

2.8 It was not disputed that no universally agreed definition of surface energy exists and it is also the case that the patent in suit contains no information as to which procedure should be followed to measure it. In particular, there is no information regarding the measuring technique for contact angles or the mathematical model to be adopted for the determination of surface energies. Considering, further, that the nature of the cited mathematical models is such that, if they are individually applied to the same contact angle data, vastly different values of surface energy of the liquid handling structure are obtained, the skilled person is not in a position to establish whether the surface energy value determined for a given structure can be effectively correlated to the respective increase of the absolute value of at least 40 mN/m defined in claim 1 of the patent in suit.

2.9 Accordingly, the skilled person is not in a position to know with certainty, for any given structure, whether such particular structure falls inside or outside the scope of the claim. This knowledge necessarily requires that the determination method for the contact angle and the specific mathematical model are either specified or apparent to the skilled person for arriving at reliably reproducible results. In the absence of such information and consistent with the relevant case law of the Boards of Appeal (see the Case Law of the Boards of Appeal of the EPO, 5th edition 2006, II.A.6.2), the disclosure of the patent in suit is to be regarded as insufficient within the meaning of Article 100(b) EPC.

2.10 For this reason alone, the opposition division's decision to revoke the patent is correct and it is not necessary to consider the other arguments.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar The Chairman

S. Sánchez Chiquero P. Alting van Geusau