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Datasheet for the decision of 17 August 2006

Case Number: T 0979/04 - 3.3.06

Application Number: 98922828.3

Publication Number: 0991815

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Language of the proceedings: EN

Title of invention:
Food containers and packages

Applicant:
Stora Enso Oyj, et al

Opponent:
M-REAL OYJ

Headword:
Food containers/STORA

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no) - all requests"

Decisions cited:
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Catchword:
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Case Number: T 0979/04 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 17 August 2006

Appellants: (Patent Proprietors)
Stora Enso Oyj
Kanavaranta 1
FI-00160 Helsinki (FI)

RAISIO CHEMICALS Oy
Raision Kaari 60
FI-21200 Raisio (FI)

Representative:
Saijonmaa, Olli-Pekka
Berggren Oy Ab
P.O. Box 16
FI-00101 Helsinki (FI)

Respondent: (Opponent)
M-REAL OYJ
Revontulentie 6
FI-02100 Espoo (FI)

Representative:
Sundman, Patrik Christoffer
Seppo Laine Oy
Itämerenkatu 3 B
FI-00180 Helsinki (FI)

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 8 June 2004 revoking European patent No. 0991815 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: P.-P. Bracke
Members: G. Dischinger-Höppler
U. Tronser

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition Division to revoke the European patent No. 0 991 815 relating to food containers and packages.

II. A notice of opposition had been filed against the granted patent, wherein the Opponent sought revocation of the patent on the grounds of Article 100(a) EPC for lack of novelty and inventive step (Article 54 and 56 EPC). The opposition was based, amongst others, on document

D1: R. Joukio and S. Mansikkamäki, "Cartonboard package manufacturing and applications" in Papermaking Science and Technology, Book 12, Jyväskylä, 1998, pages 215 to 226.

During the opposition proceedings, the Opponent further filed *inter alia* the following documents

D9: An English translation of the "Diplomarbete av Tom Carne" at Åbo Akademi entitled "Använding av talk i barriärbestrykningar", dated 22 march 1997, front page, abstract, preface list of contents, pages 1, 24 to 28, 36 to 40, 43, 63, 69, 70, 77 to 81 and appendix V;

D11: K. Santamäki, "Highly Filled Dispersions as barriers", 1st International Polymer Dispersion Coating Conference, 9 to 10 June 1997, Tampere, Finland, pages 1 to 7; and

D13: T.J. Kimpimäki, "Water-Based Barrier Dispersion Coatings", 1997 Coating Conference, 11 to 14 May 1997, Philadelphia, pages 259 to 264.

III. The decision under appeal was based on the claims as granted as the main request and on amended claims according to a first and second auxiliary request.

Claim 1 of the main request reads:

"1. A food container in the shape of a cup, tub or tray, the container being made of a coated packaging board which consists of a fiber board base and at least one polymer-based coat on the inner surface of the container, said coat forming a barrier to transmission of liquids and gases, wherein the coat is formed from a polymer dispersion applied on the board during the manufacturing process in a board machine, talc particles having been added to the polymer dispersion so that the talc constitutes 30 - 80 % of the total weight of the dried coat."

Claims 2 to 12 refer to preferred embodiments of the food container of Claim 1. Claims 13 and 14 refer to food packages containing frozen or processed food.

Claim 1 of the first auxiliary request differs from that of the main request in that the feature ", which is a multi-layer board comprising a thicker middle layer which is formed in part or entirely from mechanical pulp, such as CTMP or recycled pulp, and thinner outer layers formed from sulphate pulp on both sides of the middle layer," has been inserted between the terms "board base" and "at least one" and in that

the term "wherein the coat is formed" has been replaced by the term "the coat having been formed".

Claim 1 of the second auxiliary requests reads:

"1. A method of making a food container in the shape of a cup, tub or tray, the container being made of a coated packaging board which consists of a fibre board base, which is a multi-layer board comprising a thicker middle layer, which is formed in part or entirely from mechanical pulp, such as CTMP or recycled pulp, and thinner outer layers formed from sulphate pulp on both sides of the middle layer, and at least one polymer-based coat on the inner surface of the container, said coat forming a barrier to transmission of liquids and gases, wherein the coat is formed from an aqueous polymer dispersion applied on the board during the manufacturing process in a board machine, talc particles having been added to the polymer dispersion so that the talc constitutes 30 - 80 % of the total weight of the dried coat."

IV. In its decision, the Opposition Division held that the subject-matter claimed in all requests was novel in view of the cited prior art but not based on an inventive step in view of D13 as the closest prior art when combined with the disclosure of D9 and D11.

V. This decision was appealed by the Patent Proprietors (hereinafter Appellants) who filed amended sets of 12 claims in two auxiliary requests under cover of a letter dated 30 July 2004. In each case, the first claim is identical with the respective Claim 1 of the

first and second auxiliary request pending before the Opposition Division.

Claims 2 to 12 of the first auxiliary request correspond to Claims 2 to 8 and 11 to 14 of the main request. Claims 2 to 10 of the second auxiliary differ from those of the first auxiliary request in that they have been expressed as method claims and Claims 11 and 12 of the second auxiliary request are identical with those of the first auxiliary request.

The Opponent (hereinafter Respondent), in its reply dated 16 May 2005, filed amongst others the following document

D16: US-A-4 528 235.

VI. Upon requests made by both parties, oral proceedings before the Board of Appeal were held on 17 August 2006, in the course of which the Respondent filed

D17: a printout of 3 pages containing 7 abstracts taken from the databases Pira Abstracts and Paperchem

and the Appellants filed an amended set of claims in a new third auxiliary request which differs from that of the first auxiliary request only in that the term "containing moist or liquid food" has been inserted between the terms "…tub or tray" and ",the container being made…".

VII. The Appellants, orally and in writing, submitted the following arguments:

– The core features of the invention consisted in a polymer dispersion coating with talc particles in an amount of 30 to 80% by weight of the dried coat. The technical problem solved by these features in view of D13 consisted in the provision of a dispersion lending improved barrier properties to cups, tubs and trays. Except for D9, the core features were not disclosed in the technically relevant cited references. However, D9 was not prior art, since it had not been made publicly available before the relevant priority date of the patent in suit.

- A person skilled in the art would not have used talc alone instead of the blending of delaminated clay and talc suggested in D11 since talc required large amounts of dispersant.

- D16 was irrelevant with respect to the claimed subject-matter since it related to polymer films produced by extrusion methods.

- Therefore, the criteria for an inventive step were fulfilled.

- The same reasons applied to the first to third auxiliary requests. In addition, there was no hint in the prior art to use mechanical pulps for food containers in the form of cups, tubs or trays as required in the auxiliary requests. On the contrary, a person skilled in the art would not have used mechanical pulp for food packages, in particular not for packages for moist or liquid food as required in the third auxiliary request.

VIII. The Respondent, orally and in writing, submitted in essence the following arguments:

- Taking D13 as the starting point and considering the disclosure of D11, the subject-matter claimed in the main request was not based on an inventive step. Moreover, it was known from D16 that talc was an efficient pigment to improve barrier properties in food packaging applications.

- The subject-matter of the auxiliary requests was not inventive either since the additional feature of using mechanical pulp for food containers, including those for moist or liquid food was known before the priority date of the patent in suit. This was apparent from D1 and D17.

IX. The Appellants requested that the decision under appeal be set aside and that the patent be maintained as granted or, alternatively, in amended form on the basis of one of the sets of claims filed as first or second auxiliary request under cover of the letter dated 30 July 2004, or of the set of claims filed as third auxiliary request during oral proceedings.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. *General issues*

The Board is satisfied that the amendments made to the claims of all requests are admissible under Articles 84 and 123(2)(3) EPC and that the claimed subject-matter is novel in view of the cited prior art. These issues have not been in dispute between the parties during the appeal proceedings.

Since the appeal fails for lack of inventive step, it is not necessary to give further reasons in this respect.

2. *Inventive step*

2.1 Main request

2.1.1 The patent in suit and in particular the claimed subject-matter relate to a shaped food container which consists of a fiber board and a polymer-based coat on the inner surface of the container, which coat forms a barrier to transmission of liquids and gases (page 2, lines 3 to 6).

2.1.2 It is explained in the description of the patent in suit that known methods for rendering product packages impermeable to liquids and gases by providing the board with a metal foil or polymeric barrier layers suffer from disadvantages in relation to biodegradability, repulping, recycling, sticking on rolls and water blocking (page 2, paragraphs 3 to 10).

2.1.3 Hence, the patent in suit, aims at providing a food container made of a board provided with a polymer-based coat impermeable to liquids and gases, whilst substantially avoiding the above disadvantages of known coated boards (page 2, paragraph 11).

2.1.4 In conformity with the decision under appeal, both parties based their line of argument for evaluating inventive step only on D13 as the closest prior art.

2.1.5 The Board agrees that D13 is a suitable starting point for the assessment of inventive step since it is also concerned with the task of providing coated boards suitable for food containers which may be fully recycled, repulped and composted, and which have improved barrier properties, runnability and blocking resistance (page 259, left-hand column, third full paragraph, right-hand column, second full paragraph in combination with page 263, right-hand column, second and third paragraph).

In particular, D13 discloses water-based polymer dispersion coatings for on-machine application to the surface of paper or board to achieve a barrier layer against liquids and gases (page 259, left-hand column, second and fifth paragraph). The polymer dispersions are used for different kinds of wrappings, including cups, plates and trays and may be applied to the interior surfaces of the packages (page 263, right-hand column, second and third paragraph and paragraph bridging pages 263 and 264). The barrier dispersions typically contain mineral fillers, in particular pigments which are utilised in coating colours, to improve barrier properties, runnability, blocking

resistance, optical properties and cost effectiveness (page 259, right-hand column, first and second full paragraphs).

D13 does not identify specific fillers or the amount of fillers to be used.

2.1.6 Thus, the subject-matter of Claim 1 differs from the disclosure of D13 in that talc is used as the filler in amounts of 30 to 80% of the total weight of the dried coat.

2.1.7 The Board notes that no comparative data are on file showing that talc performs better than any other mineral filler or that a particular effect is obtained with amounts in the claimed range other than gradual improvement of vapour transmission and pulpability with increasing filler content (Tables 1 and 2 of the patent in suit).

It is, however, observed that D11 teaches that platey pigments of high aspect ratio are most effective in barrier coatings (page 2, last line to page 3, line 7) and that attention must be paid to the level of pigmentation since above a certain pigment concentration deterioration of the barrier properties will occur (page 3, third full paragraph).

Thus, the Board agrees with the opinion of the Appellants that the technical problem to be solved by the claimed subject-matter in view of D13 may be defined to consist in the provision of a food container having improved barrier properties.

The Board, further, finds credible that this problem has been solved by using a platey pigment, namely talc, in amounts where deterioration of the barrier properties does not occur.

2.1.8 It remains to be decided whether, in view of the available prior art documents, it was obvious for someone skilled in the art to solve the above stated technical problem by the means claimed, namely by using talc as the filler in amounts of 30 to 80% of the total weight of the dried coat.

2.1.9 As indicated above, D13 does not give any hint as to the kind and amount of filler to be used. However, D11 specifically deals with suitable pigments and amounts of pigments to be used in barrier dispersion coatings suitable for on-machine application onto paper substrates and boards for packaging applications to protect products from moisture and provide water and grease resistance. D11 especially deals with the use of platey mineral pigments of high aspect ratio in such barrier coatings to improve runnability, blocking resistance, cost effectiveness and repulpability (page 1, paragraphs 1 to 3, page 2, second and third full paragraph, and page 3, second paragraph).

In an example, a blending of delaminated clay and talc has been used as platey pigments (page 5, Figure 2).

2.1.10 The Appellants did not contest that talc, a so-called phyllosilicate, is a layered mineral of platey appearance and of particular high aspect ratio. However, they contended that a person skilled in the art would know that talc was a mineral pigment of poor wetting

ability as compared with clay. In order to produce the required aqueous dispersion, it was therefore necessary to use large amounts of dispersing agents which deteriorated the properties of the barrier layer. Therefore, the skilled person would not have used talc alone.

2.1.11 The Board observes in this respect, that the presence of further layered clay minerals is not excluded in the polymer dispersion used for the claimed food containers. On the contrary, the patent in suit explicitly refers to kaolin as further filler which may be present in addition to talc (paragraph 21).

Moreover, D11 does not contain any indication that the presence of clay in addition to talc would be essential in the example illustrated in Figure 2. D11 emphasises instead that the incorporation into the polymer films of platey pigments of high aspect ratio is required for maximum effectiveness of the barrier properties of the coat (page 2, last line to page 3, second paragraph).

2.1.12 Therefore, the Board concludes that a skilled person would know from D11 that talc is a particularly suitable platey pigment for improving the barrier properties of the coat as compared with coats covered by the disclosure of D13 containing non-platey pigments.

2.1.13 The Board notes that D11 does not suggest to apply the barrier dispersion onto packages for food. However, it is known from D16 that talc is acceptable for food contact and, therefore, the preferred filler material in a polymer film useful for packaging of food

(column 8, lines 31 to 36 in combination with column 1, lines 30 to 34).

2.1.14 The Appellants argued that a person skilled in the art would not consider D16 since it was not concerned with dispersion coatings on shaped packaging boards but with polymer films obtained by extrusion methods.

This argument is not convincing since D16 generally refers to polymer films which are suitable for packaging of foods and which are filled with high concentrations of platelet type fillers to decrease gas and vapour permeability (column 1, lines 6 to 10, 15 to 18, 30 to 34 and column 1, line 58 to column 2, line 11).

The Board is, therefore, of the opinion that a skilled person looking for fillers to be used in the barrier dispersion coatings of D13 which are compatible with food would, for this purpose, consider D16 amongst any other prior art documents relating to filled packaging material for food.

2.1.15 In the example illustrated in Figure 2 of D11, the best water vapour transition rates (WVTR), i.e. below 10g/m^2d, are obtained with a level of pigments consisting of a blending of delaminated clay and talc in unknown proportions, of between 30 and about 73%.

The Board realises that in the case of this example the most suitable pigment level may depend on the proportions in which clay and talc are contained in the blending. However, finding out the best amounts of a filler or mixture of fillers to be used, belongs to a

skilled person's responsibility. This is evident from D11 where it is explained that the level of pigmentation is always a compromise between the best possible barrier properties and the risk for blocking of the coated film during rewinding (page 6, second full paragraph). D11 further explains that above a critical pigment volume concentration (CPVC) the barrier properties will rapidly deteriorate and that the best barrier performance of platey pigments is achieved considerably below the CPVC (page 3, third paragraph to page 4, second paragraph and Figure 2). Whether or not the barrier performance is also influenced by the required amounts of dispersants for the filler(s) is irrelevant in this respect since a skilled person would find the maximum performance by simple experimental series.

The Board, further, notes that the percentage given in D11 is not necessarily based on the weight of the dried coat but may as well indicate the "pigment volume concentration" (PVC) (D11, page 3, third paragraph). However, it is evident that for specific fillers, the PVC may be converted into a percentage by weight of the dried coat.

2.1.16 The Board concludes, therefore, that it was obvious for someone skilled in the art seeking to provide a food container having improved barrier properties over those disclosed in D13 to use talc as pigment filler as is suggested in D11 in combination with D16 in amounts where maximum barrier performance is obtained at acceptable runnability properties.

Consequently, the main request must fail since the subject-matter of Claim 1 does not meet the requirements of Articles 56 and 52(1) EPC.

2.2 First auxiliary request

2.2.1 The subject-matter of Claim 1 differs from that of the main request in that the fibre board base has been defined to consist in a multilayer board comprising a thicker middle layer formed from mechanical pulp and thinner outer layers formed from sulphate pulp on both sides of the middle layer.

2.2.2 The Appellants did not contest that such boards were known at the priority date of the patent in suit, for example as "folding boxboard" (FBB). However, they argued that the technical problem solved in view of D13 by the embodiment of Claim 1 consisted not only in an improvement of the barrier properties of the food container but also in a decrease of the material costs. The solution of this latter problem was neither hinted at in the prior art nor obvious since those skilled in the art would not have used a board base derived from mechanical pulp for food containers because unpleasant odour left from the mechanical pulp might penetrate into the food.

2.2.3 This argument could be accepted in the case of uncoated base boards but is rather irrelevant in the case of the claimed food containers having a talc-filled barrier coat on the inner surface since the skilled person would expect from D11 not only that this coat would be impermeable for vapour and gases but also that it would provide improved aroma barrier characteristics (see D11,

page 4, third to seventh paragraph). There are no reasons to assume that the barrier would be effective only to prevent aroma to escape from the inside of the container as suggested by the Appellants. The Board is, thus, convinced that those skilled in the art would consider that the talc-filled barrier coating of D11 also prevents penetration of undesired odours from the outside or from the container board material into the inside of the container.

2.2.4 Consequently, the Board concludes that a skilled person would use a board base derived from mechanical pulp, such as FBB, in combination with a talc filled coat as disclosed in D11 in the expectation of reducing the material costs of the shaped food containers disclosed in D13 without unduly contaminating the food by unpleasant aroma left from the mechanical pulp.

2.2.5 This conclusion is confirmed by the fact that in D1 FBB is considered to be suitable for packaging of food (page 216, last paragraph, to page 217, line 5, and page 226, Table 3).

The Board has not overlooked that D1 only reveals the publishing year, 1998. Thus, it may have been published well after the second priority date of the patent in suit of 16 January 1998 which, as admitted by the Appellants, is the only valid priority date.

However, D1 is an excerpt taken from "Book 12" entitled "Paper and Paperboard Converting" which belongs to a series of 19 books concerning papermaking science and technology. Thus, D1 belongs to a basic handbook representing the general technical knowledge of the

skilled person in that specific technical field. Since the content of such books represent general technical knowledge collected over a period of time, the Board concludes that D1 represents the general technical knowledge at the priority date of the patent in suit. This is corroborated by D17 containing seven abstracts of documents published in 1986 or 1996, i.e. before the priority date of the patent in suit, which all refer to the use of CTMP or recycled pulp for food packaging.

2.2.6 The Appellants also suggested that it might have been difficult for the skilled person to produce containers in the form of cups, tubs or trays from mechanical or recycled pulp. However, this argument was not supported by evidence and is in contradiction to abstract 4 in D17 where it is mentioned that board formed from CMTP is used for juice and milk cartons (D17, page 2, PAPERCHEM abstract).

2.2.7 For these reasons, the Board finds that the subject-matter of Claim 1 of the first auxiliary request does not comply with the requirements of Articles 52(1) and 56 EPC.

2.3 Second auxiliary request

Claim 1 differs from that of the first auxiliary request in that it has been formulated as method claim and in that the polymer dispersion has been defined as being aqueous.

However, the change of the category of the claim does not include matter on which an inventive step could be based in comparison to Claim 1 of the first auxiliary

request and the definition of the dispersion as being aqueous merely quotes common general knowledge as can be seen from D13 where it is taught that barrier polymer dispersions are generally aqueous (page 259, left-hand column, first and third paragraph of the introduction).

Consequently, the second auxiliary request must fail for the same reasons as the first auxiliary request.

2.4 Third auxiliary request

Claim 1 differs from that of the first auxiliary request insofar as the food containers necessarily contain moist or liquid food.

The Appellants maintained that a person skilled in the art would not have tried to use a container derived from mechanical pulp for packaging of moist or liquid food. However, the argument cannot be accepted for the reasons already given above under points 2.2.3 and 2.2.4 in relation with the first auxiliary request, namely that the skilled person would expect from D11 that the barrier coat would be effective also between the board base material of the container and the food present in the container and, in particular, since it is disclosed in D17 that mechanical pulp has already been used in containers for liquid food.

Therefore, the Board concludes that the third auxiliary request must fail too for the same reasons as the first auxiliary request.

3. Since the claims of all requests are found to lack an inventive step irrespective of D9, there is no need to consider whether or not D9 is prior art under Article 54(2) EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Rauh P.-P. Bracke