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**Datasheet for the decision  
of 10 October 2019**

**Case Number:** T 1458/15 - 3.2.06

**Application Number:** 03812298.2

**Publication Number:** 1568342

**IPC:** A61F13/56

**Language of the proceedings:** EN

**Title of invention:**  
DISPOSABLE DIAPER

**Patent Proprietor:**  
UNI-CHARM CO., LTD.

**Opponent:**  
Kimberly-Clark Worldwide, Inc.

**Headword:**

**Relevant legal provisions:**  
EPC Art. 100(b), 56

**Keyword:**  
Grounds for opposition - insufficiency of disclosure - main request (yes), auxiliary request 1 (no)  
Inventive step - auxiliary request 1 (yes)

**Decisions cited:**

**Catchword:**



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Case Number: T 1458/15 - 3.2.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.06**  
**of 10 October 2019**

**Appellant:** Kimberly-Clark Worldwide, Inc.  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 17 March 2015  
rejecting the opposition filed against European  
patent No. 1568342 pursuant to Article 101(2)  
EPC.**

**Composition of the Board:**

**Chairman** M. Harrison  
**Members:** M. Hannam  
C. Brandt

## Summary of Facts and Submissions

- I. An appeal was filed by the appellant (opponent) against the decision of the opposition division rejecting the opposition to European patent No. 1 568 342. It requested that the decision be set aside and the patent be revoked.
- II. With its response, the respondent (patent proprietor) requested that the appeal be dismissed or, in the alternative, that the patent be maintained according to one of auxiliary requests 1 to 6 filed therewith.
- III. With letter of 16 March 2016 the appellant submitted further arguments primarily directed to the respondent's main request.
- IV. The following documents, referred to by the appellant in its grounds of appeal, are relevant to the present decision:
- D1 US-A-5 782 819  
D2 US-A-6 099 516  
D3 US-A-4 699 622
- V. The Board issued a summons to oral proceedings and a subsequent communication containing its provisional opinion, in which it indicated *inter alia* that the ground for opposition under Article 100(b) EPC may require discussion at oral proceedings.
- VI. Oral proceedings were held before the Board on 10 October 2019, during which the respondent filed a new auxiliary request 1 and withdrew auxiliary requests 2 to 6.

VII. The final requests of the parties were as follows:

The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent requested that the appeal be dismissed or that the patent be maintained according to auxiliary request 1 dated 10 October 2019.

VIII. Claim 1 of the main request (corresponding to claim 1 as granted) reads as follows:

"An open-type disposable diaper configured by a front waist region, a rear waist region and a crotch region extending between said front and rear waist regions, said front and rear waist regions having a body facing surface and an undergarment facing surface opposed to said body facing surface, said diaper being contoured by front and rear end zones extending in parallel to each other in a waist-surrounding direction and transversely opposite lateral zones extending in parallel to each other in back-and-forth direction crossing said waist-surrounding direction, said transversely opposite lateral zones in one of said front and rear waist regions being formed with first wings extending in said waist-surrounding direction, said first wings are respectively provided on said body facing surface with first fastener means and said undergarment facing surface in the other of said front and rear waist regions being provided with second fastener means on which said first fastener means may be detachably anchored, said disposable diaper further comprising:  
said first wings being elastically stretchable in said waist-surrounding direction and said undergarment facing surface in said other waist region being

provided in a vicinity of said second fastener means with anti-slip zones each adapted to come in contact with said body facing surface of said wings and to exhibit an average kinetic frictional force of 0.5 N or higher under a load of 58.23 g/9 cm<sup>2</sup> and an average kinetic frictional force of 5 N or lower under a load of 340 g/9 cm<sup>2</sup> relative to said body facing surface as said first fastener means being anchored on said second fastener means."

Claim 1 of auxiliary request 1 reads as for claim 1 of the main request with the following feature appended:

"wherein elastic fibers made of a plastic elastomer and having a fiber length of 5 to 100 mm are mixed with inelastic fibers made of a thermoplastic material having a fiber length of 5 to 100 mm in said anti-slip zones."

Claim 2 of auxiliary request 1 reads as for claim 1 of the main request with the following feature appended:

"continuous elastic fibers made of a plastic elastomer are mixed with continuous inelastic fibers made of a thermoplastic material in said anti-slip zones."

IX. The appellant's arguments relevant to the present decision may be summarised as follows:

The ground for opposition under Article 100(b) EPC was prejudicial to maintenance of the patent as granted. The scope of claim 1 did not exclude the use of anisotropic materials for the anti-slip zones. Large directional differences between the coefficient of friction for such an anti-slip zone resulted in the heart of the claim being insufficient since the skilled

person did not know in which direction the claimed average kinetic frictional force was measured. Claim 1 defined 'an' average kinetic frictional force i.e. a single one, such that the respondent's interpretation of the parameter having to be met in all directions was without basis. The patent solely described the anti-slip zones as avoiding slippage or twisting without indicating in which direction the avoidance of such slippage or twisting was intended.

D1 disclosed all features of claim 1 of auxiliary request 1 bar solely the additional features of claim 4 as granted. The ranges of coefficient of friction disclosed in col. 18, lines 38 to 47 of D1 would be understood to apply also to the preferred embodiment of Fig. 5, these thus anticipating the claimed average kinetic frictional forces.

No inventive step objection was raised to the subject-matter of claims 1 or 2 due to the specific nature of the material of the anti-slip zones defined therein.

X. The respondent's arguments relevant to the present decision may be summarised as follows:

The ground for opposition under Article 100(b) EPC was not prejudicial to maintenance of the patent as granted. The skilled person understood from the patent as a whole that, in order to prevent shifting or twisting of the overlapping waist portions, the claimed parameter of average kinetic frictional force had to be met in every direction; if a value of the parameter for a material in any direction fell outside the claim, the material was not suited for the invention. Typical materials used in the manufacture of absorbent articles were isotropic, as evident for example from D2, in

which no directional element of a material was disclosed, and from D3 col. 10. D1, which did include an anisotropic fit panel with direction-dependent coefficient of friction values, was an exception in this regard. Such anisotropic materials would only affect the edges of any claim and thus did not hinder the skilled person from carrying out the invention essentially across its entire scope.

The subject-matter of claim 1 of auxiliary request 1 involved an inventive step starting from D1. D1 failed to unambiguously disclose either of the features of granted claim 4 added to claim 1 and the claimed average kinetic frictional forces. When wishing to solve the objective technical problem of how to provide an isotropic anti-slip zone, the cited art provided no hint to the claimed solution.

## **Reasons for the Decision**

### *1. Main request*

#### *1.1 Article 100(b) EPC*

The ground for opposition under Article 100(b) EPC is prejudicial to the maintenance of the patent as granted.

- 1.1.1 The skilled person is unable to carry out the invention according to claim 1 due to the direction of measurement of the average kinetic frictional force being undefined. In this regard it is noted that the scope of claim 1 is not limited to isotropic materials for the anti-slip zones. Differences in the coefficient of friction displayed by an anisotropic material



dependent upon the direction of measurement will result in the skilled person being unable to carry out the invention since this will be dependent upon the direction of measurement of the average kinetic frictional force in the anti-slip zones, which, for any reliability in the parameter to be determined, must be known. This is however not defined or known for such materials, which materials are however materials used for this purpose in the art (see e.g. 1.1.3 below).

- 1.1.2 Lines 43 to 49 in col. 7 of the patent indicate that the anti-slip zones avoid a shift and/or twist of the front wing relative to the rear wing of the diaper. Such a 'shift' or 'twist' is not further defined such that the direction of movement intended in these expressions might be understood to be in any direction which could possibly shift or twist. The direction of measurement of the claimed average kinetic frictional force is thus practically unlimited.
- 1.1.3 D1 (see col. 18, lines 38 to 47; Fig. 1) gives an example of an anisotropic 'fit panel' of similar purpose to the claimed anti-slip zones. The disclosure includes a range of direction dependent coefficient of friction values for the 'fit panel' from  $\mu=0.6$  to  $\mu=1.9$ . This is merely one example of a document showing that anisotropic materials for use in disposable diapers are well known to the skilled person and consequently it can be assumed that they would also reasonably consider using such anisotropic materials for the anti-slip zones in the invention defined by claim 1.
- 1.1.4 The significant directional dependent coefficient of friction range cited above, evidently not unusual for anisotropic materials used in an anti-slip zone (see

e.g. 1.1.7 below), indicates that the skilled person's inability to carry out the invention is not limited to the fringes of the claimed scope but pervade the very heart of the claimed subject-matter.

- 1.1.5 The respondent's argument that the claimed parameter of average kinetic frictional force had to be met in every direction, in order to fall under the claim, is not accepted. As also argued by the appellant, it is 'an' average kinetic frictional force that is claimed i.e. a single average force rather than 'multiple' forces or 'all' forces. Thus, in needing to measure the average kinetic frictional force in a single, yet undefined, direction (which is also what the cited test of average kinetic force involves), the skilled person would not know in which direction this was for carrying out the invention. The skilled person is thus faced with a parameter which, for carrying out the invention, is entirely unreliable. Therefore, in the full knowledge that the absolute value of average kinetic frictional force is highly directionally dependent, the skilled person has insufficient clear and complete information for carrying out the invention according to claim 1.
- 1.1.6 The respondent's contention that materials used in the manufacture of absorbent articles were generally isotropic is not accepted. Whilst indeed both D2 and D3 were silent as to any anisotropic materials used in their disposable diapers, D1, which included the feature of a 'fit panel' of similar function to the 'anti-slip zone' of claim 1, very clearly disclosed several materials of a significantly anisotropic nature. The skilled person would thus understand anisotropic materials as being necessarily included within the scope of the invention defined in claim 1.

1.1.7 As regards the respondent's further argument that an anisotropic material would simply affect the peripheral boundaries of the scope of claim 1, this is not accepted. As indicated in point 1.1.4 above, large directionally dependent differences in coefficient of friction are displayed by at least some materials commonly used in disposable diapers (like nonwoven fabrics as disclosed in column 19, lines 41 to 48 of D1). For the particular fit panel of D1, such material exhibits a difference in coefficient of friction of a factor of about 3. As a result, the skilled person would appreciate that it is not only at the edges of the claimed scope but throughout its entirety that the direction in which to measure the average kinetic frictional force was a hindrance to their ability to carry out the invention.

1.1.8 In summary, therefore, the invention is not disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The ground for opposition under Article 100(b) EPC thus prejudices maintenance of the patent as granted, such that the main request is not allowable.

## 2. *Auxiliary request 1*

### 2.1 *Article 83 EPC*

The appellant raised no objections to the invention according to claim 1 of auxiliary request 1 lacking sufficiency.

2.2 The Board also sees no objections in this regard. The reason for this is that the material defined is specific in the sense that it is a mixture of particular fibers. More precisely it is a mixture of

inelastic fibers made up of a thermoplastic material with elastic fibers of a plastic elastomer. This mixture would plausibly result in an isotropic material, when considered from a technical point of view. This was also not disputed by the appellant, nor indeed was any evidence available that might give any indication to the contrary. Thus the measurement of the average kinetic force would be expected to be substantially similar irrespective of the direction of measurement.

2.3 *Article 56 EPC*

The subject-matter of claim 1 is found to involve an inventive step.

2.3.1 The Board finds, and there was agreement between the parties that, compared to claim 1 as granted, the features of claim 4 as granted added in claim 1 of auxiliary request 1 were not known from D1:

wherein elastic fibers made of a plastic elastomer and having a fiber length of 5 to 100 mm are mixed with inelastic fibers made of a thermoplastic material having a fiber length of 5 to 100 mm in said anti-slip zones.

2.3.2 The disclosure in D1 compared to which this conclusion was reached is the Fig. 5 embodiment discussed from col. 22, line 19 to col. 24, line 9. The Board also finds that this embodiment of D1 fails to unambiguously disclose the average kinetic frictional forces of claim 1. The preferred range of coefficient of friction disclosed in col. 18, lines 38 to 47 of D1 does not unambiguously apply to the Fig. 5 embodiment discussed in cols. 22 to 24 in which solely preferred ratios of

coefficient of friction rather than absolute values are disclosed.

2.3.3 The appellant's argument that the range of coefficient of friction disclosed in col. 18 would be applied to all preferred embodiments of the invention is not accepted. Whilst it is possible that the skilled person could combine the preferred coefficient of friction values with the Fig. 5 embodiment and that, as shown on pages 4 and 5 of the appellant's grounds of appeal, the claimed average kinetic frictional forces were then anticipated, this is not unambiguously the case. In particular, there is no direct link to guide the skilled person to this combination of features and, lacking a direct and unambiguous disclosure, the claimed average kinetic frictional force can thus not be considered known from D1.

2.3.4 D1 thus fails to disclose the following features of claim 1:

- the anti-slip zones each adapted to come in contact with said body facing surface of said wings and to exhibit an average kinetic frictional force of 0.5 N or higher under a load of 58.23 g/9 cm<sup>2</sup> and an average kinetic frictional force of 5 N or lower under a load of 340 g/9 cm<sup>2</sup> relative to said body facing surface; and
- wherein elastic fibers made of a plastic elastomer and having a fiber length of 5 to 100 mm are mixed with inelastic fibers made of a thermoplastic material having a fiber length of 5 to 100 mm in said anti-slip zones.

2.3.5 Based on the second differentiating feature identified above, the mixture of elastic fibers and inelastic

fibers are seen to provide an isotropic material at least as far as coefficient of friction is concerned (see item 2.2. above). In terms of the problem-solution approach, the objective technical problem to be solved can therefore be seen as how to provide a frictionally isotropic surface for the anti-slip zones.

- 2.3.6 At oral proceedings before the Board, the appellant stated that it had no objection to the presence of an inventive step in the subject-matter of claim 1. The Board also sees no hint in any of the cited documents which, when starting from D1 and considering the objective problem to be solved, would render the claimed subject-matter, including the detail to the nature of the material of the anti-slip zones, obvious. The subject-matter of claim 1 thus involves an inventive step (Article 56 EPC).
- 2.3.7 As regards the subject-matter of independent claim 2, the appellant also raised no objection to this under Article 56 EPC. The Board similarly sees no objection in this regard. The subject-matter of claim 2 thus also involves an inventive step (Article 56 EPC).
3. The Board identified apparent inadvertent amendments to the wording of the subject-matter of claims 1 and 2 insofar as the first recitation of the expression 'waist-surrounding direction' in each claim appeared as 'waist-surround direction'. Incorrect use of a semicolon was also identified. These objections were overcome in a duly filed new version of the claims of auxiliary request 1, to which no further objections arose. The claims of auxiliary request 1 dated 10 October 2019 were therefore found allowable.

4. In order to allow the parties to consider which amendments to the description were required as a result of the claim amendments and the discussion of the relevant content of D1, the Board concluded that this task should be given to the opposition division and thus to remit the case to the opposition division for this purpose. No objections were raised by the parties in this regard.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division with the order to maintain the patent in amended form on the basis of claims 1 to 9 according to the first auxiliary request dated 10 October 2019 and a description to be adapted.

The Registrar:

The Chairman:



M. H. A. Patin

M. Harrison

Decision electronically authenticated