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**Datasheet for the decision
of 29 October 2014**

Case Number: T 1247/12 - 3.3.06

Application Number: 05076155.0

Publication Number: 1598475

IPC: D06M15/643, D06M15/263

Language of the proceedings: EN

Title of invention:

Insect repellent treatment of textiles

Patent Proprietor:

Utexbel NV

Opponents:

Sanitized AG
Blücher GmbH

Headword:

Permethrin containing textiles/UTEXBEL

Relevant legal provisions:

EPC Art. 52(1), 56, 114(2)
RPBA Art. 12(4), 13(1), 13(3)

Keyword:

Admissibility of late filed evidence (yes)
Inventive step (no) -
effect not convincingly demonstrated across full breadth of
claim
Inventive step - obvious modification

Decisions cited:

Catchword:



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Chambres de recours**

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Case Number: T 1247/12 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 29 October 2014

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(Patent Proprietor)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 23 March 2012
revoking European patent No. 1598475 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman B. Czech

Members: E. Bendl

 U. Lokys

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division to revoke the European patent 1 598 475.

II. Claim 1 of the patent as granted reads as follows:

"1. Method for the manufacturing of a fabric with insect repellent properties in which a solution comprising an insect repellent product and a binding agent is applied to a fabric characterised in that said insect repellent product is permethrin and in that in the solution a combination of an acrylate binding agent and a silicon elastomer is added in order to enhance the retention of the permethrin during successive washes of the fabric."

III. The opposition division decided to admit, despite their late filing,

i) test results provided by opponent 1 (in its letter dated 7 October 2011), referred to hereinafter as O1-TR1, as well as

ii) test results provided by the proprietor (with letter of 6 February 2012), referred to as PR-TR1 hereinafter and including

- counter-experiments supposed to show that the results according to O1-TR1 were obtained under "unrealistic" working conditions,

- tests made by the University of Ghent (Test Report 12-044 A), and

- data extracted from a report by "Wiweb".

The opposition division found that even taking into account the experimental evidence submitted by the proprietor, the subject-matter of *inter alia* claim 1 as granted did not involve an inventive step in view of the combination of documents

E6 = EP-0 787 851 A1

and

E22 = "Handbuch der Textilveredlung", H.-K.
Rouette, Deutscher Fachverlag GmbH,
Frankfurt am Main, Edition Textiltechnik,
pages 730, 730, 797; 2003.

- IV. In its statement of grounds of appeal, the appellant (proprietor) again referred to the test results PR-TR1 filed during the opposition procedure. Under cover of said statement, it submitted further test results, referred to as PR-TR2 hereinafter, including *inter alia* - further tests made by University of Ghent (Test Report 12-044B),
- two further additional tests carried out by the appellant itself (results shown in "Annex 5" and "Annex 6"), and
- the full report "Wiweb report" (Az-42-15-16), as well as a declaration by Prof. Kiekens.
It argued that contrary to the finding of the opposition division, the evidence submitted showed that the sought-after technical effect was indeed achieved by the claimed method. The latter was not obvious in the light of the state of the art including a combination of E6 and E22.
- V. With its reply dated 8 May 2013, respondent 1 (opponent 1) filed an expert opinion of Prof. Möller (including Annexes A - H), containing *inter alia* an evaluation of test results referred to as O1-TR2 hereinafter. Respondent 1 maintained the objections already raised in the opposition proceedings, *inter alia* regarding inventive step. In this connection it held that the test results relied upon by the appellant did not convincingly establish the achievement of the invoked

effect, whereas the test results O1-TR1 it had submitted during opposition and the test results O1-TR2 discussed in Prof. Möller's expert opinion showed that the invoked effect was not necessarily achieved when performing a method falling within the terms of claim 1.

- VI. In its reply, respondent 2 (opponent 2) held that the test results PR-TR1 filed by the patent proprietor prior to the oral proceedings in opposition phase as well as the further test results PR-TR2 filed under cover of the appellant's statement of grounds were not admissible in view of their late filing and lack of relevance. It also maintained objections already raised in the opposition proceedings, *inter alia* regarding inventive step. In this connection, it held that the test results relied upon by the appellant were not reliable and did not convincingly establish the effect allegedly attributable to the additional incorporation of a silicon elastomer into the finishing solution.
- VII. In a further letter of 29 September 2014, the appellant rebutted all the objections raised by the adverse parties, expanded on the issue of inventive step and criticised various aspects of the test results O1-TR2 addressed in Prof. Möller's expert opinion, arguing *inter alia* that the results presented in O1-TR1 and O1-TR2 were contradictory and that the latter were unrealistic. With said letter, the appellant also filed further items of evidence, namely product information brochures and statistical/graphical analyses of some of the test results on file.
- VIII. Oral proceedings before the board took place on 29 October 2014. The debate focused mainly on the issue

of inventive step in view of documents E6 and E22 and the experimental test results on file.

IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted.

Both respondents requested that the appeal be dismissed.

X. The arguments of the appellant of relevance here, i.e. in respect of the issue of inventive step having regard to the method of claim 1 as granted, can be summarised as follows:

- E6 could be considered to represent the closest state of the art.
- In the light of E6 the technical problem consisted in the provision of a method for manufacturing an insect repellent textile with a further improved permethrin retention after repeated washing.
- Considering the unrealistically high permethrin retention described in O1-TR2 and the abnormally low pick-up value derivable from O1-TR1, these test results had apparently not been achieved under "normal" working conditions and should therefore be disregarded or at least be regarded as non-conclusive.
- In contrast thereto, the test results provided by the appellant/patent proprietor clearly demonstrated an improved retention of permethrin on the fabric after repeated washing which was attributable to the additional presence of a silicone elastomer in the finishing solution.
- Even assuming that this effect was not achieved across the full breadth of claim 1, but excluding

hindsight considerations, the claimed method was not obvious in the light of documents E6 and E22.

- The claimed subject-matter therefore involved an inventive step.

XI. The arguments of the respondents of relevance here can be summarised as follows:

- E6 represented the closest state of the art.
- The test results relied upon by the appellant were not conclusive.
- As no process conditions were indicated in claim 1 as granted, the methods tested according to O1-TR1 and O1-TR2 fell within the terms of said claim.
- These test results showed that the the addition of a silicon elastomer to the treatment solution did not necessarily cause an improvement in permethrin retention after repeated washing (O1-TR1 and O1-TR2) and bioactivity (O1-TR2). Therefore, the problem of permethrin retention had not been solved over the entire breadth of claim 1.
- The problem to be solved resided merely in the provision of an alternative method.
- The subject-matter of claim 1 as granted did not involve an inventive step across the full breadth of the claim in view of the disclosure of E6 and the common general knowledge illustrated by E22.

Reasons for the Decision

Admissibility of late filed evidence

1. The test results PR-TR1 had been admitted into the proceedings by the opposition division although they had only been submitted about one month prior to the

oral proceedings. Together with its statement of grounds of appeal, the appellant filed further evidence, including tests results PR-TR2 and the declaration of Prof. Kiekens.

- 1.1 The admissibility of PR-TR1 and of PR-TR2 filed in the appeal proceedings was contested by respondent 2 in view of their belated filing and alleged lack of relevance.

However, respondent 2 did not indicate any specific reason for which it considered that the opposition division exercised its discretion inappropriately or went beyond its discretionary remit in admitting and considering PR-TR1. In the absence of such a legal mistake of the opposition division, it is not appropriate to even consider the possibility of overruling said discretionary decision.

- 1.2 As regards the additional test results PR-TR2 and the further evidence filed by the appellant with its statement of grounds, they can be considered to have been filed in reply to the finding in the contested decision that the invoked effect had not been credibly demonstrated over the whole area claimed. They are intended to further corroborate the appellant's position regarding the achievement of the effect invoked and do not raise any particularly complex issues.

- 1.3 The board therefore decided to also admit the test results PR-TR2 and said further evidence into the proceedings (Article 114(2) EPC and Article 12(4) RPBA).

1.4 The Board also decided to admit into the proceedings (Article 114(2) EPC and Article 13(1), (3) RPBA) the further items of evidence submitted by respondent 1 and the appellant in the later course of the appeal proceedings, the admissibility thereof not even being contested by the adverse parties.

More particularly, said further items of evidence includes the expert opinion of Prof. Möller (including annexes), which was filed by respondent 1 in reply to the statement of grounds of appeal and contained detailed comments on the test results O1-TR2, supposed to corroborate further the position of respondent 1 regarding the absence of the invoked effect across the full breadth of claim 1.

Inventive step - Claim 1 as granted

2. The invention

According to the patent in suit (paragraph [0010]), the invention concerns *inter alia* "a method of producing a fabric with insect repellent properties whereby the insect repellent product stays active in the fabric, even after a large number of washes".

3. The closest prior art

3.1 It was common ground among all parties that document E6 may be taken as the closest state of the art. Considering the similarities between E6 and the patent in suit in terms of the issues addressed and the features of the respective methods, the board has no reason to take a different stance.

3.2 More particularly, E6 relates to the "finishing of a washable fabric intended to be made into wearing apparel" with an insecticide, such as permethrin, by a process which increases "the retention of the insecticide in the fabric through successive washings" (E6, page 2, lines 5 to 7). Furthermore, E6 discloses (see e.g. page 3, lines 25 and 26; examples I and II), that the fabric may be impregnated or surface coated with "a solution containing a dispersion of permethrin and a polymeric binder", the latter preferably being an acrylate binder.

4. The technical problem

According to the appellant the problem in the light of D6 was the provision of a method for manufacturing an insect-repellent fabric with a further improved permethrin retention after repeated washing.

5. The proposed solution

As the solution to this problem, the patent in suit proposes the method according to claim 1, which is characterised in particular in that the permethrin solution used for treating the fabric not only contains an acrylate binding agent, but also "a *silicon elastomer*".

6. The alleged success of the solution

6.1 Various test results regarding permethrin retention after repeated washing were submitted by the adverse parties in the course of the opposition and appeal proceedings.

6.1.1 The test results filed by the appellant/patent proprietor are supposed to show that an increased permethrin retention, as well as a sufficient residual bioactivity, was achieved after multiple washing cycles when using the claimed finishing method, i.e when additionally incorporating a silicon elastomer into the finishing composition.

6.1.2 According to respondent 1, its test results O1-TR1 and O1-TR2 show that at least under some conditions covered by claim 1 at issue no such effect could be achieved.

According to O1-TR1 a 100% cotton fabric was treated with a composition containing permethrin and 50 g/l of an acrylate binding agent, either together with 40 g/l (composition B) or without silicon elastomer (composition A). In both cases the permethrin retention after 1, 5, 10 and in particular after 60 washing cycles was very similar (591, 589, 457 and 106 mg/m² vs 609, 562, 498 and 108 mg/m², respectively).

According to O1-TR2 two similar comparisons were made (see Table 1), but using this time a different silicone elastomer (in concentrations of 50 or 20 g/l) and a different polyacrylate binder in a different concentration (80 g/l). At least after 100 washing cycles the permethrin retention was higher (80% vs. 77% and 62%) on the fabric treated with composition III not containing the silicone elastomer whilst acceptable bioactivity (in terms of mosquito knock-down) was also maintained.

In view of these results, the board concludes that, in contrast to appellant's allegation, the addition of a silicon elastomer does not necessarily improve permethrin retention after repeated washing cycles when

performing a method falling within the terms of claim 1 as granted.

6.2 The appellant held that the latter test results provided by respondent/opponent 1 were not conclusive and/or should not be taken into consideration in view of the following aspects:

- (a) Said results lacked the necessary probatory force since they had not been carried out by an independent instance, whereas the tests presented by the appellant met this requirement. Moreover, Prof. Möller did not perform the experiments described (O1-TR2) himself but only commented on them.
- (b) The permethrin retention achieved according to O1-TR1 and O1-TR2 differed significantly. This contradiction called into question the significance of the tests performed. The retention achieved according to O1-TR2 (e.g. using composition I including silicone: 89,9% after 50 home laundry cycles) was unusually and incredibly high compared to the retention achieved according to O1-TR1 (using composition B including silicone: 21,9% after 50 washes), and compared to what was achieved previously according to the prior art (see e.g. in E6, example I-B: 47,1% after only 10 home launderings). The appellant thus considered the results in O1-TR1 and O1-TR2 to be contradictory and in contrast with the results reported in the prior art.
- (c) "Abnormal" working conditions had apparently been chosen by respondent/opponent 1:
 - As shown by the appellant's counter-experiments

filed during opposition, considering the finishing composition used according to O1-TR1, the initial quantity of permethrin (2700 ppm) deposited on the fabric was unusually or "unrealistically" low, presumably due to "abnormal" working conditions, in particular in terms of drying temperature and duration.

- Likewise, the conditions used according to O1-TR2, e.g. extended drying at excessively high temperatures, may have led to some curing of the polymeric components, possibly resulting in a stronger entrapping of permethrin and/or the creation of a cured polymeric barrier layer. Such a higher drying temperature would, however, also have lead to an increased evaporation and inactivation of the permethrin deposited on the fibre.

6.3 In the present case, irrespective of whether or not the test results PR-TR1 and PR-TR2 demonstrate that an increased permethrin retention after repeated washing was actually achieved, the board has to judge whether, in the light of all the evidence on file, it is plausible that all methods falling under the broad wording of claim 1 as granted actually lead to the sought-after enhanced permethrin retention on the fabric.

6.3.1 Ad point (a) *supra*

The board has no reason to doubt that the tests were carried out by respondent 1 as described in the submission dated 7 October 2011, and in Prof. Möller's expert opinion, respectively. For the board, the fact that the tests were not carried out by Prof. Möller himself, or under his direct supervision, has no

apparent bearing on his assessment of the results provided.

6.3.2 Ad point (b) *supra*

Respondent 1 explained the higher permethrin retention achieved according to O1-TR2, as compared to the retention achieved according to O1-TR1 as follows: According to O1-TR1, the non-ionic, polyacrylate binder "Appretan NI" was used in an amount of 50 g/l, whereas in the second case the much "stronger" binder "Appretan N 92111" was used, and the concentration of acrylate binder was also substantially increased to 80 g/l.

Given these differences the board accepts that a direct comparison of these test results with each other or with the results achieved according to prior art methods (e.g. see E6, example I-B, cited *supra*), does not make sense, since different acrylate binders were used in different amounts under different finishing conditions.

Hence, for the board, there is no apparent contradiction between the respective data.

6.3.3 Ad point (c) *supra*

No convincing proof has been submitted by the appellant that the experimental approaches having led to the results presented in O1-TR1 and O1-TR2 were "not normal", technically unreasonable or not reproducible.

At the oral proceedings, it was actually common ground between the parties that the temperature/duration of the drying of the impregnated fabric may well have an impact on the properties of the finish (permethrin

retention and bioactivity), due e.g. to a possible curing of the polymer components of the finishing mixture at more severe drying conditions.

However, the wording of claim 1 does not require any particular process conditions to be respected in carrying out the claimed method process. In particular, the drying conditions are not defined. Thus, even if the applied drying temperature led to (partial) curing, this would still be encompassed by the wording to claim 1.

The lack of more precise indications in claim 1 as regards process conditions to be respected, applies also to the value of the composition pick-up on the fabric (and hence the amount of permethrin initially deposited on the fabric), which is not only dependent on the components present in the in the finishing solution used, but also on the method of application and the fabric used.

At the oral proceedings the appellant explicitly acknowledged, that the methods performed to achieve test results O1-TR1 and O1-TR2 fell within the terms of claim 1 of the patent in suit.

Referring to common knowledge as illustrated by document

E24 = The Pesticide Manual, ed. C D S Tomlin, 13th ed., 2003, page 758 (cited in opposition),

respondent 1 held that in view of the high boiling point of permethrin (200°C at 0,1 mm Hg, respectively > 290°C at 760 mm Hg) a short treatment at 130/140°C

would not lead to a significant reduction of the permethrin content.

The board also accepts as technically plausible this argument which was not rebutted by the appellant.

6.4 In view of the above considerations, the board concludes that the appellant's allegations supposed to call into question the probatory force of the test results presented by respondent 1 are not tenable. Consequently, the board fully takes into account the test results of respondent 1 in deciding whether or not the alleged effect is achieved over the entire breadth of claim 1.

6.5 In doing so, the board comes to the conclusion that, even considering, for the sake of an argument and in favour of the appellant, that the comparative test results filed by the appellant/proprietor indeed demonstrate that, compared to the method of E6, a further enhancement of permethrin retention upon repeated washing of the fabric may be achieved when using a method according to claim 1 at issue under specific conditions in terms of e.g. the type of fabric treated, the acrylate binder and silicon elastomer used, the concentrations used, the presence of further components in the finishing solution, the application method and/or the drying temperature/time, there are at least some methods also falling within the terms of claim 1 which do not lead to the desired enhancement of permethrin retention after repeated washing.

Consequently, the sought-after effect, i.e. a further enhancement of permethrin retention on a fabric after repeated washing is not necessarily achieved by each of the multitude of methods encompassed by the broad wording of claim 1 at issue.

7. Reformulation of the technical problem

Since the effect invoked by the appellant is not achieved across the full breadth of claim 1, the technical problem in the light of E6 has to be redefined in a less ambitious way. It can be seen in the provision of a further, alternative method for providing a fabric with a permethrin containing insect-repellent finish that is retained even after repeated washing of the fabric.

8. Obviousness

8.1 E6 already discloses a way of providing increased retention of permethrin during successive washing cycles and discloses the use of a solution of permethrin with an acrylate binder. However, as emphasised by the appellant at the oral proceedings, D6 does not mention silicone elastomers at all and hence does not contain any express pointer towards the possibility of incorporating a silicone elastomer into the solution applied to the fabric.

8.2 Hence, the question to be answered is, whether, for the skilled person starting from the method disclosed in E6 and seeking to provide a solution to the stated, less ambitious technical problem (point 7 supra), could and would actually envisage the additional incorporation of a silicone elastomer into the impregnation solution used according to E6 as something obvious in the light of the state of the art and/or common general knowledge.

8.3 E22 (see title) is a handbook representing common general knowledge in the relevant field of textile

finishing at the effective filing date of the patent in suit. This is not in dispute.

- 8.3.1 It refers on page 730 (left-hand column) to silicon elastomers as one out of four groups of most important polymers in the textile finishing industry. E22 also lists (page 731, right-hand column; table 17 on page 797) some desirable properties that may be imparted to textiles, such as garments, by silicone finishing agents, such as silicone elastomers (see page 797, paragraph bridging left and right columns), including *inter alia* softness, flexibility, strong (liquid) water repellency.
- 8.3.2 For the board, it is thus apparent from E22 that using silicon elastomers as a finishing agent to impart softness, water repellency and/or other advantageous properties to a fabric treated therewith was common general knowledge.
- 8.3.3 At the oral proceedings, respondent 1 emphasised that although, as indicated in E22, acrylics (polyacrylates) likewise provided softness and flexibility, rain repellency, as well as abrasion and weathering resistance, the softness imparted to fabrics by silicone elastomers is typically superior to the softness provided by acrylic finishing agents. This was not disputed by the appellant.
- 8.4 As pointed out by the respondents during the oral proceedings, the teaching of E6 is not limited to the use of polyacrylate polymeric binding agents (polyvinyl acetate may also be used (see e.g. claim 4), and the provision of some cross-linking in the permethrin-containing polymeric composition deposited on the fibres is considered to be favourable (see e.g. page 3, lines 14 to 16; claims 7 and 15).

Moreover, it was generally known that silicone elastomers are cross-linked polymeric substances (see e.g. the quoted paragraph on page 797 of E22) and at the same time provide very desirable properties to fabrics, e.g. fabrics intended to be used in the form of wearing apparel.

- 8.5 Hence, the board is convinced that the skilled person would have envisaged, even in the absence of a more express corresponding pointer in E6, and despite the fact that E22 does not mention the simultaneous use of polymers from two or more of the four groups indicated on page 730, the additional incorporation of an amount (which may be a minute amount only according to claim 1 at issue) of such a silicone elastomer finishing agent into the polyacrylate/permethrin-containing dispersion described in the examples of E6.

In the board's judgement, doing so was only one out of many equally promising options readily available to the skilled person armed with common general knowledge and seeking to provide a further, not necessarily better method of providing a fabric with a wash-fast permethrin-containing finish.

- 8.6 At the oral proceedings, the appellant argued that the poor miscibility of permethrin and silicone elastomers mentioned in the first paragraph of the declaration of Prof. Kiekens would rather discourage the skilled person from incorporating a silicone elastomer into a finishing dispersion as described in E6. This was, however, contested by respondent 1, who stated that permethrin was more soluble in the more hydrophobic silicone elastomers than in water.

Considering that this latter statement is plausible and remained undisputed, the board does not accept that there was indeed a disincentive of the type invoked by the appellant.

8.7 The board concludes that at least some of the subject-matter defined by the terms of claim 1 is obvious in the light of the teaching of document E6 and common general knowledge as illustrated by E22. Thus, the requirement of inventive step (Articles 52(1) and 56 EPC) is not met.

Conclusion

9. The appellant's request is, therefore, not allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

B. Czech

Decision electronically authenticated