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Bezeichnung der Erfindung: Deodorant products, preparation and use thereof.

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : A61L9/01

ENTSCHEIDUNG / DECISION
vom / of / du 8 October 1985

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet : Unilever (appellant)

Einsprechender / Opponent / Opposant : Haarman & Reimer (respondent)

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Art. 52(1) and 56 EPC

"Inventive step", "Collocations", "Functional limitation".

Leitsatz / Headnote / Sommaire

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Case Number: T

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DECISION
of the Technical Board of Appeal 3.3.1
of 8 October 1985

Appellant: Unilever PLC
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Representative: Mann, Volker, Dr.
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Decision under appeal: Decision of the Opposition Division of the European Patent Office
dated 28.02.84 revoking European patent No.
5618 pursuant to Article 102(1) EPC

Composition of the Board:
Chairman: K. Jahn
Member: G. Szabo
Member: C. Payraudeau

Summary of Facts and Submissions

I European patent No. 5618 was granted on 09.06.1982 with 20 claims in response to the European patent application No. 79 300 824.4 filed on 14.05.79 claiming the priority of the earlier application in the UK of 16.05.78. Claim 1 was as follows:

1. A deodorant product suitable for application to surfaces other than human skin comprising:

(i) from 0.1 to 20% by weight of a deodorant composition having a Deodorant Value of from 0.50 to 3.5, and comprising from 45 to 100% by weight of deodorant components, said components having a lipoxidase-inhibiting capacity of at least 50% or a Raoult variance ratio of at least 1.1, said components being classified into six classes consisting of:

Class 1: phenolic substances

Class 2: essential oils, extracts, resins and synthetic oils

Class 3: aldehydes and ketones

Class 4: polycyclic compounds

Class 5: esters

Class 6: alcohols,

provided that where a component can be classified into more than one class, it is placed in the lower or lowest numbered class;

said components being so selected that

(a) the deodorant composition contains at least five components of which at least one must be selected from each of class 1, class 2 and class 4;

(b) deodorant composition contains components from at least 4 of the 6 classes; and

(c) any component present in the deodorant composition at a concentration of less than 0.5% by weight of said composition

is eliminated from the requirements of (a) and (b), the Deodorant Value being measured by the Deodorant Value Test which comprises the steps of

- (a) applying to the axillae of a panel of 50 Caucasian male subjects of age within the range of from 20 to 55 years (the subjects being chosen from those who develop axillary body malodour that is not unusually strong and who do not develop a stronger malodour in one axilla compared with the other), lather obtained from either test or control soap bars, the test soap bar comprising standard soap essentially manufactured from tallow and coconut oil according to conventional soap making practice, together with added deodorant composition at a concentration of 1.5% by weight, and the control soap bars comprising standard soap without added deodorant composition, the application of either test or control soap being according to a statistically designed experiment;
- (b) assessing the body malodour of the axillae of each subject, after a period of 5 hours, by close application, in succession, of the nose of each of three female assessors to each axilla who then record the intensity of odour on a 0 to 5 scale, 0 representing no odour and 5 representing very strong odour, the strength of the odour in each instance being related, for purposes of comparison, to standard odours produced by aqueous solutions of isovaleric acid at different concentrations according to the following table:

Score	Odour level	Conc. of aqueous isovaleric acid (ml/l)
0	No odour	0
1	Slight	0.013
2	Definite	0.053
3	Moderate	0.22
4	Strong	0.87
5	Very strong	3.57

(c) calculating the average scores for both test soap and control soap, and subtracting the average score for the control soap from the average score for the test soap to arrive at the Deodorant Value for the Deodorant composition in the test soap bar;

the Lipoxidase Inhibiting Capacity of the components being a measure of their ability to inhibit the oxidation of linoleic acid by standard lipoxidase to form the corresponding hydroperoxide; and

the Raoult Variance Ratio of the components being a measure of their ability to depress the partial vapour pressure of morpholine by an amount which is at least 10% more than that predicted by Raoult's Law; and

(ii) a carrier for the composition chosen from abrasive materials, bleaching agents, waxes, film forming polymers, or mixtures thereof.

II The opponent filed opposition against the European patent on 03.03.83 requesting that it be revoked on grounds of lack of novelty and of inventive step. The opposition was supported inter alia by BR-A-PI-76 04 601 (1), DE-B-1 593 662 (2) and US-A-2 875 131 (3).

III The Opposition Division revoked the patent in a decision of 28.02.84. The reason for the revocation was that the subject-matter of Claim 1 did not involve an inventive step. The Brazilian document (1) discloses compositions comprising a group of deodorant perfumes. These represented a mixture of components selected from eight classes and were also required to pass tests for lipoxidase-inhibiting, the Raoult Variance Ratio and Deodorant Value, as specified. The deodorant compositions according to the contested patent were

substantially identical with those perfumes in the prior document, satisfying all test requirements. Whilst the active deodorant perfumes were combined with detergents (1 to 99%) in the cited document, the claim in the present case specifies carriers chosen from materials such as abrasives, bleaches, waxes or film forming polymers. However, the disclosure of (2) revealed that perfume components might well be combined with bleaches and waxes, and it would have been obvious to mix the deodorant perfumes of (1) with such carriers with the expectation of some substantivity on surfaces other than the human skin.

IV On 26.04.84 the proprietors of the patent filed an appeal against the above decision paying the fee at the same time. The Statement of Grounds was filed on 27.06.84 together with a new set of claims in which the second component of the composition was limited so as to read (cf. last lines of Claim 1): "(ii) from 0.1 to 99.9% by weight of a carrier for the composition chosen from abrasive materials. "In his reply the respondent introduced DE-B-1 767 855 (6) and later also referred to US-A-4 026 813 (4) and US-A-3 953 378 (5) in the oral proceedings on 08.10.85. The appellant submitted on that occasion an internal search report in evidence, and further amended the above phrase in Claim 1 to read: "(ii) from 1 to 99% by weight...".

V The appellants submitted during the procedure and the oral hearing substantially the following arguments:

(a) As regards the compositions disclosed in (4), Example 7 the evidence showed that in spite of selecting the components of the perfume from five of the recommended six classes, the mixture showed only a Deodorant Value of 0.13, substantially below the minimum of 0.5 in the patent. The same applied to (5), perfume composition Test

No. 2 on page 2 of the document, comprising again known representatives of six classes, where the Deodorant Value was only 0.40. Even mixtures of these composition with silica or gypsum, respectively, mentioned in these documents, would not anticipate the claims of the contested patent.

- (b) There was no evidence suggesting that the deodorant perfumes disclosed in (1) would be substantive both to human skin and to other surfaces. Dr. Johnson's declaration submitted on 17.10.83 already showed that perfumes would not normally be substantive to hard surfaces such as tiles. The expectation was, therefore, that the specific perfumes in the claimed compositions should be equally ineffectual. The prolonged effect obtained by the use of them was the more surprising since the abrasive itself was not retained by hard surfaces after rinsing with water.
- (c) As regards (6), this citation was only concerned with a specific detergent bleach composition containing insoluble particulate material to which minor amounts of adjunct could be added to make the material "more attractive or effective". Although the composition was for cleaning hard surfaces there had been no suggestion of deodorancy. The optional incorporation of perfumes merely suggested that fragrance could be perceived just "as is the case with many currently available domestic hard surface perfumes cleaning products intended for kitchen or bathroom use".
- (d) There was no teaching in these and other documents that fragrance might persist after use, nor was there any suggestion of deodorancy in consequence of the perfume. The techniques involved in the cited art, personal

cleaning on the one hand and the use of abrasive cleaners on domestic surfaces on the other, were totally separate and distant in character. The invention also involved a selection since some of the options open under the cited art in (1), e.g. nitrogenous compounds, are no longer applicable for the new use.

VI The respondent argued substantially as follows:

- (a) Example 7 of (4) describes a fern-type perfume which contained typical members of five of the classes recommended by the patent. Examples 11 and 12 illustrated the further use of such and similar perfumes which, when using a silica carrier, would not only fall under Claim 1 of the contested patent, but also under subsidiary claims of narrower scope. Similarly, the Test 2 composition in (5) is made up of typical representatives of all six classes for admixture with gypsum, an inorganic insoluble carrier. It was very strange that as soon as the state of the art disclosed a composition according to the patentee's claims, the Deodorant Value came to rescue. There were no proper instructions then in the patent how to obtain embodiments other than those in the examples.
- (b) Since (6) clearly disclosed the possibility of improving domestic cleaning products containing abrasive components by adding perfumes, it was obvious to incorporate new perfumes for which improved performance had been suggested in a similar manner. There was no prejudice against such combinations of well-known agents on the basis of their known function.
- (c) This submission was supported by the fact that these days all domestic formulations contain perfumes to give

fragrance to the product and there was also an obvious desire that this should persist for a while. The experience of housewives supported the view that this had in fact been the case. Whilst the result obtained by Dr. Johnson could not be challenged, it should not be generalised at all to other perfume materials. There was no information as to the identity of the perfume, and at least its water or liquid soluble properties should have been revealed to assess the relevance of the tests to the case in dispute.

VII The appellants request that the decision under appeal be set aside and that the patent be maintained on the basis of amended Claims 1 to 14 and the description presented during the oral proceedings. The respondent requests that the appeal be rejected.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. There can be no objection to the present version of Claim 1 on formal grounds. The restriction of the choice of carriers to abrasives and to the concentration range therefor are well supported by the specification as granted (cf. page 8, lines 53 to 58).
3. The subject-matter of Claim 1 relates in essence to products which are suitable for surfaces other than human skin, comprising (i) a specific deodorant perfume composition and (ii) an abrasive carrier therefor. The closest prior art is described in document (1) which discloses the same and similar deodorant perfume compositions for the purpose of deodorising human skin. Broad classes of chemical compounds

are specified, such as phenolic substances, esters, alcohols etc., from which the components for the composition must be selected for mixing and for testing. The tests determining suitability are the Lipoxidase Inhibiting Capacity test, the Raoult Variance Ratio (morpholine test) and the test for Deodorant Value. The last one essentially concerns effectiveness as regards the purpose of the product, based on the capacity of providing deodorancy in the axillae of human males.

4. The deodorant perfumes according to (1) are normally applied in compositions (0.1 to 10% concentration, cf. page 18) in combination with a detergent (1 to 99%) and a detergent adjunct (0.9 to 98.9%) (cf. page 38). Detergents for such purposes include soaps and surfactants such as linear C₁₀-C₁₅ alkylbenzene sulphonic acids (page 36), and the adjuncts embrace inorganic water soluble salts, e.g. sodium or magnesium sulphate (page 40). According to the document the compositions provided better deodorancy in humans than that obtained with germicidal agents or perfumed soaps on the market.
5. The technical problem in respect of this state of the art was to find further applications for the specified perfumes as deodorants, in particular on domestic hard surfaces, and to adapt the carrier for such purpose. The claimed solution was a combination of substantially the same perfumes with an abrasive carrier. The range of classes for choice has been somewhat curtailed by dropping nitrogen compounds. However, the use of this particular class was always optional (cf. Claim 5) and the now recommended group still embraces many permissible groups of component mixtures, which are generally covered in the closest state of the art, and even specifically described as individual mixtures. No novelty in

respect of a selection of the perfume composition alone can therefore be recognized.

6. The other essential feature of Claim 1 in this case is the abrasive carrier. This is "generally a water-insoluble particulate material" (emphasis added) (cf. page 8, lines 44-47). Indeed, there is some doubt whether or not insolubility in water is always necessary from the technical point of view since the composition is also used as a dry abrasive cleaner (cf. page 8, line 56 and Example 7). According to an uncontradicted statement by the respondent, the deodorant is in such cases released from the surface of the abrasive carrier on rubbing to the hard surface. Although solubility is no disadvantage in such situations (cf. also the manner of testing in Example 7, page 21, lines 34 to 37), such a broad interpretation would mean that the formulations according to (1) containing an inorganic salt up to 98.9% as an adjunct anticipated Claim 1 of the contested patent. The adverb "generally" should therefore be considered in the narrow absolute sense, excluding soluble salts, and not as an adverb indicating "for the most part", which would allow soluble abrasives as well. The claimed products are, therefore, formally novel as combinations even over the combinations with an adjunct as suggest in (1) although abrasives as such are in themselves well known in the art.
7. As regards novelty with respect to (4), Example 7 and (5), Test 2, the appellants presented evidence at the oral hearing, which was in response to the unexpected reference to these documents on the part of the respondent. It was apparently reported within the appellant's organisation in internal correspondence dated 19.05.81 that the specific perfume compositions according to these documents had not satisfied the Deodorant Value test, and therefore would not qualify for compositions claimed in the then pending

application for a patent. Unfortunately, no explanation was asked for and none was offered at the oral hearing as to why the perfume formulation according to (4), Example 7, had in fact been modified in the experiment by replacing n.butyl-paradioxane with benzyl alcohol. This contradicted the earlier statement on behalf of the appellant (19.03.81, pages 4 and 5) suggesting that the cited formulation itself would not have the correct test value. In spite of the somewhat unsatisfactory situation about novelty in this respect, the Board is in the position to set aside this question in view of its conclusions on the inventive step.

8. The exemplified formulations according to the granted patent (cf. Example 5 to 7) are suggestive of a deodorising effect for at least one hour after application to hard surfaces (glass). Although no explanation could be offered on behalf of the appellants as to the true mechanism of the effect, i.e. whether or not the malodour was adsorbed or masked by the perfume deodorant, it was clear that the abrasive was immediately removed from the scene of interaction after application in the examples. The treated glass surface was afterwards placed adjacent to the malodour source under standard conditions and the result assessed in about an hour's time. The fundamental role of the abrasive was in use to release the deodorant by rubbing or to remove malodour sources by physical action as admitted by the appellants at the oral proceedings. The measured effect was therefore solely attributable to the deodorant perfume adhering to the glass. Any effect associated with the abrasive is, therefore, independent from that of the perfume.

9. The quality of the effect due to the deodorant perfume is apparent from the examples of the patent. Whilst they undoubtedly show a deodorant effect lasting at least for one hour, the real characteristics of the performance are not disclosed in comparison with that on the human skin. Since most of the applied product is removed immediately after contact with the glass surfaces of the vials, there is no information either as to how much deodorant perfume is left on the surface and is actually interacting with a certain malodour source. Performance can presumably be improved by increasing the concentration of the agent (cf. (1), page 56). The actual operative amount is quite different in Examples 5 and 6, on the one hand, and Example 7, on the other, in view of different techniques of making contact (liquid and dry preparations). In conclusion, the degree of success is unknown.
10. As to the inventive step for the claimed product, it is generally accepted that many household products contain at least small amounts of perfumes to provide at least a temporary effect on use. The respondent suggested that it was the experience of the housewife that the odour persisted for a short while after application in many instances. Any perfume which is substantive to a degree to hard surfaces would be capable of suppressing malodour to some extent by a masking effect, the outcome being of course very much dependent on the concentration and volatility of the malodour and of the deodorant agent. This depends on how the perfume adheres to the new surface.
11. The required deodorant effect is of the same kind as that shown in the prior art, albeit the sources of malodour may be somewhat different. Nevertheless, the mechanism of deodoration is the same, i.e. masking or adsorption, since these should be the only ones operative when the source of

malodour and the deodorant are side-by-side. Apparently the introductory part of citation (1), page 3 lines 9-11, suggests that the effect of the deodorant perfume was "clearly not that of odour masking for in many instances the residues on the treated skin are odourless." This statement is, however, somewhat self-contradictory, and cannot exclude the possibility of masking whenever the treated skin develops the malodour in time (cf. same page, line 5), which is of course relevant to any claim to persistency of effect. Since it was also admitted by the appellants that it was unknown how the deodorant perfumes in question work in the present case, neither adsorption nor masking could be dismissed. As germicidal action was excluded (cf. (1), page 2, last lines), the choice was essentially between the other two modes, both operating through the air. There was therefore nothing which would have raised doubts about a possible effect on a hard surface on the same tentative basis as before.

12. As to the technical 'distance' for the transfer, the two target areas, i.e. human skin, on the one hand, and hard domestic surfaces, on the other, have much in common when it comes to achieving cleanliness, hygiene and pleasant appearance. Both use extensively the same or similar detergents. The compositions of the deodorant perfumes and those perfumes used in these other areas are very similar and overlap as to ingredients significantly (cf. compositions in (1), (4), (5) and the perfumes referred to in (1) according to various patents (pages 54-65). These are therefore technically neighbouring areas, where good results, and particularly results claiming superiority, are primary candidates for transfer by the skilled man. This is especially the case when the transfer is from a more sensitive surface (human skin) to a less delicate one (kitchen tiles).

13. No express suggestion existed in the art either, which would have prejudiced or discouraged the idea of transferring the perfumes in question to the area of domestic cleaners and bleaches having perfumes to provide fragrance. On the contrary, the great number of normal perfume components now also employed in the deodorant mixtures point clearly to replace those combinations which were for instance used in (4) or (5) with those described in (1), since the latter are not only very similar in composition but carry the promise of a bonus effect, i.e. chance for persistency in addition to the expected pleasant odour. As long as masking could not at all be excluded as a *modus operandi* on human skin, the same perfumes were expected to work anywhere, and in particular on surfaces where their own adsorption was not very high to prevent volatility. As the addition of the abrasive has only the character of a temporary collocation or aggregation before removal, and its functions are very well known, the role of the perfume alone becomes decisive. Thus its persistency, based on a certain degree of substantivity, remains the basic aspect of the inventive step, if any.
14. The evidence submitted on behalf of the appellants, i.e. the first Johnson declaration dated 10.10.83 related to this question. The declaration relied on a test in which a "standard" domestic soap containing 1.5% of an "ordinary" but unspecified perfume was applied both to the forearm of humans and to kitchen tiles. Whilst the odour persisted for a while on the forearm, no odour was noticed afterwards on the tiles. Unfortunately, these experiments are hardly reproducible in the absence of more information about the identity of the domestic soap and, more important, that of the perfume. Substantivity could indeed very much depend on the water or liquid solubility of the presumably arbitrarily selected perfumes, some adhering more, others less, to a surface. The results have no basis for any generalisation even if the fact

of exact irreproducibility is disregarded. In any case, there is no hint as to the alleged general lack of substantivity of perfumes in the literature. In the absence of common knowledge the skilled man would not have stumbled across the suggested obstacle of a total lack of substantivity on his route towards the alleged invention. There was, therefore, no ground for assuming that he would have tested any other perfumes before testing those of the closest art which must immediately have appeared to him as directly most relevant and promising as a solution of his problem.

15. The original discovery of improved deodorancy on the human skin with specific blends of perfume compounds might have been a breakthrough in view of the difficulties involved. The further task of discovering additional uses involved no real modifications of the original means, since basically the same testing criteria remained applicable. There was not even the question of discarding an essential feature of the state of the art in use on skin, the detergent component, since it is apparently preferred to use also detergents, such as soap or a C₁₀ to C₁₃ alkyl benzene sulphonate, besides an inorganic insoluble salt in the examples of the present case. As it was already explained the introduction of the abrasive serves other functions and the same perfume components are left to act unmodified in the new use.
16. Apart from the absence of indications prejudicing or hindering the idea of new uses, there were also some positive incentives in this direction. The claim that there was an exceptional degree of deodorancy on the human skin even after five hours of the application, must have encouraged the survey of further possibilities in general. Apart from possible applications on fabrics, leather goods and the like, the only possible real area for consideration, where there would still be a hope of controlling malodour with small

quantities of an agent, was that of domestic use, i.e. in the kitchen and bathroom. In addition, as already explained, this could be considered as a neighbouring technical field in view of similarities between problems (cleaning, hygiene) as well as means (soap, detergents). Even everyday experience may have suggested that pleasant odour lingers on at least to some extent with some of the products for domestic use. The move in the direction of the subject-matter in the present case was therefore open and towards the most likely sole target in view of similarities in some relevant respects, in addition to the fact that the task was associated with no adaptation problems whatsoever.

17. In view of the encouraging signs and circumstances the uncertainty about the degree of substantivity, if any, could not have been decisive. The subject-matter of Claim 1 even covers formulations with a 20% deodorant composition, which is twice as strong as the maximum recommended for formulations in human use (cf. (1), page 121, Claim 15). This should have been sufficient to promise the desired effect in the absence of established grounds for any expectation of no substantivity at all. To sum up, it was reasonable and worthwhile to investigate in such circumstances the effectiveness of the known deodorant perfumes on hard surfaces. The uncertainty in one respect alone cannot obscure the real chances of success or the high incentive value of the result hoped for. Not only total predictability renders a technical proposal obvious, but also the reasonable expectation of the attained result, which is required by the stated problem, may well be conclusive against the recognition of an inventive step, in particular in the absence of prejudice, difficulties or multiple choices. In view of the above, Claim 1 lacks inventive step. The same applies to dependent Claims 2 to 14 containing additional features which must fall with the main claim.

18. The Opposition Division also considered the question of sufficiency under Article 83 EPC and came to the conclusion that in spite of a large margin of error of biological testing, the difficulties of assessment in general had justified the approach taken by the patentee. However, evidence submitted on behalf of the patentees for the first time in the oral proceedings before the Board revealed that there were greater difficulties in finding operative embodiments within the claims than normally envisaged, even at the level of Claim 9 where a list of constituents were expressly recommended for the purpose (cf. paragraph 7, above). Had not the claims been found obvious, the matter of undue burden and consequent insufficiency under Articles 83 and 84 EPC would have been further investigated in consequence of the revelations at the oral hearing.

Order

It is decided that

The appeal is rejected.

The Registrar :

The Chairman :

J. R. G.
W. H.

Palmer