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D E C I S I O N
of 27 September 2005

Case Number: T 0330/99 - 3.3.07

Application Number: 92113888.9

Publication Number: 529437

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Language of the proceedings: EN

Title of invention:
Hair Treatment Composition

Patentee:
Kao Corporation

Opponent:
Henkel Kommanditgesellschaft auf Aktien

Headword:

-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty (yes) - multiple selection"
"Inventive step (yes) - problem and solution"

Decisions cited:
T 0219/83, T 0666/89

Catchword:

-



Case Number: T 0330/99 - 3.3.07

D E C I S I O N
of the Technical Board of Appeal 3.3.07
of 27 September 2005

Appellant: Henkel Kommanditgesellschaft auf Aktien
(Opponent) TTP (Patente)
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Representative: -

Respondent: KAO CORPORATION
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
18 March 1999 concerning maintenance of
European patent No. 529437 in amended form.

Composition of the Board:

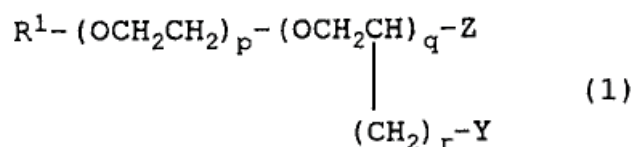
Chairman: P. Gryczka
Members: B. Struif
T. Bokor

Summary of Facts and Submissions

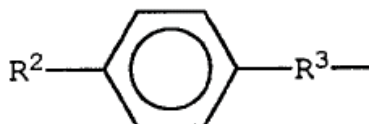
- I. The mention of the grant of European patent No. 0 529 437 with respect to European patent application No. 92 113 888.9 filed on 14 August 1992 was published on 17 July 1997.
- II. A notice of opposition was filed, in which the revocation of the patent in its entirety was requested on the grounds of Article 100(a) EPC with respect to lack of novelty and lack of an inventive step. The opposition was supported, *inter alia*, by the following documents:
- D2: EP-A-0 193 932
- D4: DE-A-39 04 054
- III. In an interlocutory decision notified by post on 18 March 1999, the opposition division found that the patent could be maintained in amended form on the basis of a set of claims 1 to 5 submitted with letter dated 25 January 1999 as main request, claim 3 being further amended at the oral proceedings before the opposition division. Claim 1 as amended read as follows:

"1. A hair treatment composition comprising:

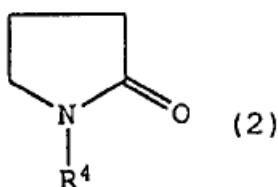
(i) 0.5 to 50% of either an organic solvent which is a compound represented by Formula (1):



wherein R^1 represents a hydrogen atom, an alkyl group having 1 to 4 carbon atoms or a group of the formula:



wherein R^2 represents a hydrogen atom, a methyl group or a methoxy group and R^3 represents a direct bond or a saturated or unsaturated divalent hydrocarbon group having from 1 to 3 carbon atoms, Y and Z each represents a hydrogen atom or a hydroxyl group and p, q and r each represents an integer of from 0 to 5, except where all p, q and r are 0 and Z is a hydrogen atom, and where all p, q and r are 0, and R^1 is a hydrogen atom and Z is a hydroxyl group; or an N-alkylpyrrolidone represented by Formula (2):



wherein R^4 represents a straight-chain or branched alkyl group having from 1 to 18 carbon atoms; or alkylene carbonates having from 1 to 4 carbon atoms;

(ii) 1 to 5% of at least one aromatic sulfonic acid selected from the group consisting of naphthalenesulfonic acids, azulenesulfonic acids, tetralinsulfonic acids, indansulfonic acids and benzophenonesulfonic acids, or salts thereof

(iii) 0.5 to 30% of an acid and/or or an alkali, all percentages being wt.% based on the total composition,

wherein said hair treatment composition has a pH of 2 to 5."

IV. The opposition division held that:

- (a) The subject-matter of claim 1 was considered to be novel over D2, since it resulted from several choices, which had to be made within the disclosure of D2, namely the type of sunscreen agent, the amount thereof and the pH value of the composition. In addition, there was no motivation for the skilled person to make these selections (Article 54 EPC).

- (b) D4, which was considered to represent the closest state of the art, described water/ethanol systems for protecting hair against light. Although there was a link between the problem of elasticity and the protection of hair, not all sunscreen compounds were suitable to solve also the elasticity problem. In addition, the exemplified water/ethanol system had a pH value above that required for the compositions of the patent in suit. The examples of the patent in suit showed that when using the pH range as claimed in combination with an organic solvent improved results in terms of elasticity were achieved. The disclosure of D4 did not render the subject-matter of claim 1 obvious, even when considering the general knowledge of the skilled person. Thus, the subject-matter of claim 1 was considered to involve an inventive step (Article 56 EPC).

- V. On 27 March 1999, the opponent (appellant) filed a notice of appeal against the above decision, the prescribed fee being paid on the same day. The statement setting out the grounds of appeal was filed on 7 July 1999.
- VI. By letter dated 12 January 2000 the proprietor (respondent) submitted an amended set of claims 1 to 5 as auxiliary request II.
- VII. By letter dated 26 August 2005, the appellant submitted two passages of literature showing the chemical structure of benzophenone-9.
- VIII. By letter dated 26 August 2005, the respondent submitted three sets of claims as auxiliary requests III to V, further experimental results and an extract from "International Cosmetic Ingredients Dictionary and Handbook" (D6) showing the chemical structure of benzophenone-9.
- IX. Oral proceedings were held on 27 September 2005. During the oral proceedings the respondent submitted a set of amended claims 1 to 5 as the main request, as well as two sets of claims as auxiliary requests I and II, these requests replacing all the previous requests on file.

Claim 1 of the main request corresponded to claim 1 underlying the decision under appeal. Claim 5 of the main request read as follows:

"5. A method for imparting elasticity to the hair which comprises treating the hair with a hair treatment composition as defined in claim 1."

X. The appellant argued in substance as follows:

- (a) As to novelty, D2 disclosed a general recipe of a sunscreen composition including a sunscreen agent and an alcohol. There was an overlap between the amounts and the pH value of this general recipe and the claimed subject-matter. Furthermore, benzophenone-9, which was a benzophenonesulfonic acid as required in the compositions of the patent in suit, was used as sunscreen agent in sixteen of seventeen examples. In accordance with the decision T 666/89 (OJ EPO, 1993, 495), the skilled person had seriously contemplated the claimed composition by applying the technical teaching of D2.

Also D4 disclosed the essential components of the claimed compositions in overlapping ranges with regard to the amounts. The exemplified compositions were different from those defined in claim 1 of the patent in suit. However, the disclosure of D4 was not restricted to the examples, but the whole content of this prior art had to be considered.

Thus, the claimed subject-matter was not novel over D2 and D4 (Article 54 EPC).

- (b) Although D2 or D4 could be used as a suitable starting point for the assessment of inventive

step, D4 was considered to be the closest state of the art, since it described the elasticity imparting effect of a specific benzophenonesulfonic acid which was used as a preferred compound according to the patent in suit. The claimed subject-matter differed from the composition of example 1 of D4 only by the presence of an organic solvent. Since the experiments in accordance with the respondent's experimental report of 26 August 2005 were not carried out with the specific benzophenonesulfonic acid of D4, they did not provide a direct comparison with the closest prior art and were thus not suitable to demonstrate an improved effect. In addition, since according to D4 the use of an aromatic sulfonic acid improved the mechanical properties of the hair, the skilled person by routine experimentation arrived inevitably at the technical effects shown in the patent in suit.

Starting from D2, the claimed subject-matter differed from the compositions exemplified therein only in that benzophenone-9 was used in a higher amount. However, since higher amounts were generally mentioned in D2, the skilled person would have modified the compositions exemplified in D2 to arrive at the technical effects shown in the patent in suit.

- (c) Thus, the claimed subject-matter did not involve an inventive step having regard to the teaching of D2 or D4 (Article 56 EPC).

XI. The respondent argued as follows:

(a) D2 described sunscreen compositions which comprised a sunscreen agent within an amount of 0.001 to 15% by weight, preferably 0.001 to 0.5 % by weight. Higher amounts than 0.5% by weight imparted an esthetically undesirable colour to the composition. In all exemplified compositions of D2 at most 0.05% by weight of benzophenone-9 as sunscreen agent was used. Thus, the description of D2 would keep the skilled person away from preparing a composition containing the sunscreen agent in the amount as required by the claimed compositions. Furthermore, although the pH should be maintained at 4.5 to 6.5, most of that pH range was outside the claimed range. In that respect, the pH value of a composition prepared in accordance with example 4 of D2 was measured to be as high as 8.1. Thus, D2 did not disclose the claimed combination of features.

D4 disclosed the use of at least 0.3% by weight of a specific benzophenonesulfonic acid for protecting hair against light. Although suitable pH values and solvent systems were mentioned, none of the examples of D4 disclosed the combination of features defining the presently claimed composition.

Hence, the claimed subject matter was novel over D2 and D4.

(b) As regards inventive step, D4, which was considered to represent the closest state of the

art, disclosed a sunscreen composition for protecting the mechanical properties of the hair from light, in particular their elasticity, whilst according to the patent in suit high elasticity was imparted to the hair. In example 1 of D4 no organic solvent was used, whereas the presence of a specific organic solvent was essential in the claimed composition to provide an improved elasticity effect, as shown by the examples of the patent in suit and the experimental results submitted with letter of 26 August 2005. Although the later tests were carried out with a different aromatic sulfonic acid than that used in D4, these tests were nevertheless suitable to show an improved effect. In fact according to the patent in suit, different aromatic sulfonic acids provided a similar effect on the elasticity of the hair, independently of their structural differences.

In addition, the pH value of the compositions in accordance with examples 2, 3 and 5 of D4 was outside the pH range defined in the present claims. The reworked composition of example 2 of D4 provided an inferior effect on hair tension/firmness. The influence of different pH values on the elasticity of the hair was also shown by a comparison of example 13 with comparative example 11 of the patent in suit.

D2 concerned a sunscreen composition for protecting the hair from a bleaching or colouring effect of sunlight. Thus, the problem solved by the compositions of D2 was quite different from

that solved by the claimed compositions which imparted elasticity to the hair. The reworked composition of example 4 of D2 provided an inferior elasticity rating when applied to the hair. Furthermore, according to the patent in suit, the hair had to be swelled by adjusting the pH value with an acid and/or alkali so that the aromatic sulfonic acid could penetrate into the hair. This teaching was not foreseen in D2 or D4.

In view of the clear teaching of D2 to use small amounts of benzophenonesulfonic acid and in view of the most preferred pH of 7.5 in the exemplified compositions of D4, there was no motivation to use the higher claimed amounts of benzophenonesulfonic acids in combination with the claimed pH value for imparting improved elasticity to the hair.

Consequently, the claimed subject-matter involved an inventive step when starting either from D2 or D4 as the closest state of the art.

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

- XIII. The respondent requested that the appeal be dismissed and that the patent be maintained on the basis of claims 1 to 5 submitted as main request during the oral proceedings; or on the basis of claims 1 to 5 submitted as auxiliary request I during the oral proceedings; or on the basis of claims 1 to 5 submitted as auxiliary request II during the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

Main request

Amendments

2. Claim 5 has been amended so as to refer to the composition of claim 1. It is uncontested that this amendment is based on the originally filed description and provides a restriction of the subject-matter of the corresponding claim 7 as granted. The appellant did not raise any formal objections to this amendment. Consequently, the requirements of Article 123, paragraphs (2) and (3) EPC are met.

Novelty

3. The appellant's novelty objection was based on D2 and D4.
 - 3.1 D2 discloses a sunscreen composition comprising an effective amount of water miscible sunscreen agent contained in a mousse base or concentrate; said mousse base or concentrate comprising a cationic surfactant substantive to hair and a nonionic film-former which in combination with a nonionic surfactant produces a foam in the composition and upon application to hair forms a coating thereon (claim 1). The sunscreen composition has a pH of 4.5 to 6.5, preferably 4.5 to 5.5 (claims 2 and 3). The sunscreen agent is present in an amount of 0.001 to 15 %, preferably 0.001 to 0.5 % based on the total weight of the composition (claims 4 and 5). Furthermore, the composition comprises a cosmetically

acceptable alcohol, preferably ethanol (claims 8 and 9). The amount of acid to maintain the pH at 4.5 to 6.5 is from 0.001 to 1.0 % by weight (page 3, line 18). As preferred water soluble sunscreen agent seven specific compounds are mentioned, *inter alia*, 2-hydroxy-4-methoxy-benzophenone-5-sulfonic acid and disodium-2,2'-dihydroxy-4,4'-dimethoxy-5,5'-disulfobenzophenone (page 3, lines 27 to 35). The later specified compound is known under the commercial name benzophenone-9 (see D6). Furthermore, D2 mentions four other possible benzophenones as sunscreen agent, none of which containing a sulfonic acid group (page 4, lines 1 to 6).

On page 3, a general formulation for compositions of D2 is as follows:

Ingredients	% w/w
Sunscreen agent	0.001-15.0
Alcohol	2.0-15.0
Nonionic resin/film-former	0.5-10.0
Nonionic surfactant/emulsifier/foam producer	0.1 -2.0
Fragrance	0.01-0.2
Protein conditioner	0.01-0.5
Water soluble silicone	0.1-0.8
Cationic surfactant	0.1-5.0
Acid to maintain pH at 4.5-6.5	0.001-1.0
Nonionic surfactant/stabilizer	0.1-1.0
Water	qs. to 100

There is consequently an overlap between this general recipe and the definition of the claimed compositions with respect to the amount of solvent, the amount of the acid, and the pH value. However, although this

general recipe also requires the presence of 0.001 to 15% of sunscreen agent, which in accordance with D2 can be among others an aromatic sulfonic acid, namely benzophenone-9, several selections have to be made within that recipe in order to arrive at the claimed compositions, in particular with respect to the nature of the sunscreen agent, its amount and the pH value of the composition.

3.2 However, the appellant argued, that in sixteen of seventeen examples of D2 benzophenone-9 was used, which was a compound falling under the definition of feature (ii) of claim 1 of the patent in suit, so that no selection in this respect had to be made. Furthermore, the amount specified in claim 1 for that compound was covered by the amounts given in the general recipe of D2.

3.3 In the examples 2 to 17 of D2, benzophenone-9 was used in an amount of at most 0.05% by weight. There is no disclosure for using benzophenone-9 or any other aromatic sulfonic acid within the claimed range of 1 to 5% by weight as required by claim 1 of the patent in suit. Furthermore, D2 discloses a pH range of 4.5 to 6.5, whereas the presently claimed compositions should have a pH value of 2 to 5. Consequently, there is also a selection to be carried out with respect to the pH value in order to arrive at the claimed compositions.

3.4 The appellant furthermore argued on the basis of the decision T 666/89, *supra*, that the skilled person had seriously contemplated using benzophenone-9 in the claimed amounts by applying the teaching of D2.

3.4.1 Decision T 666/89 concerned the novelty assessment in cases of overlapping numerical ranges. The patent related in particular to a shampoo composition comprising 8-25% anionic surfactant and 0.001-0.1 % cationic polymer. In the prior art a shampoo composition had been disclosed containing 5-25% anionic surfactant and 0.1-5.0% cationic polymer. Although the present case also relates to an overlapping range, it nevertheless differs from the situation in T 666/89 in that it defines a combination of features, in particular a specific type of compound, i.e. an aromatic sulfonic acid and a specific amount thereof, i.e. from 1.0 to 5.0%, said combination not being disclosed in the prior art document D2. Furthermore, the selected sub-range of 1 to 5% is narrow when compared to the known range of 0.001 to 15% by weight and is sufficiently removed from the preferred part of the known range (0.05% by weight) as illustrated by the examples (see Case Law of the Boards of Appeal of the European Patent Office, 4th Edition 2001, I.C.4.2.1). In addition, D2 gives a specific warning not to use more than 0.05% of sunscreen agent, since it may impart an esthetically undesired colour (page 4, lines 12 to 15) and thus teaches away from the amount required in the compositions of the patent in suit. Hence, decision T 666/89, *supra*, is not applicable to the present case. Consequently, the skilled person will not seriously contemplate moving from the exemplified small amount (0.05% by weight) of benzophenone-9 to an amount outside of the preferred range disclosed in D2 (0.001 to 0.5% by weight), so as to arrive at the claimed range of 1 to 5% by weight.

3.5 The reworked composition in accordance with example 4 of D2 shows a pH value of 8.1, which is far outside the claimed pH range (see respondent's letter of 25 January 1999). Although according to D2, the pH value may be checked and if necessary, be adjusted with citric acid or ammonium hydroxide (page 15, lines 32 and 34), the appellant has not shown that any of the exemplified compositions of D2 has a pH value within the claimed range. The onus of proof in that respect lies with the opponent/appellant (T 219/83, OJ EPO 1986, 211).

3.6 From the above it follows that a composition falling within the scope of the present claims can only be reconstructed by carrying out multiple selections within the disclosure of D2 namely: selecting benzophenone-9 from the list of possible sunscreen agents, modifying its amount as exemplified in D2, selecting the amount of the acid and/or alkali and adjusting the pH value. There is, however, no pointer in D2 to the particular combination of features being claimed. For destroying the novelty, it is necessary that the claimed combination should directly and unambiguously be derived from the prior art document and it is not sufficient to create a composition in accordance with the patent in suit by combining specific ingredients, the amounts thereof and the pH value of the composition selected from several possibilities offered by the prior art document. Hence, D2 is not novelty destroying for the subject-matter of claim 1.

3.7 D4 discloses the use of at least 0.3% by weight of 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid in an aqueous, alcoholic or aqueous-alcoholic cosmetically

compatible support to protect the mechanical properties of the hair from a deterioration by atmospheric influences, in particular by light (claim 1). Suitable alcohols include lower alcohols such as ethanol or i-propanol (page 2, lines 49 and 50). The specified sulfonic acid compound may be used in cosmetic compositions for treating hair which may include an agent for regulating the pH value (claim 5). The pH value of the composition is in the range of 2 to 9, preferably 4 to 8 (page 2, line 66). Thus, within the general disclosure of D4, a selection of the solvent system has to be made to arrive at the claimed compositions which necessarily contain an organic solvent. In addition, the claimed compositions require a pH of 2 to 5, whereas D4 envisages pH values up to 9. Furthermore, the amount of sulfonic acid required by the claimed composition is at least 1%, whereas D4 discloses amounts as low as 0.3%.

Therefore, the general disclosure of D4 does not directly and unambiguously disclose the claimed compositions.

- 3.7.1 In addition, the compositions exemplified in D4 do not fall under the wording of present claim 1. In fact the compositions of examples 1 and 5 of D4 do not contain an organic solvent. The compositions of examples 2 to 4 comprise a combination of ethanol with 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid. However, in the compositions of examples 2 and 3 the pH value is 7.5 and 7.0, respectively and in example 4, ethanol is used as the sole solvent in a concentration of 93%, thus above that required by claim 1 of the patent in suit. In addition, the amount of 2-hydroxy-4-

methoxybenzophenone-5-sulfonic acid in the compositions of examples 2, 3 and 5 is 0.5%, 0.3% and 0.3% by weight, respectively, and thus outside the claimed range. Consequently, none of the examples discloses a combination of 1 to 5% by weight of 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid, 0.5 to 50% of a specific organic solvent and a pH value within a range of 2 to 5.

3.8 From the above it follows, that a multiple selection has to be made within the disclosure of D4 to arrive at the claimed compositions with regard to the solvent system, the amount of the solvent, the amount of the specific sulfonic acid, and the pH value of the composition. Thus, the same considerations as outlined with respect to D2 apply, *mutatis mutandis*, to D4 (see point 3.6).

3.9 Therefore, the claimed subject-matter is novel over D2 and D4 (Article 54(2) EPC).

Inventive step

Closest prior art document

4. Whilst the opposition division and the respondent regarded D4 as the closest prior art document, the appellant, in addition, considered also D2 as a suitable starting point.

4.1 According to D4 light causes damages to the keratin of the hair and destroys certain amino acids thereof. Thereby the hair fibres are modified and their mechanical properties, i.e. elasticity, are deteriorated (page 2, lines 7 to 10). It has been found

- that the use of 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid preserves the elasticity of the hair against the effects of light (page 2, lines 21 to 23).
- 4.2 According to D2, radiation of light may result in physical and chemical changes of the hair. The most apparent of these modifications is the "bleached" appearance of the hair after exposure of the hair to intense sunlight (page 1, lines 26 to 32). Thus, D2 aims at a sunscreen mousse which substantially blocks or reduces the radiation reaching the hair and thereby inhibit the bleaching thereof (page 2, lines 6 to 10).
- 4.3 The patent in suit aims at hair treatment compositions capable of imparting elasticity to the hair (page 2, line 5). To achieve this effect, it is necessary that the active components sufficiently penetrate into the hair (page 2, lines 14 and 15). For that purpose, the hair has to be sufficiently swelled so that the penetration of the aromatic sulfonic acids into the hair can be promoted (page 5, lines 35 to 37 and 52 to 53).
- 4.4 According to established jurisprudence the closest prior art for the purpose of assessing inventive step is generally that which corresponds to a purpose or technical effect similar to that of the invention and requiring the minimum of structural and functional modifications (Case Law, *supra*, I.D.3.1).
- 4.5 The claimed compositions differ from the exemplified compositions in D4 (example 1) by the presence of an organic solvent and its amount, whilst they differ from those of D2 (example 4) by the amount of aromatic

sulfonic acid and the non-specified pH value. Thus, D4 and D2 require similar modifications to the claimed subject-matter. However, whilst D2 aims at reducing the bleaching effect against sunlight and thus tries to avoid discolouring of the hair, D4 addresses more the mechanical properties, in particular the conservation of elasticity of the hair. Hence, D4 is more closely related to the patent in suit than D2, and thus is the most appropriate starting point for evaluating inventive step.

Problem and solution

5. According to the patent in suit the hair of a Japanese female were banded to 10 g of bundle. Half of thus prepared hair bundle is treated with the composition to be evaluated at 40°C for 30 minutes. After washing away the composition, the hair bundle is dried using a dryer to perform a pair comparison evaluation on "tension and firmness" of the hair. The evaluation is based on the sense of touch by 5 professional panelists using the following evaluation criteria:

4 points: much more feeling tensile/firm
3 points: more feeling tensile/firm
2 points: feeling tensile/firm at the same level
1 point: less feeling tensile/firm

The hair treatment composition which obtains the sum of 18 points or higher in the above criteria is evaluated as "A". Similarly, the samples obtaining 13 to 17 points, 8 to 12 points and 7 points or lower will be evaluated as "B", "C" and "D", respectively.

Furthermore, the same evaluation is performed in terms

of a hair bundle which has been further subjected four time to shampooing and drying (page 6, lines 20 to 31).

- 5.1 The hair treatment compositions of examples 1 to 4, 7, 8, 13 and 14 of the patent in suit contain as components (i) four different organic solvents, as component (ii) eight different aromatic sulfonic acids and as component (iii) sodium lactate and lactic acid and all have a pH value of 2.8. The individual components (i) and (ii) are used in different combinations. Compositions of comparative examples 1 to 7 contain similar starting components (i) and (ii), individually or in combination and the pH values are within but also outside the claimed pH range. In none of the comparative compositions all the features (i) to (iii) required for the claimed compositions are present in combination. The experimental results of the examples illustrating the compositions according to the patent in suit show an evaluation of "A" immediately after treatment and also after 4 shampoos, whilst the compositions of comparative examples 1 to 7 show an evaluation of "B/C" or inferior. Compositions of comparative examples 5, 6, 11 and 12 (examples 5, 6, 11 and 12 of the patent as granted), which have a pH value of 6.0, provide an evaluation of "B/B". Furthermore, the composition of example 13 of the patent in suit containing sodium hydroxy methoxy-benzophenone-sulfonate, benzyl oxyethanol and ethanol at a pH value of 6 differs from that of comparative example 11 only by a lower pH value of 2.8 compared to pH 6.0. The composition of example 13 provided a better rating of "A/A" when compared with that of comparative example 11 having a rating of "B/B".

5.2 By letter dated 25 January 1999, the respondent submitted comparative results based on a reworked composition of example 2 of D4. The aqueous composition in accordance with that example contains, *inter alia*, 0.5% of 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid, 10% by volume of ethanol and 2-amino-2-propanol in sufficient amount to provide a pH value of 7.5. The reworked composition was tested in accordance with the examples of the patent in suit as described above and evaluated with a rating of "C/C". Since all the claimed compositions provide a rating of "A/A", an improved effect in terms of elasticity over the composition of example 2 of D4 has been established.

5.3 However, the appellant argued that no improved effect has been shown over the composition of example 1 of D4, which comes closer to the claimed subject-matter than that of example 2. Furthermore, the effect achieved with the claimed compositions was inherent, when using the composition of example 1 of D4.

5.3.1 Although the composition of example 1 has a pH value of 5, it does not contain any solvent. As shown by the comparative examples 3 to 7 of the patent in suit, the absence of an organic solvent in the composition is detrimental to an elasticity imparting effect. In particular, a composition containing sodium 2-hydroxy-4-methoxybenzophenone-5-sulfonate as used in example 1 of D4, at a pH value of 6, provided a rating of "C/C" (comparative example 7).

5.3.2 In addition, the proprietor has submitted further comparative tests with letter dated 26 August 2005. In comparative test 8, the composition of example 1 of the

patent in suit, which contains sodium naphthalene 2-sulfonate, is modified in that no organic solvent is present in the composition. The evaluation of comparative composition 8 gives a rating of "B/C", although it has a low pH value of 2.8. The above comparative results show, that the presence of an organic solvent in the compositions is necessary for imparting the improved elasticity to the hair. Since the composition of example 1 of D4 does not contain an organic solvent, it is made plausible that the desired elasticity imparting effect will not be achieved by using this composition. Furthermore, the appellant has not shown by experimental evidence that the properties aimed at are inherently present in the prior art compositions. The onus of proof in that respect lies however, with the opponent (appellant) (T 219/83, *supra*).

- 5.4 In view of the above, the board comes to the conclusion that the experimental results on file are sufficient to establish an improved effect over compositions of D4.
- 5.5 Hence, the problem to be solved by the claimed subject-matter over D4 can be seen in providing a hair treatment composition which imparts improved elasticity in terms of firmness and tension to the hair, which effects are also sustained for a prolonged period of time.
- 5.6 Since the examples of the patent in suit show that the elasticity improving effect is achieved for a variety of solvents and aromatic sulfonic acids in different combinations (point 5.3 above), the board is satisfied that the problem so defined is also effectively solved.

Obviousness

6. It remains to be decided whether the claimed subject-matter is obvious having regard to the documents on file.
- 6.1 According to D4, 2-hydroxy-4-methoxybenzophenone-5-sulfonic acid functions as a filter substance, which protects the hair from an attack of sunlight (see claim 1 and page 2, lines 22 to 24).
- 6.2 According to the patent in suit, the elasticity imparting effect to the hair is achieved by swelling the hair using sufficient amount of acid and/or alkali and a specified pH so that a direct penetration of the aromatic sulfonic acids into the hair is promoted (page 5, lines 35 to 37 and 51 to 53). Consequently, the technical teaching of the patent in suit is quite different from that of D4, in which the hair is protected against sunlight by using a specific compound as filter substance. This different teaching is confirmed by the fact that according to D4 certain compounds of the prior art including 2,2-dihydroxy-4,4'-dimethoxy,5,5'-disulfobenzophenone are not effective to protect hair against the influence of sunlight (page 2, lines 16 to 17 and 21 to 23) whilst the same compound is found to be suitable in the claimed hair treatment compositions for imparting elasticity to the hair (see example 14 of the patent in suit).
- 6.3 Consequently, there is no incentive in D4 for the skilled person to modify the amount of the benzophenone sulfonic acid, the pH value and the solvent system in

order to provide a hair treatment composition having improved tension/firmness properties. Hence, the claimed subject-matter is not rendered obvious by D4 alone.

6.4 The same considerations apply to D2 which teaches that the reduction of the bleaching effect of the hair is obtained by applying a sunscreen mousse which blocks or reduces the amount of radiation reaching the hair (page 2, lines 6 to 10). In D2 the effect is already obtained with small amounts of the sunscreen agent (0.05% by weight). Furthermore, amounts above 0,5% by weight provide an esthetically undesirable colour to the mousse formulation and are not preferred (page 4, lines 12 to 15). Consequently, the skilled person gets no motivation from the teaching of D2 to increase that amount for obtaining an improved elasticity imparting effect to the hair.

7. When starting from D2 as the closest prior art document, no other conclusion would be reached. In D2 the elasticity imparting effect to the hair is neither mentioned nor has it been shown that such an effect can be achieved by the exemplified compositions. In that respect, the reworked composition of example 4 of D2 provides a rating of "C/C" in the tension/firmness test (experimental results submitted with letter of 25 January 1999). Thus, the claimed compositions also show an improvement in terms of firmness/tension over D2.

Since the technical effect aimed at by the patent in suit is not mentioned at all in D2 (see point 6.4 above) the skilled person gets no hint from that document that

an elasticity imparting effect would be achieved with the features of the claimed subject-matter. Since the technical effect aimed at in D4 is also different from that achieved by the patent in suit, the skilled person would not get any incentive to modify the teaching of D2 in the direction of the claimed solution.

8. Hence, the appellant has not shown that the subject-matter of claim 1 is made obvious by the cited prior art documents.

8.1 The same considerations as outlined for claim 1 (points 5 to 7 above) apply, *mutatis mutandis*, to method claim 5, which refers back to claim 1.

8.2 From the above it follows that the claimed subject-matter involves an inventive step (Article 56 EPC).

9. Since claim 5 has been amended during the appeal proceedings, an adaption of the description, in addition to the amendments already carried out, is still necessary. In particular, example 37 (page 8) no longer falls within the definition of the claimed subject-matter.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of claims 1 to 5 filed as main request during the oral proceedings before the board, and a description yet to be adapted.

The Registrar:

The Chairman:

C. Eickhoff

P. Gryczka