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**Datasheet for the decision
of 15 January 2013**

Case Number: T 2156/10 - 3.3.07

Application Number: 99300932.3

Publication Number: 951898

IPC: A61K 7/06, A61K 7/50

Language of the proceedings: EN

Title of invention:
Hair conditioning compositions

Patentee:
JOHNSON & JOHNSON CONSUMER COMPANIES, INC.

Opponents:
Henkel AG & Co. KGaA
Kao Germany GmbH
L'OREAL

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"All requests - inventive step (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 2156/10 - 3.3.07

DECISION
of the Technical Board of Appeal 3.3.07
of 15 January 2013

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted 10 August 2010
revoking European patent No. 951898 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman: J. Riolo
Members: R. Hauss
D. T. Keeling

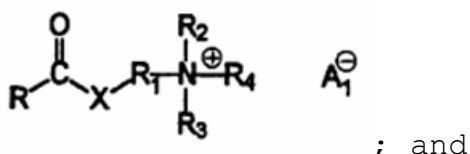
Summary of Facts and Submissions

- I. European patent No. 0 951 898 was granted on the basis of thirteen claims.
- II. Three notices of opposition were filed in which the revocation of the patent in its entirety was requested, *inter alia*, for lack of novelty and lack of inventive step under Article 100(a) EPC.
- III. The appeal lies from the decision of the opposition division pronounced in oral proceedings on 15 July 2010 and posted on 10 August 2010 revoking the patent.
- IV. The documents cited during the opposition and appeal proceedings included the following:
- D1:** EP 0 410 659 A2
 - D2:** US 4 954 335
 - D5:** Croda Data Sheet "Incroquat Behenyl TMS" (1994)
 - D13:** Inolex Insights, vol. II, no. 2/90
 - D14:** Cosmetics & Toiletries, 109, 67-74 (1994)
 - D15:** US 4 910 013
 - D27:** Experimental data filed by the appellant with the statement setting out the grounds of appeal (12/2010)
- V. In the impugned decision the opposition division considered six sets of amended claims submitted by the patent proprietor, viz. a main request and five auxiliary requests.

Claim 1 of the main request reads as follows:

"1. A composition comprising, based on the weight of the composition:

A. from 0.01 percent to 2.0 percent of a first quaternary ammonium compound of the formula



B. from 0.01 to 2.00 percent of a silicone compound selected from dimethicones, which are a mixture of fully methylated linear siloxane polymers end blocked with trimethylsiloxy units; cyclomethicones, which are cyclic dimethyl polysiloxane compounds having from 3 to 6 silicon atoms; and mixtures thereof, wherein

R is an alkyl group having from 19 to 21 carbon atoms or mixtures thereof,

X is -N(R5)-,

R1 is a substituted or unsubstituted alkylene group having from 2 to 6 carbon atoms,

R2, R3 and R4 are each independently an alkyl or hydroxyalkyl group having from 1 to 4 atoms;

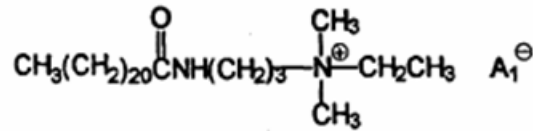
R5 is H, and

A1 is chloride; bromide; alkylsulfate containing from one to two carbon atoms; or mixtures thereof."

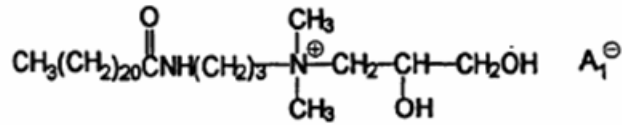
Dependent claim 3 reads as follows:

"The composition of any one of claims 1 or 2 wherein said quaternary ammonium compound is:

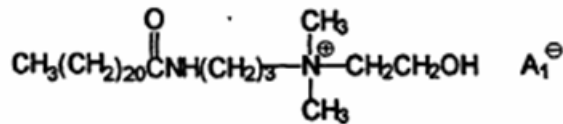
A.



B.



C.

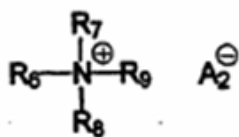


or

D. a mixture thereof."

Claim 1 of each of the auxiliary requests is the same as claim 1 of the main request, except for the following further limitations:

(i) Claim 1 of the first auxiliary request specifies that the composition further comprises a second quaternary ammonium compound of the formula:



;

wherein

R₆ is an alkyl or alkenyl group having from 12 to 36 carbon atoms,

R₇ is an alkyl or alkenyl group having from 1 to 36 carbon atoms or a benzyl group,

R₈ and R₉ are each independently an alkyl group having from 1 to 4 carbon atoms or a benzyl group,

A₂ is chloride; bromide; alkylsulfate containing from one to two carbon atoms; or mixture thereof;

the first quaternary ammonium compound and the second quaternary ammonium compound together comprising between 0.01 percent to 2.0 percent by weight of the claimed composition.

(ii) According to claim 1 of the second auxiliary request, the mandatory silicone compound B is present in the composition at a concentration of 0.05 to 1.0 percent by weight.

(iii) Claim 1 of the third auxiliary request contains the modifications mentioned in points (i) and (ii) in combination.

(iv) Claim 1 of the fourth auxiliary request corresponds to claim 1 of the first auxiliary request but further restricts the choice of substituents R₆ and R₇ of the second quaternary ammonium compound, R₆ being defined as an alkyl or alkenyl group having from 20 to 22 carbon atoms, and R₇ being defined as an alkyl group having from 1 to 4 carbon atoms, or a benzyl group.

(v) Claim 1 of the fifth auxiliary request contains all of the modifications mentioned in points (iv) and (ii) in combination.

In all five auxiliary requests, dependent claim 3 has the same wording as in the main request.

All requests contain further independent claims directed to a spray dispenser package or foam dispenser package containing the composition, and to a method of conditioning or detangling hair by applying an effective amount of the composition defined in the preceding claims.

VI. In the impugned decision the opposition division decided that the claimed subject-matter of none of the requests then pending involved an inventive step. The patent in suit concerned hair conditioning compositions. Document D13 was regarded as the closest prior art. D13 disclosed on page 4 an opaque conditioner composition designated "CD-105", containing behenamidopropyl PG dimonium chloride (trade name: Lexquat AMG-BEO) as a first quaternary ammonium compound, stearylalkonium chloride (trade name: Varisoft SDC) as a second quaternary ammonium compound and dimethicone (Silicone SF96-100). Varying the concentration of the silicone compound and/or incorporating a C₂₀-C₂₂ alkyl or alkenyl substituted second quaternary ammonium compound into such a composition was deemed by the opposition division to be normal practice obvious to the skilled person in the light of the cited prior art, *inter alia* D1, D2, D14 and D15, when attempting to solve the

technical problem of providing a further or alternative composition useful in conditioning hair.

VII. The appellant (patent proprietor) lodged an appeal against that decision and submitted new evidence in the form of experimental data (D27).

In its statement setting out the grounds of appeal the appellant stated that it was maintaining the main request and the five auxiliary requests as considered by the opposition division during the oral proceedings held on 15 July 2010. A copy of those requests was enclosed with the statement setting out the grounds of appeal. The appellant furthermore requested that it be allowed during the appeal proceedings to limit any one or all of those claim requests by changing "composition" in the first line of each claim to "leave-on conditioner composition". The appellant invited the board to consider that amendment, should the board decide that it would assist in showing that the claims were inventive.

Since all the written claim requests on file contained handwritten corrections, the appellant later filed typed-out versions for better legibility (see the appellant's submissions of 14 November 2012 and of 31 December 2012).

VIII. In their written replies the respondents (opponents) invoked lack of novelty of the compositions claimed in the main request and first auxiliary request over composition CD-105 of D13 as well as lack of inventive step of the subject-matter of all requests, and

objected under Article 123(2) EPC to the amendments introduced with the fourth and fifth auxiliary requests.

- IX. Oral proceedings before the board took place on 15 January 2013, during which the issue of inventive step was discussed with regard to all requests.

At the oral proceedings the appellant again invited the board to consider its requests not only in the written form on file but also in the amended version in which "composition" was replaced by "leave-on conditioner composition". The appellant did not however formally file written requests incorporating the said amendment. The respondents (opponents) stated in response to a question from the chairman of the board that they did not object to proceeding in that manner. The board therefore accepted that the written requests on file could be considered, in the alternative, in that amended version.

- X. The appellant argued as follows:

Main request

The problem to be solved by the patent in suit was the provision of a leave-on hair conditioning composition meeting the requirements mentioned in paragraphs [0022] to [0027] of the patent specification. The composition should accordingly impart manageability, softness and shine to hair, not leave appreciable residue on the hair, be mild and non-irritating, be stable and have a low viscosity permitting application from a spray dispenser.

The starting point in the closest prior-art document D13 for the assessment of inventive step should be example composition "SP-104" described on page 5 rather than composition "CD-105" on page 4 of that document.

Since D13 did not mention any properties or effects of composition CD-105 except that it was "opaque", it was only with hindsight in the knowledge of the invention that CD-105 could have been considered as a starting point for the formulation of leave-on type hair conditioners. Composition CD-105 was even unsuitable for leave-on use, because due to its ingredients it would leave unacceptable residue on hair and was also too viscous for application from a spray dispenser.

SP-104 of D13 was a clear conditioning shampoo containing behenamidopropyl PG dimonium chloride as the alkylamido-substituted quaternary ammonium compound. The compositions of the patent in suit differed from that composition in that they contained a silicone compound. That modification was not obvious, since D13 did not contain any teaching about silicone compounds.

Even if the board chose for its starting point composition CD-105, which contained 2.50% by weight Silicone SF96-100, regarded the restriction of the concentration of the silicone compound to 2.00% or less as the only distinguishing feature of the claimed compositions, and defined the objective technical problem as the provision of an alternative hair conditioning composition, the claimed composition would still be inventive. Starting from composition CD-105, the skilled person would not have opted to reduce the concentration of silicone, since neither D13 nor any

other prior-art document provided any incentive for doing so. Documents D1, D2 and D5, cited in this context by the respondents, actually taught broad concentration ranges up to 20% by weight for silicone compounds. The skilled person could have reduced the concentration of the silicone compound, but would not have contemplated doing so in order to obtain an alternative composition providing the same level of hair conditioning benefits.

First to fifth auxiliary requests

With regard to the first auxiliary request, the appellant relied on the same arguments as with regard to the main request.

With regard to the second, third and fifth auxiliary requests, the appellant held moreover that reducing the upper limit to 1% by weight, which meant more than halving the concentration of silicone compound present in composition CD-105 of D13, would result in a rather different composition and was even less obvious than setting the upper limit at 2% by weight. The fact that some prior-art disclosures mentioned concentrations of 1% silicone or less in hair care formulations did not make it obvious to use such low levels in connection with the composition of D13.

As far as the C₂₀-C₂₂ alkyl or alkenyl substituted second quaternary ammonium compound as defined in the fourth and fifth auxiliary requests was concerned, document D13 contained no suggestion to employ such compounds or to replace the stearalkonium chloride in composition CD-105. The skilled person assuming that CD-105 was a

satisfactory conditioner would not have modified any of its features for fear of negatively affecting its performance. Long-chain substituted quaternary compounds were known from D5, which described the commercially available material Incroquat Behenyl TMS containing behentrimonium methosulfate. In accordance with the teaching of D5 that that material was capable of incorporating high levels of silicones into emulsions, the skilled person employing long-chain alkyl substituted quaternary compounds would have increased the concentration of silicone compounds rather than decreasing it.

Modified requests directed to "leave-on conditioner" compositions

The proposed amendment made it even clearer that the claimed compositions had to meet all the criteria mentioned in the description, in particular in connection with leave-on compositions, *inter alia* that they should not leave appreciable residue on the hair and should have a low viscosity to permit application from a spray dispenser. Those compositions were therefore very different from prior-art composition CD-105 of D13, which was viscous and contained components rendering it unsuitable for leave-on use.

It would not have been obvious to the skilled person aiming to produce a leave-on hair conditioner to start from composition CD-105 of D13, reduce the amount of silicone and remove all components which could render the composition opaque, leave an undesirable residue on the hair and increase the viscosity of the composition.

XI. The respondents argued as follows:

Main request

The claimed compositions were defined only by their components: the first quaternary ammonium compound and the specific mandatory silicone compound. They were not further restricted by any technical features concerning the effect or purpose of the compositions, viscosity requirements or the absence of certain ingredients such as opacifying agents. The most appropriate starting point in the closest prior-art document D13 was composition CD-105 on page 4, which contained both of the required mandatory components and which was intended for conditioning hair. Assuming that the concentration of dimethicone in composition CD-105 could not be established, the sole difference in the claimed composition over CD-105 was the restriction of the silicone concentration to a maximum of 2.00% by weight. Since no unexpected technical effect was linked to this difference, the objective technical problem was the provision of an alternative hair conditioning composition. The skilled person was aware that silicone compounds were hair conditioning agents which could be employed at a wide range of concentrations, typically also at 2% by weight or less, as confirmed by the teaching of documents D1, D2 or D5. Hence it would be obvious to the skilled person to vary the silicone concentration in order to solve the technical problem.

First to fifth auxiliary requests

The second quaternary compound as defined in claim 1 of the first auxiliary request was not a distinguishing

feature over composition CD-105 of D13, which contained stearalkonium chloride. The argumentation with regard to this request was the same as for the main request.

As confirmed by D1, D2 and D5, silicone concentrations of 1% by weight and less were routinely employed in hair conditioners, so that this feature of claim 1 of the second, third and fifth auxiliary requests, without evidence of an unexpected technical effect, could not contribute anything to inventive step.

Nor had the presence of the long-chain substituted second quaternary ammonium compound as defined in the claims of the fourth and fifth auxiliary requests been shown to provide any unexpected technical effect. Such compounds were known to the skilled person, as shown by documents D5 or D14, both disclosing behenyl trimonium methosulfate as a useful hair conditioning agent.

In the case of each auxiliary request, the objective technical problem was, again, the provision of an alternative hair conditioning composition, solved in each case by routine modifications which did not involve an inventive step, viz. varying the silicone concentration and/or incorporating a known second quaternary ammonium hair conditioning agent.

Modified requests directed to "leave-on conditioner" compositions

The term "leave-on conditioner" had no technical meaning and did not impose any limitations on the scope of the composition claims. Said scope was defined only by the mandatory ingredients explicitly indicated in

those claims. The appellant had not presented any conclusive evidence showing that prior-art composition CD-105 of D13 was unsuitable for leave-on application. In particular, no evidence had been provided to show that hydroxyethyl cellulose or hydrolysed protein as used in that composition would produce undesirable build-up on the hair fibres. Nor did the terms of the modified composition claims impose any restrictions on the viscosity of the compositions. Thus, composition CD-105 still represented the most appropriate starting point in document D13, and the assessment of inventive step was therefore the same as for the main request and first to fifth auxiliary requests.

XII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or the first to fourth auxiliary requests filed on 14 November 2012 or the fifth auxiliary request filed on 31 December 2012, or on the basis of the same requests wherein "composition" in the first line of each claim was replaced by "leave-on conditioner composition" as announced in the statement setting out the grounds of appeal.

XIII. The respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. Main request - inventive step

2.1 The patent in suit relates to compositions which are useful in conditioning and detangling hair, and which may be used in rinse-off products or in leave-on products (see the patent specification, paragraphs [0001]-[0002]). The compositions are intended to provide manageability, softness and shine to the hair. To solve the underlying problem of providing such compositions, the claims of the main request define a composition comprising (A) 0.01 to 2.0% by weight of a specified first quaternary ammonium compound having a long-chain alkylamido substituent and (B) 0.01 to 2.00% by weight of a silicone compound selected from dimethicones, cyclomethicones and mixtures thereof.

Closest prior art

2.2 The closest prior art for the purpose of assessing inventive step is generally that which is directed to the same or a similar purpose or technical effect and which requires the minimum of structural and functional modifications to arrive at the claimed subject-matter (Case Law of the Boards of Appeal of the European Patent Office, 6th edition 2010, I.D.3.1).

2.3 All parties to the appeal proceedings were in agreement that document D13 constituted the closest prior art. The board sees no reason to select a different document. D13 concerns the hair care agent behenamidopropyl PG dimonium chloride, which is a long-chain alkylamido-substituted quaternary ammonium compound conforming to formula "B" of dependent claim 3 of the main request, in its commercially available form Lexquat AMG-BEO

(i.e. diluted with water). D13 discusses the properties of that agent and describes three example compositions containing it.

2.4 The parties disagreed however on the question of which of the example compositions disclosed in D13 was the most appropriate starting point within said document for the assessment of inventive step: conditioner composition CD-105 described on page 4 or conditioning shampoo composition SP-104 described on page 5. This question requires an evaluation of the two relevant aspects mentioned above (see point 2.2), i.e. the purpose/effect and technical features of the compositions.

2.4.1 According to page 1 of D13, Lexquat AMG-BEO has many properties which are useful in hair care formulations, and in particular it provides moderate conditioning, adds sheen and lustre to the hair, improves wet and dry combing and has a low order of Draize irritation potential. In the passage on page 2 of D13 entitled "Conditioning" it is mentioned that the conditioning properties of Lexquat AMG-BEO were evaluated by a test panel. The reader of D13 would therefore understand from the general context which is established in that document that the conditioning compositions shown on pages 3 to 5 of D13 (each designated as "conditioner" or "conditioning") are intended to illustrate the title ingredient's application as a conditioning agent in hair care products, and that Lexquat AMG-BEO is accordingly employed to impart the aforementioned useful conditioning properties to each of the suggested example compositions. Thus, the example compositions presented in D13 are in fact directed to the same

purpose as the compositions of the patent in suit, viz. to provide the said hair conditioning benefits. All three compositions are on the same level with regard to this first aspect. In view of this, the explicit statement at the top of page 5 indicating that composition SPF-104 features improved softness and shine with easier comb-out does not add any new information.

- 2.4.2 With regard to the technical features, or the second relevant aspect, composition CD-105 described on page 4 is the only example composition of D13 which contains a silicone material, viz. Silicone SF96-100 by General Electric. It was furthermore not contested among the parties that said commercially available silicone material SF96-100 contains dimethicone, which is a mandatory silicone as required by the present claims. CD-105 is therefore the composition which requires the minimum of structural modifications to arrive at the claimed subject-matter, and is thus deemed to be the most appropriate starting point in document D13 for the purpose of assessing inventive step.

Additional arguments of the appellant

- 2.5 The appellant argued that composition CD-105 of D13 was unsuitable for leave-on application and would therefore not have been selected by the skilled person as a starting point for the preparation of a leave-on conditioner composition, for the following reasons: First, the composition would leave an unacceptable residue on hair because it was opaque and contained insoluble components, in particular hydroxyethyl cellulose (Natrosol 250HHR CS present at 0.90% by

weight) and hydrolysed animal protein (Lexein X250 present at 0.10% by weight). Second, the composition was also unsuitable for application from a spray dispenser because of its high viscosity, measured as described in D27 for sample No. 11948-072, which closely reproduced composition CD-105 of D13.

- 2.5.1 This argument cannot succeed, since the scope of the claimed compositions is restricted neither to "leave-on" type compositions nor to compositions having a low viscosity, and it is also made clear in the patent specification that the compositions of the invention may be used in rinse-off products, even if leave-on products are preferred (see the patent specification, paragraph [0002]). As a consequence, the said restrictions cannot be taken into account because they are not reflected in the technical features of the claimed compositions at all. The skilled person would not be obliged to start out specifically from leave-on type compositions having a low viscosity, so the appellant's argument must fail for this reason alone.
- 2.5.2 Nor, in fact, has the appellant provided conclusive evidence of the starting composition's alleged lack of suitability for leave-on application.

(a) Composition CD-105 of D13 is described as "opaque" and contains components such as hydroxyethyl cellulose or hydrolysed protein, which may be deposited on hair fibres. In the absence of any experimental evidence, however, no conclusion can be drawn as to whether such a composition would leave unacceptable levels of visible residue on the hair, or of residue which might

in other ways diminish the desired conditioning effects.

(b) D27 reports viscosity measurements intended by the appellant to show that composition CD-105 of D13, reproduced in D27 by sample No. 11948-072, presents a high viscosity making the composition unsuitable for application from a spray dispenser. In view of the fact that the general concept of leave-on application is not necessarily restricted to the application of low-viscosity fluids from a spray dispenser, this argument is however irrelevant. It is conceivable that a leave-on conditioning composition could be viscous and could be applied to the hair by other means than by spraying, or applied after dilution to a lower viscosity.

Objective technical problem

2.6 Composition CD-105 on page 4 of D13 is a conditioner composition comprising 3.00% by weight Lexquat AMG-BEO. According to the information "23% min. activity" and "28-32% solids" on page 1 of D13 this corresponds to between 0.7% and 1% of behenamidopropyl PG dimonium chloride, a quaternary compound conforming to formula "B" as defined in claim 3 of the main request. The concentration requirement of 0.01% to 2.0% by weight of the first quaternary ammonium compound is therefore deemed to be met. The composition furthermore comprises 2.50% by weight silicone SF96-100, which contains dimethicone in conformity with the definition of the mandatory silicone compound of claim 1 (see point 2.4.2 *supra*).

- 2.7 The concentration of dimethicone in component SF96-100 as used in composition CD-105 is however not indicated in document D13. Inventive step is assessed on the assumption, in favour of the appellant, that the concentration of dimethicone in composition CD-105 cannot be conclusively established to be at 2.00% by weight or lower. If that is the case, the claimed embodiment of the composition of the patent in suit containing the alkylamido-substituted quaternary ammonium compound of formula "B" differs from composition CD-105 only in the feature of the concentration range of 0.01 to 2.00% by weight defined for the mandatory silicone compound.
- 2.8 The patent in suit does not attribute any particular technical effect to the specified concentration range of the mandatory silicone compound. Nor has the appellant provided any evidence regarding the influence of that feature on the properties of the compositions. The test reported in D27 does not examine the influence of the silicone concentration. In the absence of any pertinent data, the board must conclude that the chosen concentration range of the mandatory silicone compound has not been shown to provide any unexpected advantage. Nor has it been shown to produce compositions with at least the same level of conditioning benefit as the composition of the closest prior art, across the entire claimed scope.
- 2.9 In the absence of any evidence of an unexpected technical effect, the objective technical problem when starting from the teaching of D13 may therefore be defined as the provision of a further hair conditioning composition containing a long-chain alkylamido-

substituted quaternary ammonium compound. In view of the conclusion reached in the preceding paragraph, the "further" composition is not an alternative required to provide the same level of conditioning properties as the closest prior-art composition, but merely a novel composition suitable for conditioning hair.

Obviousness of the solution

2.10 The objective technical problem of providing a further hair conditioning composition was solved by defining the concentration of the mandatory silicone compound as being in a range of 0.01% to 2.00% by weight.

2.11 As defined in claim 1, the mandatory silicone compound is selected from dimethicones, which are a mixture of fully methylated linear siloxane polymers end blocked with trimethylsiloxy units; cyclomethicones, which are cyclic dimethyl polysiloxane compounds having from 3 to 6 silicon atoms; and mixtures thereof.

2.12 Linear or cyclic fully methylated polysiloxanes as defined in claim 1 of the main request are well-known ingredients of hair care products, also known to provide hair conditioning benefits such as better combing and feel. Their use, at variable concentration levels, in hair conditioning compositions in combination with cationic conditioning agents was also known, as evidenced by prior-art documents D1 (see claim 1, page 2: lines 47 to 52, page 9: line 47 to page 10: line 25), D2 (see claim 1, column 10: line 45 to column 11: line 52) and D5 (see page 4). Reference is made in particular to D1, disclosing concentrations of from 0.1% by weight (see claim 1), 0.1% to 2% and

0.2 to 1% by weight (see page 9, lines 47 to 48) and 0.2% by weight (see example formulations) and to D2, disclosing concentrations of 0.5-5% by weight, 1-4% by weight (see column 10: lines 45 to 47), and 1% or 2% by weight (see the example formulations in table 1). The concentration of the dimethicone ingredient used in D5 is 0.5% by weight (see page 4).

- 2.13 The fact that document D14, which concerns both hair care and skin care applications, discloses silicone concentrations of 0.5% and 20% in two example formulations, neither of which is unambiguously intended for hair care (see formula 1 and formula 2 on page 69 of D14), would not be interpreted by the skilled person as a teaching in favour of only employing high levels of silicones in hair care applications.
- 2.14 Thus the selected concentration range of 0.01% to 2.00% by weight reflects typical concentrations of dimethicone and cyclomethicone as conventionally employed in hair conditioning compositions. The proposed solution is therefore deemed to be a routine modification which would have been obvious to the person skilled in the art seeking to provide further hair conditioning compositions.
- 2.15 As a consequence, the composition defined in the main request does not involve an inventive step within the meaning of Article 56 EPC.

3. First auxiliary request
 - 3.1 The presence of the second quaternary ammonium compound as defined in claim 1 of the first auxiliary request is not a distinguishing feature over composition CD-105 of D13, which contains stearylalkonium chloride ($R_6 = \text{octadecyl}$, $R_7 = \text{methyl}$, $R_8 = \text{methyl}$, $R_9 = \text{benzyl}$, $A_2^- = \text{chloride}$) in the component Varisoft SDC, which is present at 1.50% by weight.
 - 3.2 Since the concentration of stearylalkonium chloride in Varisoft SDC has not been established, it cannot be ruled out that the concentration in composition CD-105 of behenamidopropyl PG dimonium chloride and of stearylalkonium chloride together may be higher than 2.0% by weight. Hence it may be assumed that the concentration range of 0.01% to 2.0% by weight fixed for the first and second quaternary ammonium compounds together could be a distinguishing feature of the claimed composition over composition CD-105.
 - 3.3 No unexpected technical effect has however been linked to the selection of that concentration range, which must therefore be regarded as an arbitrary modification. In consequence, the introduction of that feature cannot affect the definition of the objective technical problem, nor does it require inventive skill. Any arbitrary modification without a particular technical effect would be an obvious measure for providing a further hair conditioning composition.
 - 3.4 The concentration range of the mandatory silicone compound is 0.01% to 2.00% by weight as in the main request, and does not involve an inventive step for the

same reasons as explained above in connection with the main request.

3.5 Hence the composition defined in the first auxiliary request does not involve an inventive step within the meaning of Article 56 EPC.

4. Second auxiliary request

4.1 Further narrowing the concentration range for the mandatory silicone compound to 0.05 to 1.0% by weight does not change the situation discussed above in the context of the main request (see in particular points 2.10 to 2.14 *supra*), since concentrations of 1.0% and lower are equally typical concentrations of dimethicone and cyclomethicone, as conventionally employed in hair conditioning compositions.

4.2 Hence the composition defined in the second auxiliary request does not involve an inventive step within the meaning of Article 56 EPC, for the same reasons as explained in connection with the main request.

5. Third auxiliary request

5.1 The third auxiliary request combines the amendments introduced into the first and second auxiliary requests regarding the presence of a specified second quaternary ammonium compound and associated concentration requirement for the quaternary compounds, and the concentration range of 0.05% to 1.0% by weight defined for the mandatory silicone compound. It has been neither alleged nor shown that those technical features could interact to provide a surprising technical effect.

Since the amendments in question must therefore be considered to be independent of one another, their combination does not create a new situation with regard to the assessment of inventive step. Arbitrary measures within the scope of the normal routine practice of the skilled person are regarded as obvious for solving the problem of providing further hair conditioning compositions, as explained above in the context of the first and second auxiliary requests.

5.2 As a consequence, the composition defined in the third auxiliary request does not involve an inventive step within the meaning of Article 56 EPC.

6. Fourth auxiliary request

6.1 The presence of a second quaternary ammonium compound as defined in the fourth auxiliary request, with R_6 being an alkyl or alkenyl group having from 20 to 22 carbon atoms, is a distinguishing feature over composition CD-105 of D13.

6.2 Such compounds were however known to the skilled person as useful hair conditioning agents, as evidenced by prior-art documents D5 or D14, both concerning behentrimonium methosulfate. That compound conforms to the formula of the second quaternary ammonium compound as defined in the fourth auxiliary request, with R_6 being behenyl and each of R_7 , R_8 and R_9 being methyl. According to D5, behentrimonium methosulfate confers excellent detangling properties to hair care products, is exceptionally mild and leaves a softer feel and greater sheen in comparison to stearylalkonium chloride (see D5: page 1, paragraphs 1 to 3). According to D14

(see page 68, column 2, lines 17 to 38) behentrimonium methosulfate is a conditioning agent which may be applied in hair conditioners and cream rinses, and successful commercial products based on this ingredient include a detangler solution and a detangler/instant conditioner. Although behentrimonium methosulfate is capable of emulsifying large quantities of silicone, it can also be used with low concentrations of silicone, so D5 and D14 do not in fact teach combining this ingredient only with high silicone levels.

- 6.3 No unexpected technical effect is linked to the introduction of this feature, hence the formulation of the objective technical problem remains the same as before.
- 6.4 Including a known hair conditioning ingredient in order to provide a further hair conditioning composition is a routine measure obvious to the skilled person.
- 6.5 The concentration requirement that the first and second quaternary ammonium compound together must comprise between 0.01% to 2.0% by weight of the composition, also present in the composition claims of the fourth auxiliary request, has not been linked to any unexpected technical effect. It is therefore, again, regarded as an arbitrary feature which cannot change the situation with regard to inventive step.
- 6.6 As a consequence, the composition defined in the fourth auxiliary request does not involve an inventive step within the meaning of Article 56 EPC.

7. Fifth auxiliary request
 - 7.1 The fifth auxiliary request combines the amendments from the second and fourth auxiliary requests.
 - 7.2 In the absence of any evidence to the contrary, the several amended features of the fifth auxiliary request are regarded as separate independent technical features. As explained above in the context of the second and fourth auxiliary requests, none of those features involves an inventive step. Since the amendments are independent of one another, their combination proposed in the fifth auxiliary request does not create a new situation regarding the assessment of inventive step.
 - 7.3 As a consequence, the composition defined in the fifth auxiliary request does not involve an inventive step within the meaning of Article 56 EPC.
8. Assessment of all requests on the assumption that "composition" in the first line of each claim was changed to "leave-on conditioner composition"
 - 8.1 Although the board accepted, in the present instance, that the written requests on file could be considered, in the alternative, in the proposed amended version (see point IX *supra*), it wishes to point out that parties to proceedings should as a rule always file formal written requests. If they wish to have different versions of their requests considered they should put all the versions forward in the form of separate written requests, which the board may then consider one by one. That corresponds to the normal practice before the boards of appeal and is desirable on grounds of

clarity. That applies in particular to requests by an applicant or patent proprietor inviting a board to grant or maintain a patent on the basis of one of a number of alternative versions of the claims. Confusion is likely to be engendered if the claims are to be assessed, not just on the basis of the written version, but also on the alternative basis that certain words may be added, deleted or modified. In the present case the board decided, exceptionally, to consider the alternative wording proposed by the appellant because, first, the respondents did not object and, second, the issues raised were relatively straightforward and uncomplicated.

- 8.2 According to the usual understanding of the skilled person, a leave-on conditioner composition provides at least one conditioning benefit to the hair and is suitable for remaining on the hair after application without the need for rinsing/removal of the composition.

Any further properties and features mentioned only in the description but not in a claim definition cannot be regarded as limiting mandatory technical features of the claimed compositions.

Due to their mandatory ingredients (quaternary ammonium compound(s) and silicone compound) the claimed compositions provide hair conditioning benefits.

- 8.3 In consequence, the proposed amendment of "composition" to "leave-on conditioner composition" does not have the effect of limiting the claimed scope by any concrete technical features, except for excluding compositions

clearly unsuitable to remain on the hair and scalp (e.g. oxidative hair-dye compositions).

- 8.4 With regard to the selection of a starting point in the closest prior art, the situation does not change.

The skilled person would not select a shampoo composition as a starting point for developing a leave-on product. Thus, composition CD-105 in D13, which is designated a "conditioner" and does not contain typical cleansing surfactants, is a more plausible starting point than composition SP-104, which is a shampoo.

As already explained in point 2.5.2 *supra*, the appellant has moreover failed to prove its allegation that composition CD-105 contained elements which would render it clearly unsuitable for leave-on application.

Hence, the most appropriate starting-point for the assessment of inventive step is, once more, the conditioner composition CD-105 in document D13, which is deemed to be a hair conditioning composition suitable for leave-on use.

- 8.5 The objective technical problem is, accordingly, the provision of a further leave-on hair conditioning composition containing a long-chain alkylamido-substituted quaternary ammonium compound.

- 8.6 On this basis, the board's assessment regarding inventive step is not affected by the proposed amendment and remains the same as explained in

connection with the main request and first to fifth auxiliary requests (see points 2 to 7 *supra*).

8.7 As a consequence, none of the six written requests on file would become inventive on the assumption that "composition" in the first line of each claim was changed to "leave-on conditioner composition".

9. In view of these findings, the board is not required to take a decision on the issue of novelty or added subject-matter or to analyse the independent claims directed to a dispenser package or to a method of conditioning or detangling hair.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

S. Fabiani

J. Riolo