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Datasheet for the decision of 9 July 2013

Case Number: T 0875/10 - 3.3.10

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Language of the proceedings: EN

Title of invention:
Thickened hair colourant and bleaching compositions

Applicant:
The Procter & Gamble Company

Headword:
Thickened hair compositions / The Procter & Gamble Company

Relevant legal provisions:
EPC Art. 56

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T 0020/81, T 0197/86

Catchword:

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Case Number: T 0875/10 - 3.3.10

D E C I S I O N
of Technical Board of Appeal 3.3.10
of 9 July 2013

Appellant: (Applicant)	The Procter & Gamble Company One Procter & Gamble Plaza Cincinnati, OH 45202 (US)
Representative:	Boubel, Thomas Procter & Gamble Service GmbH Patent Department Berliner Allee 65 64274 Darmstadt (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 9 November 2009 refusing European patent application No. 05023909.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: P. Gryczka
Members: J.-C. Schmid
C. Schmidt

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division refusing European patent application No. 05023909.4 (European publication No. 1 669 105).

II. The decision under appeal was based on the claims according to the then pending request filed on 21 March 2007. The Examining Division found that the subject-matter claimed lacked inventive step in view of document

(3) US-A-2004/019980,

which represented the closest prior art document. The sole difference between the compositions disclosed in examples 3 to 5 of document (3) and those claimed was the melting point of the surfactant/amphiphile having an HLB of 6 or less. The problem underlying the application was to provide alternative hair colouring or bleaching compositions, since the Applicant filed no comparative tests comparing the claimed compositions with those of document (3). The solution of replacing the thickener by another suggested in document (3) was obvious because the skilled person did not need more incentive for replacing one thickener with another than a list of equivalent alternatives, as provided in paragraph [331] on page 7 of document (3). The claimed compositions were therefore obvious in the light of document (3).

III. With the statement of grounds of appeal, the Appellant (Applicant) filed the results of tests comparing the properties of a composition reflecting document (3) with a composition of claim 1 to show that the claimed compositions had a stable thickening system with creamy

consistency and hence a superior performance compared to those exemplified in document (3).

IV. With a communication accompanying the summons for oral proceedings to be held on 9 July 2013, the Board informed the Appellant *inter alia* that the comparative tests did not show that a technical problem based on this superior performance was solved across the whole breadth of claim 1, since the comparison with the composition reflecting document (3) was not carried out with the structurally closest composition of the invention.

V. On 13 June 2013, the Appellant filed an extract from the Personal Care Products Council Ingredient Database (document (4)) to show that the compound dihydroxyethyl soyamine present in the exemplified compositions of document (3) was a hair conditioning agent and hence not a surfactant.

It furthermore filed a new main request in order to clarify that claim 1 originated from the combination of claims 1 and 11 of the application as filed, as well as five auxiliary requests. Independent claim 1 of the main request read as follows:

"1. A hair colouring or bleaching composition comprising:

i) at least 0.25 mole/l of a source of carbonate, carbamate, hydrogencarbonate or peroxymonocarbonate ions and mixtures thereof,
ii) at least one oxidizing agent and:
iii) at least one gel network thickener system comprising at least one surfactant or amphophile having

an HLB of 6 or less and a melting point of at least 30°C and further comprising:

A) at least one surfactant selected from:

a) anionic surfactants according to the formula RnXmYM, wherein R is independently selected from alkyl, alkenyl or alkylaryl groups having from 8 to 30 carbon atoms, X is independently selected from polar groups comprising at least one carbon atom and at least one oxygen or nitrogen atom, Y is an anionic group selected from carboxylates, sulphates, sulphonates or phosphates, n and m are independently 1 or 2, and M is hydrogen or a salt forming cation and mixtures thereof;

b) non-ionic surfactants having an HLB of 7 or more, and comprising one or more polyethyleneoxide chains, wherein each polyethyleneoxide chain has on average at least 50 ethylene oxide units and mixture thereof;

c) non-ionic surfactants having an HLB of 7 or more, which are free of polyethyleneoxide chains and mixtures thereof;

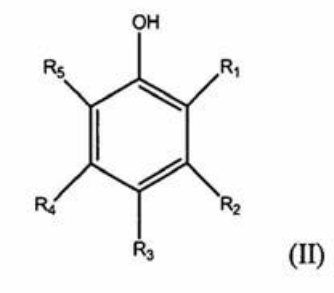
d) cationic surfactants selected from quaternary ammonium salts or amido-amines having at least one fatty chain comprising at least 20 carbon atoms and mixture thereof; and

wherein said composition comprises less than 0.1% by weight of radical scavengers, wherein said radical scavenger is defined according to formula (I):

R^1-Y-C(H)(R^3)-R^4-(C(H)(R^5)-Y-R^6)$_n$

wherein Y is NR^2 , O, or S, n is 0 to 2, and wherein R^4 is monovalent or divalent and is selected from: (a) substituted or unsubstituted, straight or branched, alkyl, mono- or poly-unsaturated alkyl, heteroalkyl, aliphatic, heteroaliphatic, or heteroolefinic systems, (b) substituted or unsubstituted, mono- or poly-cyclic

aliphatic, aryl, or heterocyclic systems, or (c) substituted or unsubstituted, mono-, poly-, or per-fluoro alkyl systems; the systems of (a), (b) and (c) comprising from 1 to 12 carbon atoms and 0 to 5 heteroatoms selected from O, S, N, P, and Si; and wherein R^4 can be connected to R^3 or R^5 to create a 5, 6 or 7 membered ring; and wherein R^1, R^2, R^3, R^5, and R^6 are monovalent and are selected independently from: (a), (b) and (c) described herein above, or H, formula (II):



(II)

wherein R_1, R_2, R_3, R_4, and R_5 are each independently selected from H, COO^-M^+ , Cl, Br, $SO_3^-M^+$, NO_2, OCH_3, OH or a C_1 to C_{10} primary or secondary alkyl and M is either H or alkali metal, and the group (III) benzylamine, imidazole, di-tert-butylhydroxytoluene, hydroquinone, guanine, pyrazine, piperidine, morpholine, methylmorpholine, 2methyoxyethylamine, and mixtures thereof or

B) at least one alkyl ether phosphate having from 1 to 5 ethylene oxide units."

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the oxidizing agent is a water-soluble peroxygen oxidizing agent.

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the A) at least one surfactant is only selected from anionic surfactants defined under

a) in claim 1 of the main request, i.e. the alternative surfactants defined under b), c) and d) are deleted.

Claim 1 of auxiliary request 3 differs from claim 1 of auxiliary request 2 in that the at least one surfactant having an HLB of 6 or less is selected from fatty alcohols comprising from about 14 to 30 carbon atoms, oxyethylenated fatty alcohols comprising from 16 to 30 carbon atoms and 2 units or less of ethylene oxide, glycerol fatty acid esters comprising from 14 to 30 carbon atoms and mixtures thereof and that the at least one surfactant is selected from anionic surfactants defined under A) as in the auxiliary request 2, i.e. the surfactants defined under B) are deleted.

Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 3 in that said anionic surfactant is selected from alkyl ether phosphates, alkyl ether sulphates, alkyl glyceryl sulphonates, N-acyl amino acid derivatives, N-acyl taurates; acyl lactylates; carboxyalkyl ether of alkyl polyglucosides and mixture thereof.

Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 4 in that in that the at least one surfactant having an HLB of 6 or less is selected from fatty alcohols comprising from about 14 to 30 carbon and said anionic surfactant was selected from C_8-C_{30}-alkyl ether phosphate.

VI. According to the Appellant document (3) was the closest prior art. Dihydroxyethyl soyamine dioleate present in the compositions exemplified in document (3) was not a surfactant, but was a hair conditioning agent as illustrated by document (4). The problem underlying the patent application was the provision of a creamy

thickened composition having improved stability in term of viscosity. The compositions of document (3) did not form stable thickened gel network, whereas the claimed composition did. The comparative tests filed with the letter dated 9 March 2010 compared the rheological properties of a composition according to example 3 with those of a composition according to claim 1, wherein the surfactants and solvents present in the composition of document (3) were removed and replaced by the surfactant system of the invention. The composition according to the invention was a thick cream which was stable after one week at room temperature. On mixing with the developer composition, the final composition maintained its thick and creamy appearance and its viscosity. The composition of example 3 was a thin orange solution which underwent separation within a 24 hours period and thus considered unstable. On mixing with the developer composition, the final composition did not form a thickened gel network composition. The improvement reached with the claimed compositions was unexpected.

Hence the claimed subject-matter involved an inventive step.

VII. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims according to the main request, or subsidiarily according to one of the auxiliary request 1 to 5, all requests filed on 13 June 2013.

VIII. At the end of the oral proceedings held on 9 July 2013 the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Inventive step

2. Closest prior art

The Board considers, in agreement with the Examining Division and the Appellant, that document (3) represents the closest state of the art to the invention, and, hence, takes it as the starting point in the assessment of inventive step.

2.1 Document (3) discloses a hair colouring composition obtained by mixing two compositions just prior to application to the hair. The first composition (a) comprises a water-soluble peroxygen oxidizing agent and the second composition (b) comprises oxidative dyes and at least one water soluble carbonate releasing salt, and optionally, a water soluble ammonium salt (see claim 1). The oxidizing agent may be sodium percarbonate (see claim 2); the water soluble carbonate releasing salt may be a carbonate or a hydrogenocarbonate (claim 6); the water-soluble ammonium salt may be ammonium carbonate or ammonium carbamate (see claim 7). The hair colouring composition may further comprises 0.05 to 20% of a thickener and 5 to 40 % of surfactant (example 1, claim 8). The thickener may be cetyl alcohol, cetearyl alcohol, stearyl alcohol (see paragraph [0031] on page 7). These alcohols are indicated in the present patent application to be suitable low HBL surfactants or amphophiles with an HLB of 6 or less and a melting point of at least 30°C (see page 15, lines 21 to 23 of

the application as filed). The surfactant may be anionic, cationic or non-ionic and have a lipophilic chain of from 8 to 22 carbon atoms, for example dihydroxyethyl soyamine dioleate or PEG3 cocoamine, which are both non-ionic surfactants (PEG3 cocoamine is an alkylamine compound substituted with $-CH_2CH_2O-CH_2CH_2OH$ and with CH_2CH_2OH) (see examples 2 to 6 on pages 7 and 8). Document (3) does not require the presence of a radical scavenger, however 0.01 to 3% of an antioxidant may be present in the colouring composition (example 1), e.g. sodium isoascorbate (examples 2 to 6).

2.2 The dye formulation of example 3 of document (3) comprises 6% by weight of ammonium carbonate, (0.62 moles/l), corresponding to 0.41 mole/l of the final hair colouring composition wherein the dye formulation is mixed in a 2:1 ratio with the developer solution containing the oxidizing agent (see paragraph [0345]). The dye formulation further comprises oleic acid which is a surfactant having an HLB of 1. The composition further comprises dihydroxyethyl soyamine dioleate and PEG3 cocoamine, which are both non-ionic surfactants (PEG3 cocoamine is an alkylamine compound substituted with $-CH_2CH_2O-CH_2CH_2OH$ and CH_2CH_2OH). The dye formulation of example 3 also comprises 0.15% by weight of sodium isoascorbate (radical scavenger) corresponding to 0.1% by weight in the final hair colouring composition.

Hence, the hair colouring composition obtained with the dye formulation of example 3 fulfils all the requirements of claim 1, except that of the structure of the surfactants.

2.3 According to the Appellant dihydroxyethyl soyamine dioleate was a hair conditioning agent, and, therefore could not be regarded as a surfactant. However, the fact that dihydroxyethyl soyamine dioleate can be utilised as a hair conditioning agent does not preclude it to be a surfactant.

A surfactant (*surface active agent)* is a substance which lowers the surface tension of the medium in which it is dissolved. This property of surface activity is usually due to the fact that the substance contains both a hydrophilic and a hydrophobic group.

Dihydroxyethyl soyamine dioleate is the diester of oleic acid and dihydroethyl soyamine. It has thus hydrophilic moieties (ester) and hydrophobic moieties (long hydrocarbyl chains). It has therefore the structural characteristics required by a surfactant. Hence, dihydroxyethyl soyamine dioleate must be regarded as a surfactant, with the consequence that the hair composition disclosed in example 3 of document (3) comprises a thickener system comprising three sufactants that are oleic acid, dihydroxyethyl soyamine dioleate and PEG3 cocamine.

Main request and auxiliary request 1

Claim 1 of auxiliary request 1 differs from claim 1 of the main request only in that the oxidizing agent is a water-soluble peroxygen oxidizing agent. As the closest prior document (3) discloses a composition comprising a water-soluble peroxygen oxidizing agent (see point 2.1 above),the assessment of inventive step below applies equally to the main request and to the auxiliary request 1.

3. Technical problem underlying the patent application

In view of document (3), the Appellant submitted during the oral proceedings that the technical problem underlying the application consisted in providing a creamy thickened composition having improved stability in term of viscosity.

4. Solution

The solution is the composition of claim 1 comprising a thickener system characterized by the choice of a particular combination of surfactants, namely of a surfactant having an HLB or 6 or less and a melting point of at least 30°C with a surfactant defined under points (A) (a), (b), (c), (d), or (B) of claim 1.

5. Success

5.1 The Appellant referred to the results of the comparative tests filed with the letter dated 9 March 2010 in order to shown that the technical problem as defined above was effectively solved by the compositions of claim 1.

The dye composition reflecting document (3) comprises 8.6% by weight of oleic acid, 22.2% by weight dihydroxyethyl soyamine dioleate, 8% by weight PE3 cocamine, all being surfactants (see point 2.2 above), 12% by weight of propylene glycol and 12,5% by weight of isopropanol, both compounds being organic solvents. This composition was compared to a composition according to claim 1 wherein the surfactants and solvents were replaced by 10% by weight of the commercial product Crodaphos CES/P&G from Croda, which is a mixture of cetearyl alcohol, dicetyl phosphate and

ceteh-10 phosphate, and completed with water. The composition of example 3 of document (3) was a thin solution which underwent separation within 24 hours, whereas the composition according to claim 1 was a stable thick cream.

5.2 According to established jurisprudence of the Boards of appeal, in the case where comparative tests are chosen to demonstrate an inventive step with an improved effect over a claimed area, the nature of the comparison with the closest state of the art must be such that the effect is convincingly shown to have its origin in the distinguishing feature of the invention, (see T 197/86, EPO OJ 1989, 371, points 6.1.2 and 6.1.3 of the reasons).

5.3 However, in the present case the claimed composition chosen for the purpose of comparison differs from the composition reflecting document (3) not only by the choice of the surfactants system, but also by the removal of the organic solvents, namely propylene glycol and isopropanol, which are replaced with water. Thus, the Appellant's comparative test does not properly demonstrate that the formation of a stable thickening system with a creamy consistency is necessarily due to the feature distinguishing the claimed composition from the closest prior art (see point 2.2 above), i.e. the choice of the specific surfactants system. In fact, the formation of a stable composition with a creamy consistency can be due to the removal of the organic solvents. The present patent application, however, explicitly foresees the presence of these organic solvents in the compositions (see page 27, lines 3 and 4 of the application as filed). The Board comes therefore at the conclusion that the comparative data provided by the Appellant does not

demonstrate that the technical problem of providing a stable thickening system with a creamy consistency has been solved across the whole breadth of claim 1, namely not for compositions comprising organic solvents such as propylene glycol or isopropanol.

The Appellant furthermore referred to the compositions disclosed in the application, in particular that of example 13, in order to show that further claimed compositions had a stable thickening system with a creamy consistency. However, the compositions disclosed in the examples of the application comprise no organic solvent, more specifically no propylene glycol and no isopropanol, and hence do not allow a fair comparison with the composition of example 3 of document (3) comprising these organic solvents.

5.4 According to the jurisprudence of the Boards of Appeal, alleged but unsupported effects cannot be taken into consideration for the determination of the problem underlying the claimed invention (see e.g. decision T 20/81, OJ EPO 1982, 217, point 3, last paragraph of the reasons).

6. Reformulation of the technical problem

Since in the present case the alleged effect, i.e. improvement stability in term of viscosity, lacks the required experimental support, the technical problem as defined at point 3 above needs to be redefined in a less ambitious way, namely in the provision of alternative hair colouring compositions.

7. Obviousness

Finally, it remains to be decided whether or not the proposed solution to this objective technical problem (see point 6 above) is obvious in view of the cited state of the art.

Document (3) discloses that the hair composition may comprise thickeners such as cetyl alcohol, cetearyl alcohol, stearyl alcohol (see page 7, paragraph [331]). These exemplified compounds are surfactants or amphiphiles having a HLB of at most 6 and a melting point of less than 30°C, as indicated in the present application (see claim 9).

Furthermore document (3) teaches that the compositions may additionally contain a surfactant system and that suitable surfactants for inclusion in the composition can be anionic, cationic or non-ionic and generally has a lipophilic chain length of from 8 to 22 atom carbon.

Thus, any such surfactant is taught to be suitable in the hair colouring compositions according to document (3). The surfactants specified in claim 1 in points (A) (a), (b), (c), (d) and B) are conventional surfactants, as recognized by the Appellant. In fact, the surfactants used in examples of the present patent application were commercially available at the filing date of the present application. For instance, anionic surfactants, such as an alkyl ether phosphates, are sold under the trade name Crodafos® SEA (see page 34, line 3 of the application as filed). The choice of conventional surfactants envisaged by the general teaching of document (3) is neither critical nor purposive for providing alternative hair colouring compositions. Thus, this choice is seen as lying within the routine activity of the skilled person faced with the objective problem of providing alternative

compositions and thus does not involve an inventive step.

8. For these reasons, the subject-matter of claim 1 of the main request and auxiliary request 1 is obvious in the light of document (3).

Auxiliary request 2

9. In claim 1 of this request, the surfactants are restricted to the anionic surfactants defined under points (A)(a) and (B), i.e. the cationic and non-ionic surfactants defined under point (A)(b), (c), and (d) have been deleted. However, claim 1 of auxiliary request 2 still encompasses compositions comprising organic solvents, with the consequence that it is still not credible that the technical problem of improving stability in term of viscosity has been solved across the whole scope of claim 1. Accordingly, the technical problem underlying the patent application remains that of providing alternative hair colouring compositions.

The solution is the composition of claim 1 of auxiliary request 2 comprising a thickener system characterized by the combination of a surfactants having an HLB or 6 or less and a melting point of at least 30°C with another surfactant defined under points (A) (a), or (B) of claim 1.

These anionic surfactants, still include alkyl ether phosphate which were commercially available at the filing date of the application and which are taught to be suitable in the composition of document (3) (see point 7 above).

Therefore, the considerations having regard to the obviousness of the claimed subject-matter given in point 7 above and the conclusion drawn in point 8 above with respect to the main request still apply to this request as well, i.e. the subject-matter of claim 1 of auxiliary request 2 is obvious and does not involve an inventive step.

Auxiliary request 3

10. In claim 1 of the auxiliary request 3, the "at least one surfactant or amphiphile having an HLB of 6 or less and a melting point of at least 30°C" has been restricted to specific surfactants and the surfactants defined under B) are deleted. Claim 1 of auxiliary request 3 still encompasses compositions comprising organic solvents, with the consequence that it is still not credible that the technical problem of improving stability in term of viscosity has been solved across the whole scope of claim 1. Accordingly, the technical problem underlying the patent application remains that of providing alternative hair colouring compositions. The solution is the composition of claim 1 of auxiliary request 3 comprising a thickener system characterized by the combination of a surfactants having an HLB or 6 or less and a melting point of at least 30°C selected from fatty alcohols comprising from about 14 to 30 carbon atoms, oxyethylenated fatty alcohols comprising from 16 to 30 carbon atoms and 2 units or less of ethylene oxide, glycerol fatty acid esters comprising from 14 to 30 carbon atoms and mixtures thereof with another surfactant defined under points (A) (a) of claim 1.

Document (3) discloses that the hair composition may comprise as thickeners cetyl alcohol, oleyl alcohol,

cetearyl alcohol of stearyl alcool. Those alcohols are fatty alcohols comprising from about 14 to 30 carbon atoms wich fall under the surfactants having an HLB or 6 or less and a melting point of at least 30°C now specified in claim 1 of auxiliary request 3.

The restriction of the surfactant or amphiphile having an HLB of 6 or less and a melting point of at least 30°C to surfactants which include surfactants specifically disclosed in document (3), cannot render the claimed compositions non-obvious over document (3).

Accordingly, the subject-matter of claim 3 also lacks an inventive step.

Auxiliary requests 4

11. In auxiliary requests 4 the anionic surfactants have been furthermore limited to particular anionic surfactants comprising alkyl ether phosphates and to specifically C_8-C_{30} alkyl ether phosphates respectively. However, claim 1 of auxiliary request 4 still encompasses compositions comprising organic solvents, with the consequence that it is still not credible that the technical problem of improving stability in term of viscosity has been solved across the whole scope of claim 1 (see point 5 above). Accordingly, the technical problem underlying the patent application remains that of providing alternative hair colouring compositions.

The solution is the composition of claim 1 of auxiliary request 4 comprising a thickener system comprising a surfactant having an HLB of 6 or less and a melting point of at least 30°C and an anionic surfactant, characterized in that the anionic surfactant is selected from alkyl ether phosphates, alkyl ether

sulphates, alkyl glyceryl sulphonates, N-acyl amino acid derivatives, N-acyl taurates; acyl lactylates; carboxyalkyl ether of alkyl polyglucosides and mixture thereof.

All anionic surfactants are taught to be suitable in the compositions of document (3), including the alkyl ether phosphate which were commercially available at the filing date of the application (see point 7 above).

Therefore, the considerations having regard to the obviousness of the claimed subject-matter given in point 7 above and the conclusion drawn in point 8 above with respect to the main request still apply to this request as well, i.e. the subject-matter of claim 1 of auxiliary request 4 is obvious and does not involve an inventive step.

Auxiliary request 5

12. In claim 1 of auxiliary requests 5, the thickener system comprises fatty alcohols comprising from 14 to 30 carbon atoms and at lest one anionic surfactant selected from C_8-C_{30} alkyl ether phosphates. However, claim 1 of auxiliary request 5 still encompasses compositions comprising organic solvents, with the consequence that it is still not credible that the technical problem of improving stability in term of viscosity has been solved across the whole scope of claim 1 (see point 5 above). Accordingly, the technical problem underlying the patent application remains that of providing alternative hair colouring compositions.

The proposed solution is the composition of claim 1 of auxiliary request 5 comprising a thickener system characterized by the combination of fatty alcohols

comprising from 14 to 30 carbon atoms with C_8-C_{30} alkyl ether phosphates.

In the absence of any technical effect attributable to the choice of the combination of fatty alcohols comprising from 14 to 30 carbon atoms with those particular anionic surfactants, and none are apparent to the Board, this particular surfactants system can only be seen as an arbitrary choice within the teaching of document (3). Hence, the limitation to this specific combination of surfactants cannot contribute to the inventiveness of the claimed subject-matter.

Therefore the conclusion drawn in point 8 above with regard to the main request still applies to auxiliary request 5 , i.e. the subject-matter of claim 1 of auxiliary requests 5 does not involve an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed

The Registrar: The Chairman:

C. Rodríguez Rodríguez P. Gryczka

Decision electronically authenticated