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Datasheet for the decision of 7 April 2014

Case Number: T 1537/11 - 3.3.07

Application Number: 07021372.3

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Language of the proceedings: EN

Title of invention:
Cleansing composition

Applicant:
Kao Germany GmbH

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - combination invention (no)
- main request and auxiliary request I
Inventive step - combination invention (yes)
- auxiliary request II

Decisions cited:

Catchword:

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Case Number: T 1537/11 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 7 April 2014

Appellant: (Applicant)
Kao Germany GmbH
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64297 Darmstadt (DE)

Decision under appeal:
Decision of the Examining Division of the European Patent Office posted on 11 February 2011 refusing European patent application No. 07021372.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chairman: J. Riolo
Members: D. Semino
D. T. Keeling

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division announced at the oral proceedings on 26 January 2011 refusing European patent application No. 07 021 372.3.

II. The decision was based on claims 1-9 filed with the letter dated 28 July 2010 as main request, claims 1-9 filed with the letter of 1 December 2010 as auxiliary request I and claims 1-9 of auxiliary requests II and III filed during oral proceedings on 26 January 2011.

Claim 1 according to the main request read as follows:

"1. Cleansing composition for keratin fibres especially human hair comprising at least one anionic surfactant, at least one non-ionic surfactant and at least one amphoteric surfactant at a concentration of 5 to 50% by weight calculated to total composition characterised in that it comprises at least one monoglyceride with 12 to 22 C atoms in fatty acid moiety and at least one compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule."

Claim 1 of auxiliary request I corresponded to claim 1 of the main request with the further limitation of the monoglyceride to "at least one monoglyceride with 14 to 18 C atoms in fatty acid moiety". Claim 1 of auxiliary request II corresponded to the main request whereby the "at least one compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule" was replaced with "silicone quaternium-18". Claim 1 of auxiliary request III included both the amendment of auxiliary request I and the one of auxiliary request II.

III. In the decision under appeal, the following documents were cited *inter alia*:
D1: Anonymous, "Silsoft Q cationic amino silicone terpolymer", internet article, September 2006
D2: DE 100 20 887 A1
D3: B. Ridley et al., "Recent Polymer Technologies for Hair Care", Cosmetics & Toiletries magazine, vol. 120, no. 11, November 2005, pages 65-78

IV. The decision under appeal can be summarised as follows:

None of the requests was deemed to meet the requirements of Article 56 EPC in view of D2 in combination with either D1 or D3. The composition of claim 1 of the main request differed from those of D2, taken as the closest prior art, in the presence of at least one compound comprising a silicone polymer, a quaternary ammonium group and a polyether group. The synergistic effect of the monoglyceride and the silicone compound in reducing colour washout had only been demonstrated for one specific combination rather than for a representative number of examples, in the absence of which it was not considered achievable across the entire scope of the claim due to the broad definitions of both the monoglyceride and the compound comprising a silicone polymer, a quaternary ammonium group and a polyether group. The problem was consequently the provision of a mere alternative cleansing composition for hair. The solution was deemed obvious in view of D1 or D3 which both disclosed the use of the required silicone compound to reduce colour washout. The compositions according to claim 1 of auxiliary requests I, II and III respectively were similarly not inventive, as despite the respective limitations to the scope of the monoglyceride and the

silicone compound the presence of a synergistic effect could still not be recognised across the entire claimed scope, so that the problem and consequently the assessment of the obviousness of the solution remained the same.

V. The applicant (appellant) filed an appeal against that decision. With the statement setting out the grounds of appeal, the appellant submitted four sets of claims as main request and auxiliary requests I, II and III respectively. All requests were identical to those on which the decision was based.

VI. Oral proceedings were held on 7 April 2014.

VII. The appellant's arguments can be summarised as follows:

Main request - inventive step

a) Starting from D2, which related to compositions for reduced colour washout, as closest prior art, the difference lay in the presence of at least one compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule and the technical problem was the provision of a composition which washed less colour out from artificially coloured hair. The solution was the synergistic combination of the monoglyceride and cationic quaternary silicone compound as defined in the claims. The posed problem was proven to be solved by the data in the application as filed and by those submitted on 28 July 2010, which could be extrapolated to compositions which were structurally close to the tested ones. None of the documents on file hinted at the synergistic interaction between the two

compounds, so that the presence of an inventive step should be acknowledged.

b) Even if the synergistic effect were not acknowledged and the problem were simply the provision of an alternative composition, the solution would in any case not be obvious, because none of the available documents disclosed the silicone compound contained in the claimed composition. D1 could not be considered as prior art under Article 54(2) EPC, since the origin of the publication date of September 2006 assigned in the search report related to an unclear internet publication and the document itself did not feature a date. D3 did not constitute prior art relevant to the main request, since the specific compound silicone quaternium-16 disclosed therein as improving colour retention did not fall within the general definition of the silicone compound according to claim 1. The subject-matter of claim 1 of the main request was therefore inventive.

Auxiliary requests - inventive step

c) The same was true *a fortiori* for the auxiliary requests which further limited the class of monoglycerides and limited the silicone compound to the specific silicone compound in the example (silicone quaternium-18).

The argument related to the lack of relevance of document D3, based on the fact that silicone quaternium-16 did not fall within the general definition of the silicone compound according to claim 1, was raised for the first time at the oral proceedings and was not supported by any evidence.

VIII. The applicant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or, in the alternative, on the basis of auxiliary request I, II or III, all filed on 17 June 2011.

Reasons for the Decision

Main Request - inventive step

1. *Closest prior art*

1.1 Document D2 has been considered as the closest prior art both in the appealed decision and in the arguments of the appellant. The Board see no reason to deviate from this choice.

1.2 Document D2 discloses the use of an active combination ("Wirkstoffkombination") of saccharoidal surfactants ("Zuckertenside") and fatty acid partial glycerides to improve the colour intensity and the washability of coloured keratin fibres, wherein under washability it is meant maintenance of the original colour, both as far as nuances and as far as intensity are concerned, under repeated washing (paragraphs [0001] and [0008]).

1.3 Examples 2.7 and 2.8 of D2 both disclose shampoo compositions which comprise an anionic, a non-ionic and an amphoteric surfactant and a monoglyceride with 12 to 22 carbon atoms (page 20, lines 8-62). Specifically, the composition of example 2.7 comprises *inter alia* 40.0 % wt. of Texapon® NSO (comprising ca. 28% sodium laureth sulfate, an anionic surfactant), 6.0 % wt. Dehyton® G (comprising ca. 30% sodium cocoamphoacetate, an amphoteric surfactant), 0.5 % Cetiol® HE (PEG-7

glyceryl cocoate, a non-ionic surfactant) and 3.0 % wt. Lamesoft® PO 65 (comprising unspecified amounts of coco glucoside, a non-ionic saccharoidal surfactant, and glyceryl oleate, a monoglyceride with 18 C atoms in the fatty acid moiety; see the first entry of the table on page 17 of D2). The remaining ingredients not being surfactants, the concentration of the latter lies in the range of 13.5 - 16.5 % by weight calculated to total composition, thereby falling well within the range of 5 to 50% required by claim 1 of the main request. A similar composition is disclosed in example 2.8.

1.4 The compositions of D2 relate therefore to the same issue as the present application (i.e. reduce colour washout, see paragraphs [0001] and [0008] and the first paragraph on page 1 of the application under analysis). Moreover, its examples 2.7 and 2.8 disclose compositions comprising all the features of claim 1 of the main request with the absence of "at least one compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule".

2. *Problem solved*

2.1 According to the application as filed, the technical problem to be solved is to provide an aqueous cleansing composition especially for keratin fibres such as human hair which synergistically reduces colour washout and therewith extends colour durability (page 1, paragraphs 1 and 4).

2.2 The evidence on file, in particular the examples and comparative examples, must be taken into account to evaluate whether the problem posed has indeed been solved with respect to the closest prior art.

2.3 Example 1 of the application as filed (page 16) discloses a composition according to the invention comprising, in addition to the requisite surfactants, glyceryl monooleate (as Lamesoft® PO 65) and silicone quaternium-18 (as Silsoft® Q). Compositions for comparative purpose were also produced (page 16, first full paragraph) which differed from the composition of example 1 in that they did not contain glyceryl monooleate (compositions A and C) and/or silicone quaternium-18 (compositions A and B).

2.3.1 To demonstrate the effect of colour washout reduction, human hair was repeatedly washed with each composition and the colour difference ΔE was measured (page 16, last paragraph and page 17). The lower the value of ΔE, the smaller is the difference in colour. The results obtained are summarised in the following table:

Composition	% wt. Lamesoft® PO 65	% wt. Silsoft® Q	ΔE
Example 1	1.0	0.8	8.2
A	-	-	13.1
B	2	-	10.4
C	-	1.6	9.5

2.3.2 The composition of example 1 according to the invention is clearly superior in reducing colour washout when compared to comparative compositions B or C in which the weight percentage of either glyceryl monooleate or silicone quaternium-18 respectively has been doubled in the absence of the other compound. A synergistic effect in reducing colour washout associated with the combination of glyceryl monooleate and silicone quaternium-18 has consequently been demonstrated. The data filed by the appellant with letter of 28 July 2010

during examination proceedings, in which the same tests were repeated without doubling the quantity of the two compounds in the absence of the other one, also refer to the combination of glyceryl monooleate and silicone quaternium-18 and do not add further evidence over that provided by the examples in the application.

2.4 The presence of a synergistic effect with respect to example 1 was also acknowledged by the Examining Division in the appealed decision. Said effect was nevertheless not taken into account in formulating the technical problem since the Examining Division considered that the effect had not been demonstrated over the entire scope of claim 1 of the main request, specifically due to the broad definitions of both the monoglyceride and the compound comprising a silicone polymer, a quaternary ammonium group and a polyether group.

2.5 Insofar as it concluded that the effect demonstrated by example 1 could not be extended to all compositions falling under claim 1 of the main request, the Board agrees with the Examining Division.

2.6 According to the case law (Case Law of the Boards of Appeal of the EPO, 7th edition 2013, I.D.9.8.3), if the inventive step of a claimed invention is based on a given technical effect, the latter should, in principle, be achievable over the whole area claimed. Whether this is the case must be assessed by examining the evidence on file and considering whether the effect is credible across the claimed scope.

2.7 As noted above, example 1 of the application demonstrates the presence of a synergistic effect for the combination of glyceryl monooleate (Lamesoft® PO 65)

and silicone quaternium-18 (Silsoft® Q). Accordingly, the Board must assess whether the synergistic effect demonstrated for the specific combination can be considered credible for all alternatives, namely for all combinations of a "monoglyceride with 12 to 22 C atoms in fatty acid moiety" and a "compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule".

2.8 As far as the silicone compound is concerned, the definition provided in claim 1 of a "compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule", is extremely broad in scope and encompasses a very large number of possibilities and permutations. Repeating units of the defined groups are not required, nor is their number specified. No guidance is provided as to the specific structure and order of the components, whether the compound is linear or branched, and the presence of additional functional groups in the molecule is not excluded. Additionally, the application refers exclusively to silicone quaternium-18 and silicone quaternium-16 as compounds falling under the scope of said definition (paragraph bridging pages 2 and 3), whereby for the latter no comparative tests have been performed.

2.9 In spite of the fact that the same issue was raised by the Examining Division in the examination phase and formed an important part of the reasons according to the appealed decision, the appellant, despite having adequate opportunity to do so, has decided not to provide any further evidence that the effect demonstrated by silicone quaternium-18 in combination with glyceryl monooleate is credible across the broader

scope of the general definition of the silicone compound according to claim 1.

2.10 In this light, and in the lack of any other evidence to the contrary, the Board does not consider it credible that the synergistic effect demonstrated by silicone quaternium-18 in combination with glyceryl monooleate will equally be displayed by substantially all compounds falling within the broader definition of the silicone compound provided according to claim 1 of the main request.

2.11 Since the synergistic effect is not achievable over the whole area claimed, it cannot be taken into account in the formulation of the technical problem and thus in the assessment of inventive step of the main request.

2.12 On that basis and in the absence of an effect or improvement with respect to the closest prior art, the Board considers the problem underlying claim 1 of the main request to be the provision of further aqueous cleansing compositions for keratin fibres with limited colour washout.

3. *Obviousness*

3.1 The skilled person, starting from the compositions of examples 2.7 or 2.8 of D2 and looking for further compositions, would, without using inventive skill, consider adding to the compositions of D2 further ingredients known in the art to possess colour washout reducing properties.

3.2 Document D3 discloses that Dow Corning 5-7113 Silicone Quat microemulsion, comprising silicone quaternium-16, demonstrates improved permanent colour retention (page

76, right hand column, second full paragraph). The same ingredient is discussed in the application as filed as being an ingredient of the compositions of the invention comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule (paragraph bridging pages 2 and 3).

3.2.1 During oral proceedings held before the Board, the appellant resiled from said information provided in the description as filed with respect to silicone quaternium-16, stating for the first time in the proceedings that despite the statements in the description, said compound does not in fact fall under the definition provided in claim 1 of the main request, with the consequence that D3 is not relevant prior art.

3.2.2 The Board notes that prior to the oral proceedings the relevance of D3 was never disputed by the appellant, despite D3 being used according to the appealed decision in combination with D2 to deny inventive step. This amendment to the party's case comes at the latest possible point in the proceedings and, not being supported by any evidence, cannot be taken into account by the Board in accordance with Article 13(1) RPBA. Consequently, the Board can only conclude that the information provided in the application as filed with respect to silicone quaternium-16 is correct, so that silicone quaternium-16 is a compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule.

3.3 It follows that the inclusion of silicone quaternium-16 in the compositions of examples 2.7 or 2.8 following the teaching in D3 in order to solve the posed problem, results in a composition according to claim 1 of the main request.

3.4 On that basis it is concluded that the composition of claim 1 of the main request does not involve an inventive step.

Auxiliary request I - inventive step

4. Claim 1 of auxiliary request I differs from claim 1 of the main request in the further limitation to 14 to 18 carbon atoms in the fatty acid moiety of the monoglyceride. The definition of the silicone compounds remains unchanged with respect to the main request.

4.1 The analysis of inventive step detailed for the composition of claim 1 of the main request and centered on the fact that the presence of a synergistic effect demonstrated for the combination of glyceryl monooleate and silicone quaternium-18 cannot make it credible that the same effect is present for any silicone compound falling under the definition of a "compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule" remains the same in the absence of a limitation in the definition of the silicone compound.

4.2 The composition of claim 1 of auxiliary request I consequently does not involve an inventive step for the same reasons as provided for the main request (points 1 to 3, above).

Auxiliary request II - inventive step

5. Claim 1 of auxiliary request II differs from claim 1 of the main request in that the silicone compound is limited specifically to silicone quaternium-18 which, as concluded above (point 2.3.2), has been shown in

example 1 to display a synergistic effect with glyceryl monooleate in reducing colour washout. The question now arises whether the synergistic effect can be recognised as being achievable over the entire scope of the claim which encompasses monoglycerides having from 12 to 22 carbon atoms in the fatty acid moiety.

5.1 The Examining Division answered this question in the negative, as evidence in the form of example 1 had only been provided for glyceryl monooleate and not for other monoglycerides falling within the claimed range, in the absence of which the effect observed for a composition comprising one particular monoglyceride could not be extrapolated to other similar monoglycerides (page 4, paragraph 7 of the appealed decision).

5.2 The Board does not share the view of the Examining Division in this regard. In contrast to compounds falling under the broad definition of the silicone compound of claim 1 of the main request, the nature and properties of the aliphatic chain of long chain fatty acid monoglycerides such as those of claim 1 of auxiliary request II are well known to the skilled person. Such compounds comprise a hydrophobic aliphatic chain, have similar physical properties and possess similar chemical reactivity. Furthermore, in contrast to the broadly defined silicone compound, the number of compounds falling under said definition is finite and relatively limited. It is therefore reasonable and credible to assume that said compounds will also possess similar properties with respect to reducing colour washout, and to display a similar synergistic interaction with silicone quaternium-18 as that displayed by glyceryl monooleate. It follows that a synergistic effect can be acknowledged across the scope of claim 1 of auxiliary request II.

6. *Problem solved*

6.1 In view of the above, the problem is to provide an *improved* aqueous cleansing composition for keratin fibres which provides a synergistic reduction in colour washout. Example 1 in the application as filed is considered as sufficient evidence that this problem has effectively been solved.

7. *Obviousness*

7.1 The skilled person, starting from example 2.7 or 2.8 of D2 as closest prior art and trying to solve the problem posed is not provided with any incentive to add silicone quaternium-18 to the compositions of D2, as there is no indication in the prior art that said compound could act synergistically with a monoglyceride according to claim 1 to reduce colour washout.

7.2 Document D1 is the only document on file related to silicone quaternium-18 and discloses that silicone quaternium-18 under the trade name Silsoft® Q provides several benefits including colour retention (see page 1, "product description") and that a composition comprising Silsoft® Q reduces the loss of hair colour (see "color protection shampoo" composition on age 5). However, it does not give any indication of a possible synergistic effect of silicone quaternium-18 in combination with a monoglyceride.

7.3 The synergistic effect obtained by the claimed combination can also not be considered as a mere bonus effect resulting from an already obvious combination, since the use of silicone quaternium-18 was not the only option available to the skilled person, who might

also have chosen *inter alia* to increase the amount of monoglyceride in the composition, or add other known colour washout reducing ingredients to the compositions of D2, such as silicone quaternium-16 known from D3.

7.4 On that basis, the composition of claim 1 of auxiliary request II involves an inventive step.

7.5 The question whether document D1 belongs to the state of the art under Article 54(2) EPC in view of the uncertainties related to the internet publication can remain unanswered, since the Board has concluded that, even if D1 were considered relevant prior art, it would not be prejudicial to the inventive step of auxiliary request II.

Auxiliary request II - Articles 123(2), 84 and 54 EPC

8. Claim 1 of auxiliary request II is based on claims 1 and 2 as originally filed and the passage in the description (paragraph bridging pages 2 and 3) in which silicone quaternium-18 is described as a preferred embodiment for the compound comprising a silicone polymer, a quaternary ammonium group and a polyether group in its molecule. The requirements of Article 123(2) are therefore fulfilled. No objections under Articles 54 and 84 EPC were raised in the appealed decision against the claims of auxiliary request II. The Board shares this view; in particular, as can be inferred from the reasons with respect to inventive step (*vide supra*), none of documents D1, D2 and D3 discloses the combination of an anionic surfactant, a non-ionic surfactant, an amphoteric surfactant, a monoglyceride with 12 to 22 C atoms in its fatty acid moiety and silicone quaternium-18.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the Examining Division with the order to grant a patent on the basis of claims 1-9 of auxiliary request II filed on 17 June 2011 and a description to be adapted.

The Registrar: The Chairman:

L. Fernández Gómez J. Riolo

Decision electronically authenticated