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Datasheet for the decision of 25 August 2006

Case Number: T 0830/05 - 3.3.06

Application Number: 97903373.5

Publication Number: 0885001

IPC: A61K 7/50

Language of the proceedings: EN

Title of invention:
Cleansing compositions comprising xanthan gum and cross-linked polyacrylic acid

Patentee:
UNILEVER PLC, et al

Opponents:
KPSS-Kao Professional Salon
HENKEL KGaA

Headword:
Stability/UNILEVER

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
T 0005/81, T 0012/81, T 0198/84, T 0279/89, T 0939/92, T 0401/94, T 0747/97, T 0644/97, T 0068/95

Catchword:
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Case Number: T 0830/05 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 25 August 2006

Appellant I: (Opponent 01)
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Representative: -

Appellant II: (Opponent 02)
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Respondents: (Patent Proprietors)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 2 May 2005 rejecting the opposition filed against European patent No. 0885001 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: P.-P. Bracke
Members: G. Raths
U. Tronser

Summary of Facts and Submissions

I. This appeal lies from the decision of the Opposition Division to reject the oppositions filed against the European patent No. 0 885 001 (claiming the priority date of 6 March 1996), which contained 8 claims, the sole independent Claim reading as follows:

> "1. A liquid cleansing composition comprising:
> (a) 5% to 50% by wt. of a surfactant system comprising:
> (i) anionic surfactant or mixture of anionic surfactants; and
> (ii) an amphoteric and/or zwitterionic surfactant or mixtures thereof;
> (b) 0.1% to 20% by wt. of an oil or emollient having a particle size of 1 to 500 microns;
> (c) 0.01 to 5.0 % by wt. of a xanthan gum; and
> (d) 0.01 to 5.0% by wt. of a cross-linked polyacrylic acid polymer."

II. The two notices of opposition were based on the grounds of Article 100(a) EPC for lack of novelty and inventive step (Articles 52(1), 54(2) and 56 EPC).

III. During the opposition proceedings *inter alia* the following documents were cited:

(1A) EP-A2-0 346 097,
(2) WO-A-96/41 610,
(3) WO-A-96/02 224,
(4) EP-A-0 463 780,
(5) US-A-5 034 218 and
(9) EP-A-0 581 442.

IV. In its decision the Opposition Division held that

- the subject-matter of Claim 1 would be novel over documents (1A), (2) and (3);

- as regards inventive step, in the light of document (3) as the closest prior art, the goal of the patent in suit would have been to provide a composition comprising an anionic and an amphoteric surfactant as well as a silicone oil which would be stable at a temperature above 50°C.

The problem was solved by using xanthan gum together with a crosslinked polyacrylate. However, none of the cited documents would teach the skilled person how to arrive at the claimed subject-matter which therefore would involve an inventive step (Article 56 EPC).

V. An appeal was filed against this decision by both opponents (hereinafter the appellants), appellant II submitting the following documents:

(10) Cosmetic Science and Technology Series, Vol. 13: Rheological Properties of Cosmetics and Toiletries, D. Laba (Edit), 1993, pages 314 to 315;

(11) Household and Personal Product Industries 21, Thickeners, Ben Milwidsky, 1984, Nr 6; and

(12) EP-B1-0 048 612.

The appellants argued that the subject-matter of Claim 1 would not be novel in regard of documents (2) or (3).

It would be true that the composition according to example II on page 16 of document (3) would not explicitly list "xanthan gum" but only "a thickener"; however, among the list of thickeners mentioned in the description xanthan gum would be cited explicitly (page 6, line 29).

Also, in the compositions according to the examples 9 to 12 of document (2), the skilled person would use xanthan gum as a thickener.

In regard of Article 56 EPC, the appellants submitted the following arguments:

- In the light of document (3) as the closest prior art, the problem underlying the patent in suit would have been to provide an alternative cleansing composition.

- Document (1A) would have taught the skilled person that acrylate polymer combined with xanthan gum would produce in a liquid system comprising surfactants a synergistic effect resulting in improved stability of therein dispersed particles. The specific surfactant selection, namely the combination of anionic and amphoteric surfactants, would belong to the common general knowledge of the skilled person illustrated by document

(10') Schrader, K., Grundlagen und Rezepturen der Kosmetika, Hüthig, Heidelberg, 1989, pages 680 and 681.

- Document (4) would teach the skilled person to use either xanthan gum or acrylate polymer in order to stabilize dispersions in silicone containing emulsions.

Also, a skilled person could infer from document (4) that there was no difference between storage temperatures at 37°C and 45°C since the formulation according to example 1 of document (1) was as well instable at 37°C as at 45°C whereas the formulation according to example 4 of document (4) was stable as well at 37°C as at 45°C. In other words, it would be possible to extrapolate stability or instability properties from one temperature level to another.

- Further, since document (5) taught that crosslinked polyacrylate and xanthan gum were each a suitable candidate for stabilizing silicone containing emulsions at high temperatures, it would have been obvious to use polyacrylate and xanthan gum at 51.7°C.

- Document (9) disclosed that the use of xanthan gum alone or cross-linked polyacrylate alone would lead to a stabilisation at high temperatures (120°F [48.88°C], 2 weeks); therefore, the use of a combination of xanthan gum with crosslinked polyacrylates in order to obtain stability at 51.7°C would also be obvious in the light of this document.

The fact that document (9) does not disclose compositions containing amphoteric surface active

agents would not be relevant since the respondent failed to demonstrate that the combination of amphoteric and anionic surface would not lead to an unexpected effect.

VI. The respondent argued orally in substance against the arguments of the appellants during oral proceedings which took place on 25 August 2006.

VII. The appellants request that the decision under appeal be set aside and the patent be revoked.

The respondent requests that the appeals be dismissed.

Reasons for the Decision

1. *Article 54 EPC*

1.1 Appellant II argued that the composition according to examples II or III of document (3) would anticipate the subject-matter of Claim 1 of the patent in suit because the skilled person would use as a component defined as "thickener" xanthan gum which is mentioned in the list of thickening agents (page 6, lines 22 to 33). It argued in the same way in respect of the compositions according to examples 9 to 12 of document (2), to be considered under Article 54(3) EPC, the priority date being 13 June 1995 and the publication date 27 December 1996.

1.2 The Board does not accept these arguments. The description of document (3) reads as follows:

> "In the examples:-
> ……
> Thickener was Antil 141 (a propylene glycol and propylene glycol oleate) ex Goldschmidt."
> (page 12, lines 13 and 25 to 26)

Hence, example II as well as example III of document (3) disclose compositions comprising Antil 141 as a thickener.

Since these compositions do not unambiguously disclose a combination of crosslinked polyacrylate and Xanthan gum, they do not anticipate the subject-matter of Claim 1 of the patent in suit.

The same reasoning holds for the compositions according to examples 9 to 12 of document (2), the reference to Antil 141 as a thickener being on page 17 (lines 5 to 6).

1.3 The appellants contested that the claimed subject-matter met the requirements of novelty as described in decisions T 12/81 (OJ EPO 1982, 296), T 198/84 (OJ EPO 1985, 209), T 279/89 and T 401/94 for selection inventions, since the claimed compositions resulted from a selection of xanthan gum out of the list of thickeners cited in documents (2) or (3).

However, for the Board, in order to come to the claimed compositions, a skilled person confronted with the

disclosure of documents (2) or (3) **as a whole** had to make a twofold selection.

- First he had to select among the examples I, II and III of document (3) example II or III (and among the examples 1 to 14 of document (2) examples 9 to 12);
- then he had to select xanthan gum out of the list of thickeners mentioned in document (3) (respectively in document (2)).

The fact that the compositions the skilled person would arrive at are not the result of a single selection out of one group of components, but the result of a twofold selection already renders the resulting combination of features novel.

Therefore, the tenors of the above cited decisions are not relevant in the present case.

1.4 The subject-matter of Claim 1 is novel and, therefore, meets the requirements of Article 54(1)(2) and (3) EPC.

2. *Article 56 EPC*

2.1 The invention according to the patent in suit relates to liquid cleaning compositions comprising oils/emollients as benefit agents.

2.2 The Board in agreement with all the parties takes example II of document (3) as the starting point for evaluating inventive step. Document (3) as well as the patent in suit deals with the objective to stabilize compositions containing large particle sizes (i.e. oil or emollient e.g. silicon oil having a particle size of

1 to 500 µm (patent in suit) and benefit agents e.g. silicon oil having a particle size of 50 to 500 µm (document (3)) and the composition according to example II has the most features in common with the claimed subject-matter.

2.3 According to the patent in suit the objective was to stably suspend large size oil/emollient droplets in a better way (page 2, lines 5 to 8).

2.4 The appellants had reformulated the problem underlying the patent in suit in the light of document (3) as the provision of an alternative cleansing composition. They argued the stability at a temperature of 51,7°C was not worth an effect to be taken into consideration but only a more severe stability requirement.

Since the list of thickeners of document (3) comprised, *inter alia*, crosslinked polyacrylate and xanthan gum, it would be obvious according to the appellants to replace the thickener of the composition according to example II of document (3) with xanthan gum in order to obtain a good stability at 51.7°C.

In support of their arguments they further referred to documents (4), (1A), (5) and (9).

2.5 The Board does not agree with the technical problem as reformulated by the appellants in the light of document (3). It is noted that none of the cited documents discloses any testing at 51.7°C. By reformulating the problem to be solved as the provision of an alternative cleansing composition, the appellants disregarded the effect obtained by the claimed

compositions, namely stability under accelerated conditions at 51.7°C. Therefore, the Board has to analyse whether the combined teaching of the prior art documents could be expected to lead to compositions having stability at 51.7°C.

2.5.1 The composition according to example 4 of document (4) containing, *inter alia*, crosslinked polyacrylate was stable after storage for six months at 0°C, at ambient temperature, at 37°C and 45°C, the compositions according to example 1 of the same document containing, *inter alia*, also crosslinked polyacrylate was stable at 0°C and at ambient temperature after six months storage, but some separation was seen after storage at 37°C and 45°C for four months.

The appellants' argument was that a conclusion can be drawn from stability at 37°C on stability at 45°C (example 4) and from instability at 37°C on instability at 45°C (example 1).

The Board contests that this kind of predicting stability can be extended to other temperature levels. The difference between these compositions is that the composition according to example 1 comprises TIMIRON MP 1005 (particles of titanium dioxide coated mica having an average particle size of <15 µm) and the composition according to example 4 TIMIRON-MP 45 (average particle size: 40 to 100 µm).

So, whereas, in case of example 4 the skilled person could conclude from the stability at 0°C and ambient temperature on stability at 37°C and 45°C, he could not draw this conclusion in the case of example 1.

This comparison shows that in emulsions, the nature of the ingredients, in this case the particle size of titanium dioxide coated mica, interacts in a non predictable way. Also, there is no hint as to the critical temperature at which the change from stability to instability takes place.

Moreover, the appellants contested that the patent addresses the stability problem at 51.7°C. They submitted this was an artificial, unrealistic approach to define the problem, which was contrary to the tenors of decisions T 5/81, T 747/97, T 644/97 and T 68/95.

The Board cannot agree with the appellants. In the present case, the accelerated stability test at 51.7°C is not only to be considered as evidence that the claimed compositions are effectively stable at 51.7°C. This test makes it also plausible that the claimed compositions are stable over longer periods at temperatures lower than 51.7°C.

As neither stability at higher temperatures nor stability at less high temperatures over longer periods of time are neither artificial nor technically unrealistic problems, the tenors of the above mentioned decisions are not relevant in the present case.

2.6 Therefore, in this case, in determining the problem underlying the patent in suit in the light of document (3), the proven effect, namely stability under accelerated conditions at 57.1°C is taken into consideration. This definition of the technical problem does not contradict the earlier statements in the

patent in suit about the general purpose and character of the invention which was to stably suspend long size oil/emollient droplets than either one of xanthan gum or crosslinked polyacrylate alone (see page 2, lines 6 to 8).

Therefore, the problem underlying the patent in suit in the light of document (3) is the provision of a cleansing composition having a good stability under accelerated conditions at 51,7°C.

The compositions according to examples 11 to 15 of table 1 as well as the compositions according to examples 2 and 3 on pages 11 and 12 prove that this problem is plausibly solved, the latter ones showing a stability at 51,7°C after 3 weeks, and when silicon oil is subjected to lower shear rate, even after 7 weeks.

2.7 The appellants argued that this problem is not solved over the whole scope of Claim 1.

The Board does not agree.

The respective compositions according to examples 11 to 15 of the patent in suit have a concentration of 0.4 % by weight of crosslinked polyacrylate and 0.05 (example 11), 0.1 (example 12), 0.2 (example 13), 0.2 (example 14) and 0.3 (example 15) % by weight of xanthan gum, the composition according to example 14 having different concentrations in anionic and zwitterionic surface active agents from those of example 13.

In this respect the appellants referred to decision T 939/92 (OJ EPO 1996, 309). In particular, the appellants were of the opinion that the respondent had to prove the allegedly inventive effect over the complete claimed scope.

However, in point 2.6.1 of decision T 939/92, which concerns ex parte proceedings, it is clearly stated that the burden of proof that an effect is effectively obtained, can only rest upon the shoulder of the person alleging it. Since in the present inter partes case, the appellants alleged that an effect was not obtained, the burden of proof was upon the appellants for showing that an effect was not obtained. Therefore, in the absence of any proof to the contrary, the Board is satisfied that the technical problem as defined under point 2.6 is effectively solved.

2.8 The question which remains to be decided is whether the technical solution, i.e. the use of xanthan gum together with crosslinked polyacrylate in an oil or emollient containing emulsions comprising anionic and amphoteric and/or zwitterionic surfactants, involves an inventive step.

2.8.1 The appellants argued that document (1A) would give the skilled person a hint to replace the thickener of the composition according to example II of document (3) because document (1A) discloses that the synergistic mixture of thickening agents can be used for a variety of liquid systems to be thickened (page 4, lines 16 and 17). An example is a liquid abrasive cleaner comprising a thickening mixture of crosslinked polyacrylate and xanthan gum and particulate abrasive

material. The area of use of the synergistic mixture may also be the area of personal products such as, *inter alia*, shampoos, shower and bath gels (page 4, lines 57 and 58).

In support of their arguments that the skilled person would obviously combine xanthan gum and crosslinked polyacrylate, the appellants referred to the examples of table I and examples 36, 37 and 38 of document (5).

Both compositions according to the examples of said table I contain xanthan gum; the difference is that the one comprising tri-long chain alkyl quaternary ammonium compound was stable at 26.7°C, the one containing a di-long chain alkyl quaternary ammonium compound was not.

The composition according to example 36 comprises, *inter alia*, guar gum and was stable after a two week storage at 48.88°C. Since guar gum has very high low-shear viscosity and strong shear-thinning character, the appellants argued that the skilled person would substitute it with xanthan gum having the same characteristics.

The compositions according to examples 37 and 38 contain, *inter alia*, crosslinked polyacrylate and were stable after a 2 week storage at 48.88°C.

The appellants concluded that document (5) would suggest each of crosslinked polyacrylate and xanthan gum as a suitable candidate for obtaining a good stability at high temperatures whereby a tri-long chain alkyl quaternary ammonium compound should be avoided.

In the light of the teachings of documents (5) and (1A) the skilled person would combine xanthan gum and crosslinked polyacrylate in order to obtain stability at 51.7°C.

The Board does not agree with the appellants' arguments.

The reasoning of the appellants ignores the evidence available in the patent in suit.

Namely, the compositions according to the examples 1 to 4 of table 1 of the patent in suit contain crosslinked polyacrylate as a thickening agent, the compositions according to examples 9 and 10 xanthan gum. All these compositions, contrary to what one would have expected from document (5), were not stable at 51,7°C after a two week storage, although according to the appellants they would be suitable candidates for stabilizing the compositions. This confirms that predicting stability from one temperature level to another level is not reliable.

This lack of predictability is anyhow corroborated by document (5), in particular, the examples of table 1, referred to by the appellants, and e.g. examples 21 and 22. The compositions according to said examples comprise *inter alia* di- or tri-long chain alkyl quaternary ammonium compounds which are oil-soluble, water-dispersible conditioning agents (column 5, lines 50 to 59). Document (5) proves that a slight change of the chemical component, here the change from tri- to di-long chain alkyl quaternary compounds, disturbs the phase equilibrium and thus influences the stability in a negative way.

In the type of emulsions at issue, stability is a sensitive property. The kind of ingredients constituting the emulsions is therefore critical. This once more confirms that there is no reliable predictability as to stability at high temperatures, the interaction of all the components having an influence.

2.8.2 As to document (1A), it indicates only a general use of the synergistic mixture to stabilise emulsions in e.g. hand creams and foams (page 6, lines 24 to 25) and shampoos (page 4, lines 57 to 58), but is silent on the requirement of the formulation of the compositions when stability at a temperature of 51.7°C is to be obtained.

Therefore, the synergistic effect of physical stability achieved by compositions according to document (1A) comprising xanthan gum and an acrylic-type polymer concerning liquid abrasive compositions, suspensions, water-based and emulsion inks (page 6, lines 17 to 19) does not necessarily apply to emulsions containing anionic and zwitterionic or amphoteric surface active agents (used according to the compositions of the patent in suit).

So, the argument based on document (1A) regarding the synergistic effect of using xanthan and crosslinked polyacrylate fails.

2.8.3 As to the stability of emulsions when thickening agents listed in document (3) are used, this list comprises also a cellulose type thickening agent, namely carboxy methyl cellulose, a highly water soluble thickener. By

strictly following the reasoning of the appellants, the skilled person could also combine crosslinked polyacrylate with a cellulose type thickening agent. However, the compositions according to examples 7 and 8 of table 1 of the patent in suit comprising, *inter alia*, crosslinked polyacrylate and Polysurf (a cellulose type thickening agent, namely cetyl hydroxyethyl cellulose which is a non aqueous viscosity increasing agent) are not stable at 51.7°C. These comparative examples 7 and 8 show that the above mentioned technical effect is not necessarily obtained when choosing a candidate of the list of thickeners of document (3).

However, if combining crosslinked polyacrylate with xanthan gum in oil or emollient containing emulsions comprising anionic and amphoteric and/or zwitterionic surfactants, stability after one week storage at 51,7°C is obtained (see the compositions according to examples 11 to 15 of the patent in suit).

2.9 Thus document (3) as well as the other cited prior art documents i.e. (4), (1A) and (5) have in common that the problem of stability at 57.1°C has not been addressed. Therefore these documents are not appropriate to give the skilled person a clue to find any hints for manufacturing compositions being stable at 51.7°C.

2.10 Document (9) disclosing a shampoo composition comprising a suspending agent which may be xanthan gum or a crosslinked acrylic resin and anionic surfactants is not relevant, since amphoteric and/or zwitterionic surfactants are missing.

The appellants commented this lack of disclosure in document (9) as irrelevant since there was no evidence that anionic and amphoteric and/or zwitterionic surfactants provided a specific effect.

The Board does not agree. It is sufficient that the claimed subject-matter as a whole, namely the oil or emollient, xanthan gum, crosslinked polyacrylate and anionic and amphoteric and/or zwitterionic surfactants provide the effect, i.e. stability at 51.7°C. Evidence of a separate effect or evidence of the degree of contribution to the overall effect due in particular to the anionic and amphoteric and/or zwitterionic surfactants is not required.

2.11 Since none of the documents (4), (1A), (5) and (9) referred to stability at a temperature of 51.7°C, the skilled person had no reliable information as to how to solve the problem defined under point 2.6.

The remaining documents are not relevant for the following reasons:

Document (10) refers only in general terms to a shampoo. It must be thin to pour easily, but not so thin that it runs through the user's fingers before it can be applied (page 314, lines 4 to 5). When describing composition and structure of two-phase emulsions, the effect of details regarding the manufacturing of emulsions on the final properties becomes apparent. Indeed, the passage in the fourth paragraph on page 315, stating

> "Lin and Lambrechts (1969) determined that the final emulsion could have different physical properties just by varying the initial distribution of the surfactant."

proves that physical properties of emulsions are very sensitive.

Document (10') submitted as evidence for common general knowledge for the combined use of amphoteric and anionic surfactants is not relevant since it does not refer to stability problems at all.

Document (11) discloses that xanthan gum has unique properties. The viscosity fall is only slight if temperature changes from almost freezing to close to boiling points. This document does not provide any incentive for the solution of the present problem since it does not refer to the other emulsion ingredients at stake.

Document (12) is not relevant since it refers only to thickeners and the method of manufacturing them.

Since, as shown hereinabove, in this case, the conclusion from stability at different temperatures is not reliable due consideration having to be paid to the interaction and the role and nature of all the components, the combination of xanthan gum with crosslinked polyacrylate to stabilize oil or emollient containing emulsions comprising anionic and amphoteric and/or zwitterionic surfactants at 51.7°C was not obvious.

2.12 The Board concludes that the subject-matter of Claim 1 involves an inventive step and, therefore, meets the requirements of Article 56 EPC.

Order:

For these reasons it is decided that:

The appeals are dismissed.

The Registrar: The Chairman:

A. Townend P.-P. Bracke