

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen
(D) No distribution

**Datasheet for the decision
of 30 November 2006**

Case Number: T 0240/02 - 3.3.07

Application Number: 93307943.6

Publication Number: 0635259

IPC: A61K 7/09

Language of the proceedings: EN

Title of invention:

Composition and process for decreasing hair fiber swelling

Patentee:

AVLON INDUSTRIES INC.

Opponent:

KPSS-Kao Professional Salon Services GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56

Keyword:

"Novelty - yes"

"Inventive step - problem and solution - yes"

Decisions cited:

T0219/83

Catchword:

-



Case Number: T 0240/02 - 3.3.07

DECISION
of the Technical Board of Appeal 3.3.07
of 30 November 2006

Appellant: KPSS-Kao Professional Salon Services GmbH
(Opponent) Pfungstädterstrasse 92-100
D-64297 Darmstadt (DE)

Representative: Riedl, Peter
Patentanwälte
Reitstötter, Kinzebach & Partner
Postfach 860649
D-81633 München (DE)

Respondent: AVLON INDUSTRIES INC.
(Patent proprietor) 5401 West 65th Street
Bedford Park
Illinois 60638 (US)

Representative: Vossius, Volker
Dr. Volker Vossius,
Patentanwaltskanzlei - Rechtsanwaltskanzlei,
Geibelstrasse 6
D-81679 München (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 1 February 2002
rejecting the opposition filed against European
patent No. 0635259 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: S. Perryman
Members: B. Struif
F. Rousseau

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 635 259 with respect to European patent application No. 93 307 943.6 filed on 6 October 1993 was published on 20 January 1999. The granted patent was based on nine claims. Claim 1 was the only independent claim and read as follows:

"1. A process for relaxing hair fibers comprising the steps of:

- (a) lanthionizing hair fibers with a non-reducing base; and then without providing an intermediate rinse,
- (b) deswelling the hair fibers by applying to the hair a deswelling composition comprising a component selected from the group consisting of a starch, a sugar and a salt."

II. A notice of opposition was filed against the granted patent, in which revocation of the patent in its entirety was requested on the grounds of lack of novelty and lack of an inventive step under Article 100(a) EPC. The opposition was supported *inter alia* by the following documents:

- D1: DE-A-1 955 823
- D2: EP-A-0 443 356
- D3: DE-A-3 503 762
- D4: US-A-4 494 557
- D5: Johannes Nöthen; Dissertation TH Aachen 1990: Entwicklung einer Apparatur zur Messung der Einzelhaarquellung und Untersuchungen zum

Quellungsverhalten von Humanhaaren", S. 59-95,
Zusammenfassung.

III. In a decision posted on 1 February 2002, the opposition division rejected the opposition.

The opposition division held that:

- (a) The opposition was admissible and complied with the requirements of Articles 99(1) and 100 EPC, Rules 1(1) and 55 EPC.
- (b) As regards novelty, example 2 of D1 disclosed a process for relaxing the hair by using a reducing solution and applying a swelling or penetrating composition. According to claim 1 of the patent as granted only non-reducing bases were used. Although in example 2 of D1 a non-reducing base was used, thereafter an aqueous solution was applied, which was described in the general part of the description (pages 3 and 4) to have a swelling effect on the hair fibres. There was no evidence on file showing any deswelling effect. Thus, the subject-matter of claim 1 was novel over D1.
- (c) As regards inventive step, documents D1 or D2 could be considered to represent the closest state of the art. Whilst D1 related to a process of lanthionizing hair fibres, D2 concerned a process of processing hair fibres including a deswelling step. Starting from D1, the objective problem was to provide a process for relaxing hair fibres with a non-reducing base, by avoiding structural damage

to hair during the relaxing process. D1 taught, contrary to the claimed invention, the application of a swelling or penetration composition.

Starting from D2, which used a reducing base, the problem was to provide another process for relaxing hair fibres. Swelling or deswelling appeared very sensitive to the particular process used, and it could not be expected that hair fibers behaved in a fashion similar to D2 when a deswelling was applied after the lanthionizing step.

D3 related to reductive hair waving, which used a protein softening solution providing an effect opposite to that of deswelling. There was no hint that the protein softening solution, provided a deswelling effect when a step of lanthionizing was involved.

D4 did not address the problem of excessive swelling or the use of a deswelling composition. D5 related to waving hair by using a reducing base.

Thus, there was no incentive to combine the teachings of documents D1 and D2 or D1 with any of D3 to D5. Consequently, the subject-matter of claim 1 involved an inventive step.

- IV. On 4 March 2002, the opponent (appellant) filed a notice of appeal against the above decision, the prescribed fee being paid on the same day. With the statement setting out the grounds of appeal filed on

24 May 2002, the appellant submitted *inter alia* the following further documents:

D6: US-A-4 373 540

D7: Ullmann's Encyclopedia of Industrial Chemistry,
Vol. A12, 1989, pages 588 and 591

V. By letter of 27 October 2006, the respondent submitted two auxiliary requests.

VI. Oral proceedings were held on 30 November 2006.

VII. The appellant argued in substance as follows:

(a) As regards novelty, D3 disclosed a process for changing the structure of hair by using a non-reducing base at a pH of 10. At such a pH value the formation of lanthionine might occur. In the next step, without any intermediate rinsing, a protein softening solution was applied, which might contain water soluble salts. By using water-soluble salts a difference in concentration existed between the inner part of the hair and the outer surrounding salt solution, which resulted in a deswelling of the hair fibres.

Furthermore, example 2 of D1 disclosed all the features of claim 1 including an ammonium salt and urea. According to claim 1 of the patent in suit, salts were suitable deswelling agents. Furthermore, according to D2 urea was a deswelling agent as well.

Hence, the subject-matter of the claims was not novel over D1 or D3.

- (b) As regards inventive step, the patent in suit concerned a process for relaxing hair by lanthionizing hair with a non-reducing base which caused structural damage of the hair. It was agreed that lanthionizing was effected under strong alkaline conditions by which essentially all of the cystine bonds of the keratine were transformed to lanthionine bonds. D7 was considered to be the closest state of the art, which disclosed a usual lanthionizing process with a subsequent rinsing step causing excessive swelling and damage of the hair. The problem of the patent in suit was to provide a process for relaxing hair, in which the swelling and damage of hair was avoided. It was a trivial solution to use a deswelling agent to compensate the swelling effect.

Furthermore, D2 disclosed a process for deforming hair by using an alkaline reducing agent, by which lanthionine bonds were formed. According to D2, the rinsing with water caused swelling of the hair fibres and resulted in a damage of hair. That problem was solved by D2 in that the hair was treated with an aqueous solution which contained inert compounds having a higher osmotic pressure compared to distilled water. By such a treatment a deswelling of the hair fibres occurred. The problem of swelling also occurred, when hair was rinsed after the formation of lanthionine bonds according to the claimed process. Thus, the

skilled person would get from D2 an incentive for the solution of the problem underlying the patent in suit.

The swelling of the hair shown in D5 was considered to be based on an osmotic effect rather than on the degree of reduction. Thus, the effects described in D5 also applied to a lanthionizing process. Furthermore, it was already known from D5 that rinsing with water provided an additional swelling peak which should be avoided as confirmed by D2. The higher the pH of the solution the higher was the additional swelling due to water rinsing. In addition, D5 recommended a deswelling by rinsing with a solution of sodium chloride. Hence, the skilled person got an incentive to use a rinsing solution containing a salt when the negative effects of a lanthionizing process needed to be avoided. Thus, the claimed subject-matter lacked an inventive step.

VIII. The respondent argued in substance as follows:

- (a) As regards novelty, D3 disclosed a process for changing the structure of hair by using a redox reaction. According to the claimed process, the hair was relaxed by lanthionizing with solutions of strong alkalis, which had a pH of at least 11. The pH value disclosed in D3 was not high enough for the formation of lanthionine bonds. Furthermore, in D3, the treatment with a protein softening solution resulted in a swelling of the hair. Urea mentioned in D3 effected an expansion but not a deswelling.

According to D1, a swelling or penetration was applied to the hair after it was subjected to a keratine softening agent. Such a composition for swelling was also applied according to example 2 of D1, after the hair had been lanthionized. There was no evidence on file showing any deswelling effect when applying the composition of example 2 of D1 to the hair.

Hence, the claimed subject-matter was novel vis-à-vis D3 or D1.

- (b) As regards inventive step, D7 was considered as the closest state of the art which disclosed a hair straightening composition which used a strong alkaline base. The relaxer composition was removed from the hair by rinsing it with water so that the hair swelled. In contrast to D7, according to the claimed subject-matter a rinsing step before applying the deswelling composition was explicitly avoided and a deswelling composition was applied.

D2 related to a treatment for deforming keratin fibres using a reduction/oxidation process, whilst according to the patent in suit, lanthionine bonds were formed in an irreversible reaction by treating hair with strong alkalis. Thus, there were fundamental differences between the two processes and the swelling properties of the hair fibres subjected to said different processes would not be the same.

D5 disclosed only redox systems and the degree of reduction had an effect on the swelling. The damage to the hair by lanthionizing might already be so great that the skilled person would not consider any further step to remedy the negative effects thereof. Furthermore, the hair swelling could not be reduced to a simple conventional osmotic effect, since hair was not a biological cell membrane. The other prior art documents cited in the procedure did not come closer to the claimed subject-matter than those discussed above.

Hence, the claimed subject-matter involved an inventive step.

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

- X. The respondent requested as main request that the appeal be dismissed or that the patent be maintained on the basis of one of the claims of auxiliary request I or II, both submitted on 27 October 2006.

Reasons for the Decision

- 1. The appeal is admissible.

Novelty

- 2. The appellant argued that the claimed subject-matter lacked novelty over D1 or D3.

2.1 D1 discloses a process for the permanent straightening of hair by treating the hair with known keratin softening agents. After substantial removal of the later, the hair is blotted under repeated combing by use of a swelling or penetration agent and subsequently is fixed and neutralized, respectively, in a usual manner (claim 1). It is essential that the swelling or penetration compounds are suitable to increase the hair straightening effect of the keratine softening substances (page 4, last paragraph).

In example 2 of D1 an alkaline hair straightening agent having a pH of 12.8 is applied to the hair, and is allowed to work in for 5 minutes. After that the agent is substantially combed out, and a formulation containing 1.5% by weight of an ammonium salt of a carboxy vinyl polymer, 3,5% by weight of urea, 10.5% by weight of 2,2-dimethyl-1,3-propanol, 15.0% by weight of isopropanol with the balance of water is applied to the hair.

2.1.1 The respondent argued that, since said formulation contained an ammonium salt, it was a deswelling composition as used in step (b) of claim 1 of the patent in suit.

However, the formulation used in example 2 is, according to the clear teaching of D1, a swelling or penetration composition which does not deswell the hair fibres (compare point 2.1, above). This is confirmed by D1 itself, in which suitable swelling or penetration substances include diols, alcohols and urea (page 4, third paragraph). The formulation in example 2 contains a high amount of 29% by weight of those swelling

substances and only 1.5% by weight of the ammonium salt of a polymer so that the amount of the swelling agents mentioned above is about twenty times higher than that of the ammonium salt. This already indicates that the formulation of example 2 should have a swelling rather than a deswelling effect, even if a minor amount of a polymer salt was included. A deswelling step b) is, however, a key feature of the process of claim 1 as granted. The appellant failed to show that the formulation of example 2 indicated above has, contrary to the whole teaching of D1, a deswelling effect. The onus of proof in this respect lies, however, with the opponent (appellant), which he failed to discharge (T 219/83, OJ EPO 1986, 211).

- 2.1.2 Consequently, the appellant has not shown that the claimed subject-matter lacks novelty over D1.
- 2.2 D3 discloses in claim 1 a process for the permanent restructuring of hair comprising the following steps:
- (a) contacting the hair with a reactive reducing solution comprising a reducing agent capable of cystine cleavage for a time sufficient to achieve a substantially-maximum cystine bond cleavage;
 - (b) blotting the hair to remove the reactive reducing solution; and
 - (c) contacting the hair with a protein flow solution for a period of time sufficient to induce protein flow in the hair to achieve a desired restructured configuration prior to application of an oxidizing agent to reestablish the cystine bonds to fix the restructured configuration. The protein flow solution is an aqueous protein flow solution having a pH from about 2 to about 10 and comprises an aqueous solution of at least one protein flow agent selected from the

group consisting of a polyvalent ion, a water-soluble hydroxyorganic compound containing up to about 4 carbon atoms and at least one hydroxyl group and mixtures thereof. The pH value of step (a) is normally in the range of from 5 to 10 (page 16, last paragraph). The protein flow solution in step c) may contain magnesium or calcium salts in a concentration of 1 to 10% by weight (page 24, last paragraph).

2.2.1 Whilst the first step (a) in claim 1 of D3 is a reducing step, step a) of claim 1 under dispute is a lanthionizing step with a non-reducing base. It was agreed by the parties that the term "lanthionization" or "lanthionizing" has an established meaning in the art and concerns a hair treatment process, wherein hair is exposed to a strong alkaline relaxing solution transforming cystine bonds substantially to lanthionine bonds (see patent in suit page 2, lines 12 to 14; appellant's letter of 23 May 2002, page 5, lines 1 to 4). As far as D3 refers to lanthionization, it defines it as a caustic reaction with hair which process is incompatible with all other salon conditioning systems, because the hydroxyl ion irreversibly attacks the cystine (kSSk) linkages to form lanthionine, by the reaction:



(page 14, second full paragraph).

2.2.2 According to both parties, lanthionization is effected at a pH of at least 11. This is confirmed by D6, wherein the pH for lanthionization is above 11.8, preferably 12.5 to 13.5 (column 6, lines 45 to 48) and

- D7 (see also point 3.2 below). According to the patent in suit, lanthionization is effected at pH values of 12 to 13.5 (page 3, line 3).
- 2.2.3 None of the cited documents show that substantial lanthionization of hair can be effected at a pH of 10 or lower. Since the reducing step (a) of D3 is carried out at a pH of at most 10, in line with the submissions of both parties, such a pH is in any case not high enough for substantially forming lanthionine bonds throughout the hair.
- 2.3 From the above it follows that lanthionizing step a) of the claimed process with a non-reducing base for relaxing hair is distinguished from the reduction/oxidation treatment according to D3 for the permanent reconstruction of hair.
- 2.4 Consequently, the appellant has not shown that all the claimed features can directly and unambiguously be derived from D3 or D1. Hence, the claimed subject-matter is novel over the cited prior art documents D1 and D3.

Inventive step

Closest state of the art

3. The patent in suit concerns a process for relaxing hair fibres. Such a process is known from the prior art document D7, which both parties regarded as the closest state of the art. The board does not see any reason to deviate from that view as can be gathered from the following:

- 3.1 D7, which is an excerpt of a standard encyclopedia, describes hair straightening preparations. Such preparations can be used to straighten naturally wavy and curly hair. They contain strong bases such as alkali hydroxides (for example sodium hydroxide) in an amount of 1.5 to 4% by weight and do not require oxidative post treatment. Thickened preparations are applied to the hair with a brush and distributed throughout the hair with a comb. The hair is straightened by further combing. The preparations are allowed to work in for a predetermined time (ca. 2 to 15 min) and then are thoroughly rinsed out (page 591, point 6).
- 3.2 The lowest amount of sodium hydroxide (1.5% by weight) disclosed in D7 corresponds to a pH of about 12.5, which is in line with typical pH values disclosed in the patent in suit (12.5 to 13.5; page 3, line 3). Since D7 discloses a lantionizing step followed by a rinsing step, the steps described in D7 cover the conventional relaxing process, from which the patent in suit itself starts (page 2, lines 15 to 17).

Problem and solution

4. According to the patent in suit, although the conventional relaxing process decreases the amount of curl in hair, it also damages hair. The conventional process causes hair fibers to split longitudinally and break, leaving hair coarse, brittle, and unmanageable. These negative results cannot be corrected by applying conditioning agents to the hair subsequent to the relaxing process (page 2, lines 21 to 25).

4.1 In the examples of the patent in suit a fiber swelling analysis for fibers relaxed according to the conventional process is shown in Fig. 1. According to Fig. 1, fiber swelling increases steadily for the entire twenty minutes of exposure to sodium hydroxide. At the lanthionization-swelling peak 10, sodium hydroxide is removed and the fiber is rinsed with water for five minutes, in line with the conventional relaxing process. As is seen in Fig. 1, the fiber undergoes a second-stage swelling during the rinsing step to achieve the rinsing-swelling peak 12 which is higher than the lanthionization-swelling peak 10. After achieving the rinsing-swelling peak 12, swelling decreases steadily.

4.2 The test, the results of which are shown in Fig. 2 is repeated using the claimed process and the composition according to example 5 of the patent in suit. The composition of example 5 contains *inter alia* as main deswelling components: 56.6% by weight of a hydrogenated starch hydrolysate (Hystar CG; 70%), 5.86% by weight of magnesium sulfate, 6.0% by weight of lactic acid (85%) and 6.4% by weight of phosphoric acid (85%). As shown in Fig. 2, fiber swelling increases similarly to Fig. 1 to a lanthionization peak 14 at twenty minutes, the point at which the deswelling composition of example 5 is introduced. The deswelling composition remains on the hair fiber for three minutes and is then rinsed off with water. Fiber swelling again increases to a rinsing peak 16. However, because the rinsing peak 16 is lower than the lanthionization peak 14, the fibers relaxed according to the process of the present invention are not subject to second-stage

swelling greater than first-stage swelling, and therefore are not subject to the resulting structural damage.

- 4.3 The effects of the claimed process are illustrated in three further tests. One test shows that the fibers subjected to the claimed process have undergone minimal swelling, and no longitudinal rupture of the cuticles occurs (page 7, lines 33 to 35). According to the next test, hair fibers relaxed according to the claimed process are stronger than those relaxed according to the conventional process (page 2, lines 50 and 51).
- 4.4 Finally, tests are performed on twenty-five subjects in a half-side test. Each subject's hair is treated with a commercial sodium hydroxide relaxing solution for thirteen to eighteen minutes. When the hair appears to be straight, the right side of the head is treated with the composition of example 1 for two to three minutes. The composition of example 1 contains *inter alia* as main deswelling components: 56.6% by weight of a hydrogenated starch hydrolysate (Hystar CG; 70%), 6.4% by weight of lactic acid (85%) and 6.4% by weight of phosphoric acid (85%). The left side of the head is processed according to the conventional relaxing process.
- 4.5 The composition of the present invention is then reapplied to the right sides of the subjects' heads for five minutes. The left sides are treated with a commercial conditioner for five minutes, then shampooed once with an acidic shampoo. Both sides are then evaluated subjectively by independent consultants for various properties. The results are set forth in Tables

- 2 and 3, and show that the claimed process decreases the swelling of hair fibers during the relaxing process, resulting in hair that is smoother, silkier, shinier, easier to comb, and more manageable than hair relaxed according to the conventional relaxing process.
- 4.6 From the above test results it follows that the claimed process provides improved hair properties compared to the conventional process according to D7.
- 4.7 The problem to be solved over D7 may therefore be seen in providing a process for relaxing hair fibers which decreases the swelling of hair fibers and strengthens the hair fibers and results in hair that is smoother, silkier, shinier, easier to comb, and more manageable than hair relaxed by the conventional relaxing process of D7, in line with the patent in suit (page 2, lines 37 and 38 and page 9, lines 52 to 54).
- 4.8 It follows from the above that the problem addressed in the patent in suit is effectively solved by the claimed process.

Obviousness

5. It remains to be decided whether the claimed subject-matter is obvious having regard to the documents on file.
- 5.1 In D7, there is no hint, that negative effects by water rinsing may occur when the hair is subjected to a lanthionizing step and that they can be avoided by applying a deswelling composition according to step (b) of claim 1 without an intermediate rinse.

5.2 The appellant argued that documents D2 and D5 in combination with D7 rendered the claimed subject-matter obvious.

5.2.1 D2 discloses a process for the deformation treatment of keratin fibres, in which the keratin fibres are exposed to the action of a reactive reducing solution which contains reducing agents to break open the cystine linkages present in the fibres. A rinsing is carried out after the action of this solution and the fibres are exposed to the action of an oxidising agent in order to form cystine linkages again. Another rinsing is carried out where appropriate. Irreversible damage to the fibres is effectively prevented according to D2 by rinsing, after the exposure to the reducing solution, with an aqueous solution which has the effect that at no time during the rinsing process is the diameter of the fibres more than 30% larger than at the end of the reduction step (compare claim 1 and abstract). The solutions preferably used for rinsing have an osmotic pressure of more than 4.5×10^5 Pa compared to distilled water at 25°C (page 5, lines 17 and 18). Suitable compounds are specified in table 5, pages 12 and 13 and include salts and sugars. Preferred solutions contain sodium chloride in an amount of 10 to 350 g/l (claim 9). When using the rinsing solution of D2 a swelling of the hair fibres can effectively be avoided (page 4, lines 42 and 43) as illustrated by Fig. 1 and Fig. 2.

5.2.2 D5 concerns a thesis which describes the swelling behaviour of human hair (see title). The swelling behaviour of hair using permanent wave systems on the basis of thioglycolate, which is a reducing agent, is

investigated (summary page 93, first paragraph). As shown in Fig. D1 to D4, an increase in the pH value of the reducing agent from 8 to 10 enhances the swelling considerably. Although the pH of the reducing solution has an effect on the swelling (page 93, second paragraph), the results presented in D5 are based only on a reducing process, in which the pH is at most 10 (see point 2.2 above).

According to D5, when rinsing out the reducing agent from the hair with water, a strong osmotic swelling occurs (page 93 and Fig. D7 and D8 on pages 71 and 72). By the addition of a salt to the rinsing solution, the osmotic swelling no longer occurs and damage to the hair surface is avoided (page 93, last paragraph and page 94, first and second paragraphs). Hence, the teaching in D5 that by using salt solutions to avoid the negative effects of rinsing are avoided, is similar to that of D2.

5.2.3 However, there are no experiments in D2 or D5, which concern a lanthionizing process with a non-reducing base having a pH of typically 12 to 13.5. In the permanent wave processes as illustrated by D2 and D5, the cystine bonds are cleaved to cysteine bonds and afterwards reinstalled through oxidation (see D2), whilst in the lanthionizing step of the claimed subject-matter lanthionine bonds are irreversibly formed (see patent in suit, page 2, lines 12 to 14; D3 page 14). Thus, in a lanthionizing process in contrast to a permanent wave process with a reducing agent, completely different chemical reactions are involved. For example, the reducing reaction itself (cleavage of cystine bonds) has an influence on the degree of

swelling, since D5 describes a direct connection between the degree of swelling and the degree of reduction (page 93; page 77, last paragraph). Even if D5 shows that the swelling is also affected by the pH values (see Fig. D1 to D4), there is, however, no indication in the cited prior art, what might happen when the hair is subjected to a treatment with a **non-reducing base** (emphasis by the board) having a high pH of typically 12 to 13.5 as used in a lanthionizing process which is then rinsed out.

5.2.4 The appellant argued that the test results shown in Fig. 1 and 2 of D2 are similar to those shown in Fig. 1 and 2 of the patent in suit. These results showed that by lanthionizing hair damage occurred in a similar way to that resulting from a permanent wave process and that these negative effects could be avoided by the same technical features disclosed in D2.

5.2.5 However, the test results of the patent in suit go back to experiments on which the claimed invention is based which have not been made available to the public before the priority date. Since D2 and D5 concern a quite different chemical process, it is hindsight reasoning to speculate from D5 or D2 what hair damage might occur when only a lanthionizing step and an additional rinsing with water is involved.

5.2.6 Furthermore, according to D5, a swelling of more than 116% already causes an irreversible damage to the hair cuticle (page 83), so that there is no incentive for the skilled person to consider any further steps to remedy the negative effects of lanthionization at or above such a high swelling degree, which would normally

be surpassed by a lanthionizing process according to the claimed subject-matter (see swelling degree of above 120% in Fig. 2 of the patent in suit).

5.3 The only way for the skilled person to clarify the yet unknown swelling behaviour during the conventional lanthionizing process would be to make scientific investigations in that respect. Such investigations would amount to a research program similar to that shown in the thesis D5 for permanent waving with a reducing agent. However, there is no incentive in the prior art to make such investigations and indeed in that respect experiments have never been made in the cited prior art. The results of such research are not something that the skilled person can derive in an obvious manner from the prior art.

5.4 Consequently, the skilled person could not foresee from the documents on file that the conventional lanthionization process with strong alkalis and rinsing with water could be improved by using without an intermediate rinse a deswelling step. Since there is no hint in the prior art for any experimental evidence, on which the claimed subject-matter is based, there is no incentive for the skilled person to apply any of the proposals known for hair reducing systems of D2, D3 (see point 3.4 above) or D5 to the different lanthionizing process. Consequently, the skilled person would not combine the teaching of D7 with that of D2, D3 and/or D5 to arrive at the claimed subject-matter, since without experimental evidence there was no reasonable expectation of success.

5.5 Although D1 concerns a two stage process for straightening hair, wherein in the first step alkali hydroxide is applied, a swelling/penetration composition is applied in the second step quite in contrast to the deswelling step b) as specified in granted claim 1 (see point 2 above). The other cited prior art documents do not come closer to the claimed subject-matter than those discussed above and neither by themselves nor in combination with other cited documents, do they provide any pointer to the invention now claimed.

5.6 Hence, the claimed subject-matter is not made obvious by the cited prior art documents and involves an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

T. Buschek

S. Perryman