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Datasheet for the decision of 16 May 2019

Case Number: T 1111/17 - 3.3.07

Application Number: 10716251.3

Publication Number: 2563328

IPC: A61Q5/00, A61Q5/12, A61K8/898, A61Q5/06

Language of the proceedings: EN

Title of invention:
METHOD OF TREATING DAMAGED HAIR WITH AN AMINOSILICONE

Patent Proprietor:
Momentive Performance Materials Inc.

Opponent:
Kao Germany GmbH

Headword:
METHOD OF TREATING DAMAGED HAIR WITH AN AMINOSILICONE/Momentive Performance Materials Inc.

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - All requests (No)

Decisions cited:

Catchword:

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Beschwerdekammern

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Case Number: T 1111/17 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 16 May 2019

Appellant: (Patent Proprietor)	Momentive Performance Materials Inc. 260 Hudson River Road Waterford, NY 12188 (US)
Representative:	Laufhütte, Dieter Lorenz Seidler Gossel Rechtsanwälte Patentanwälte Partnerschaft mbB Widenmayerstraße 23 80538 München (DE)
Respondent: (Opponent)	Kao Germany GmbH Pfungstädter Str. 98-100 64297 Darmstadt (DE)
Representative:	Grit, Mustafa Kao Germany GmbH Pfungstädter Strasse 98-100 64297 Darmstadt (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 8 March 2017 revoking European patent No. 2563328 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	J. Riolo
Members:	D. Boulois Y. Podbielski

Summary of Facts and Submissions

I. European patent No. 2 563 328 was granted on the basis of a set of 11 claims.

Independent claim 1 as granted read as follows:

"1. A method of treating thermally and/or chemically damaged hair comprising:
(i) contacting thermally and/or chemically damaged hair with a hair treating composition which is an oil-in-water emulsion comprising a aminosilicone of the general formula (I):

$$MD_x\ D_y\ M \qquad (I)$$

wherein:
$M=R^1R^2{}_2SiO_{1/2}$
$D=R^2{}_2SiO_{2/2}$, and
$D'=R^2R^3SiO_{2/2}$, and
where
R^1 is an alkyl group having 12 to 50 carbon atoms,
R^2 is a substituted or un-substituted hydrocarbon group having 1 to 6 carbon atoms,
R^3 is 3-aminopropyl group and/or a N-(2-aminoethyl)-3-aminopropyl group,
x has a value of 1 to 2,000, and
y has a value of 1 to 50; and
(ii) applying heat for physically smoothing and/or shaping the treated hair;
wherein the hair treating composition is not rinsed from the chemically and/or thermally damaged hair that has been treated with the hair treating composition prior application of heat under step (ii)."

II. An opposition was filed under Article 100 (a) EPC against the granted patent on the grounds that the

subject-matter of the granted patent lacked novelty and inventive step.

III. The appeal lies from the decision of the opposition division to revoke the patent. The decision was based on 4 sets of claims, namely the claims as granted as main request, auxiliary request 1 filed with letter of 13 January 2017 and auxiliary requests 2 and 3 filed during the oral proceedings of 9 February 2017.

IV. The documents cited during the opposition proceedings included the following:
D1: JP 2008 143858 A
D2: Machine translation of D1
D3: Marchioretto and Van Doorn, "Silicones are versatile solutions to protect hair", Household and Personal Products Industry, 46(2), p. 54-59, published online on 5.2.2009
D4: Robbins et al, "Adsorption to keratin surfaces: A continuum between a change-driven and a hydrophobically driven process", J. Soc. Cosm. Chem., 45, p. 85-94, 1994
D5: Dussaud et al, "Characterization of the deposition of silicone copolymers on keratin fibers by streaming potential measurements", Colloids and Surfaces A: Physicochem. Eng. Aspects, 434, p. 102-109, 2013

V. According to the decision under appeal, the disclosure of D1/D2 did not anticipate the subject-matter of claim 1 of the main request, since this document did not mention that the treated hair was thermally or chemically damaged.

As regards inventive step, D3 was considered as the closest prior art. The difference between the granted

claim 1 and D3 lay in the structure of the silicones. Amodimethicones were disclosed in D3, without defining (1) the long-chain alkyl termination at the M-chain and (2) the specific amine substitution (R1 and R3). It was not clear from the examples of the patent whether or not an improved effect could be achieved by the inventive compounds and the temperature applied during the treatment was not specified in the patent. Thus, the technical problem was seen as the provision of an alternative method for the treatment of damaged hair, whereby heat was to be applied to physically smooth or shape the hair. The solution was the use of silicones according to formula I of claim 1. Said solution was obvious in view of D2, which disclosed compounds that fall into the scope of formula I to be used in hair styling.

The subject-matter of claim 1 of auxiliary requests 1 and 2 was not inventive for the same reasons.

Claim 1 of auxiliary request 3 did not meet the requirements of Article 123(2) EPC.

VI. The patent proprietor (hereinafter the appellant) filed an appeal against said decision. With the statement setting out the grounds of appeal dated 14 July 2017, the appellant filed auxiliary requests 1-3; auxiliary requests 1 and 3 were new, while auxiliary request 2 corresponded to the first auxiliary request presented during the opposition proceedings. The appellant also submitted experimental data.

Independent claim 1 of auxiliary request 2 read as follows, difference(s) compared with claim 1 as granted of the main request shown in bold:

Auxiliary request 2

"1. A method of treating thermally and/or chemically damaged hair comprising:
(i)...
(ii) applying heat for physically smoothing and/or shaping the treated hair **comprising the use of at least one heat applying device selected from the group consisting of a straightening iron and a curling iron;** wherein the hair treating composition is not rinsed from the chemically and/or thermally damaged hair that has been treated with the hair treating composition prior application of heat under step (ii)."

VII. With the letter dated 2 January 2018, the opponent (hereinafter the respondent) responded to the statement of grounds of appeal.

VIII. A communication from the Board, dated 22 March 2019, was sent to the parties. In this it was considered in particular that none of the request was inventive over D3. Moreover, the Board considered that the features added to claim 1 of auxiliary request 1, and also auxiliary request 3, did not meet the requirements of Article 123(2) and 123(3) EPC.

IX. With the letter dated 16 April 2019, the appellant filed new auxiliary requests 1 and 3.

Independent claim 1 of auxiliary requests 1 and 3 read as follows, difference(s) compared with claim 1 as granted of the main request shown in bold:

Auxiliary request 1

"1. A method of treating thermally and/or chemically damaged hair, **which is straightened, curled, bleached, and/or dyed hair, the method** comprising:...".

Auxiliary request 3

"1. A method of treating thermally and/or chemically damaged hair, **which is straightened, curled, bleached, and/or dyed hair, the method** comprising:
(i)...
(ii) applying heat for physically smoothing and/or shaping the treated hair **comprising the use of at least one heat applying device selected from the group consisting of a straightening iron and a curling iron**; wherein the hair treating composition is not rinsed from the chemically and/or thermally damaged hair that has been treated with the hair treating composition prior application of heat under step (ii)."

X. Oral proceedings took place on 16 May 2019.

XI. The arguments of the appellant may be summarised as follows:

Main request - Inventive step

D3 could be considered the closest prior art. A first difference between granted claim 1 and the teaching of D3 lay in the structure of the silicones to be applied to damaged hair. There was also no teaching in D3 that any of the silicone agents mentioned was suitable for protecting, specifically, damaged hair against heat. Moreover, the feature of not rinsing was not disclosed in D3.

The objective technical problem should be considered as

the selection of specific silicone compounds to obtain a particularly emphasized effect when used, in a specific manner, to treat hair of specific condition before the application of heat.

This problem was solved by using, without rinsing, the aminosilicones as defined in granted claim 1 before applying heat to chemically and/or thermally damaged hair.

The Frizziness Removal-test reported in par. [0064] [0065] and the Durable Hydrophobization-test reported in par. [0069]-[0072] of the patent showed the effect. The additional experimental data filed in appeal proceedings also showed that the inventive silicone E1, when applied as a leave-on conditioner, yielded very good results in heat protection of damaged hair. Moreover, the effect of the silicone was not depending on the temperature and did not disappear with lower temperature.

Hence, a superior effect over prior art components as mentioned in D3 had been demonstrated.

The solution to the technical problem was not obvious, since there was no basis in D1/D2 for the person skilled in the art to apply the claimed silicones specifically to damaged hair prior to heat treatment and without rinsing with a reasonable expectation of success to obtain any outstanding effect that would make them a superior pick.

Auxiliary request 1

The condition of the damaged hair to be subjected was not identified in D3 as a starting condition where

application of silicones could have a beneficial effect. This request hence required the person skilled in the art to select a specific starting point for the method, for which there was no reasonable basis.

Auxiliary request 2

It was true that ironing had been identified in D3 as a heat application method. However claim 1 defined an even more specific selection of procedural requirements, from those generally available, to obtain a well-defined and previously unexpected beneficial effect; this effect was shown by the additional data which were performed at 130°C and 160°C, the usual operating temperatures of curling irons. The restriction to specific heating devices implied thus implicitly the use of high temperatures.

When starting from D3, the person skilled in the art hence had to not only choose to apply a specific aminosilicone to damaged hair and not rinse prior heat application, but also to select a specific kind of heat treatment over other heat treatments.

Auxiliary request 3

This request defined both the condition of the damaged hair to be treated with aminosilicone and the kind of heat treatment to which the treated hair was then subjected. When compared to D3, a number of purposeful modifications had been made and there had been no basis for the person skilled in the art to envisage a method of such specific nature with a reasonable expectation of success.

XII. The arguments of the respondent may be summarised as follows:

Main request - Inventive step

D3 was a prior art document that presented silicones as "versatile solutions to protect hair", such as enhancing hair strength, heat protection, and color protection. Fig. 2 of D3 clearly showed that at a temperature of e.g. 70°C all three tested silicones delivered no significant difference in moisture loss. The same was true for higher temperatures for silicones.

Thus, the only remaining difference between the disclosure of D3 and claim 1 of the opposed patent was the structure of the amodimethicone.

The tests provided by the patentee were flawed in many respects:
1. The process temperature of the flat iron was not disclosed nor was any temperature mentioned in the patent description.
2. The patentee had selected a flat iron in the test report that has a minimum temperature of 130°C, but claim 1 of the opposed patent did not exclude lower or higher temperatures.
3. As clearly shown in Fig. 2 of D3, the effect at lower temperatures (e.g. 70°C as in D3) between different silicones was diminished, and, therefore, a superior effect of the silicones according to the opposed patent was not shown in the test report over the whole range claimed.

Hence, the problem over the closest state of the art was seen in the provision of an alternative method for

treating hair. The solution was obvious in light of the combination of D3 with D1/D2.

Auxiliary request 1 - Inventive step

D3 disclosed a method of treating hair and clearly referenced heat and chemical damage resulting from hair irons and dyeing, respectively. Thus, the teachings presented in D3 were applicable to "straightened, curled, bleached and/or dyed hair" and the method was clearly suitable for this purpose. The amendment made to claim 1 of this request could not be seen as providing a difference between the prior art.

Auxiliary request 2 - Inventive step

The limitation of heat applying devices did not deliver any unexpected effect over the prior art. Moreover, these devices were common heat applying devices and D3 clearly taught the use of such devices.

Auxiliary request 3 - Inventive step

Auxiliary request 3 was a combination of amendments from auxiliary requests 1 and 2. Thus, the claims of auxiliary request 3 lacked inventive step as well.

XIII. Requests

The appellant requested that the decision under appeal be set aside and the patent be maintained as granted or, as an auxiliary measure, that the patent be maintained on the basis of auxiliary request 1 filed with letter dated 16 April 2019, or auxiliary request 2 filed with the grounds of appeal on 14 July 2017, or

auxiliary request 3 filed with letter dated 16 April 2019.

The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. Main request (Claims as granted) - Inventive step

1.1 The invention relates to a method for treating hair using a composition comprising a silicone of Formula I, to give hair good thermal protection and lubrication properties which leave the hair shiny and feeling non-oily.

1.2 D3 is considered as the closest prior art by the opposition division in its decision and by both the appellant and the respondent.

D3 relates to the use of silicones for inter alia the protection of hair from heat.

D3 mentions explicitly the use of silicone compositions on damaged hair, by mentioning that "hair that has been temporarily or permanently dyed is especially in need of protection" and that the silicones "can be especially useful in products designed for curly or kinky hair or for weakened or damaged hair" (see D3 page 1/8, second paragraph and paragraph "Enhancing Hair Strength"). The claimed treatment of damaged hair can therefore not constitute a difference between the claimed subject-matter and the disclosure of D3, as argued by the appellant.

The use of different silicones, namely amodimethicone, aminopropyl phenyl trimethicone and silicone quaternium 16 is studied in D3 as regards protection from heat and moisture retention in hair at the temperatures of 70, 120 and 160°C obtained by blow drying and curling with hot irons (see D3, par. "Protection from Heat on page 2/8 and Figure 2). D3 makes in particular clear in Figure 2 that the temperature of the heating step is important, since the moisture retention, which influences the hair protection, is significantly different when operating at 70, 120 or 160°C.

Moreover, the protocol of application of the silicones disclosed in D3 shows that the silicones are not rinsed away, which can therefore also not constitute a difference between the claimed subject-matter and the disclosure of D3, as argued by the appellant.

D3 does not mention the use of silicones of formula I as claimed.

1.3 According to the appellant, the problem is the selection of specific silicone compounds to obtain a particularly emphasized effect when used, in a specific manner, to treat hair of specific condition before the application of heat.

1.4 The solution is the use of aminosilicone of the general formula (I) in a method of treating thermally and/or chemically damaged hair.

1.5 According to the appellant, the examples of the contested patent and the additional data provided with the statement of grounds of appeal show that the technical problem has been solved. Reference is made to the “Frizziness Removal Test” in par. (0064)-(0065) and

the “Durable Hydrophibization Test” in par. (0069)-(0072) of the specification and to the additional data provided with the statement setting out the grounds of appeal.

1.5.1 The “Frizziness Removal Test”

The "Frizziness Removal Test" compares the hair volume factor before and after ironing of hair treated with various silicones and alkylaminosilicone according to the invention. The data of Table 2 show that the aminosilicone modified at the end by long alkyl chain treatment during ironing allowed a significant removal of frizzyness, superior to the conventional aminosilicone treatment.

1.5.2 The “Durable Hydrophibization Test"

The test compares the effect of silicone treatment according to the claimed method on the hydrophobization of the hair, after a given number of hair washes. The test show an improvement in the durability of the hydrophobization of the hair treated with the alkylaminosilicone according to the invention in comparison to other aminosilicones.

1.5.3 Additional Experimental Data

Said test makes a comparison of the hair volume factor before the after ironing at 130°C and 160°C, and of the hydrophobicity of the hair treated under the same conditions at 130°C and 160°C, between a treatment by several different silicones and by an alkylaminosilicone according to the invention. The hair tress treated with the silicone of the claimed invention shows less frizzy tresses with a better hair

volume factor and hair hydrophobicity than the hair tressed with other silicones.

1.5.4 Conclusions

In view of all the experiments provided by the appellant, the following can be concluded:

- None of the “Frizziness Removal Test” and the “Durable Hydrophibization Test” present in the contested patent identifies the ironing or heat temperature which has been used for performing said tests, which renders a comparison with the prior art composition incomplete and deficient.

An information or teaching as to the temperature to apply in the claimed step of "(ii) applying heat for physically smoothing and/or shaping the treated hair" is furthermore also totally lacking not only in the “Frizziness Removal Test” and the “Durable Hydrophibization Test” but also in the whole description and claims of the contested patent. In the present case, the lack of information in the examples and the claims of the heating temperature of the claimed step (ii) is seen as a fundamental deficiency.

The “Frizziness Removal Test” and the “Durable Hydrophibization Test” of the contested patent are therefore cannot show an effect over the closest prior art.

- The additional data provided with the statement of grounds of appeal show an undeniable effect linked with a treatment with the alkylaminosilicone according to the invention, when the claimed step ii) is performed

in said tests only under the temperatures of 130°C and 160°C.

However, the scope of claim 1 is not restricted to such temperature of 130°C and 160°C or even to a range of 130-160°C for which an effect has been credibly shown. A basis for such restriction does not exist in the application as filed.

This absence is a fundamental deficiency, as already pointed out above, since it is clear from the additional data that the heating step (ii) is an essential step for performing the claimed invention. The volume factors before and after ironing as given in Table 1 of the tests show indeed a variation only after application of said heating step.

Since D3 makes clear in Figure 2 that the temperature of the heating step is important and since the moisture retention, which influences the hair protection, is shown to be significantly different when operating at 70°C, 120°C or 160°C, it is not credible that said effect might be observed at any temperature.

As to the argument of the appellant that the effect does not disappear with lower temperatures, and that only its magnitude becomes smaller at lower temperature, this argument is not credible and not supported by any data, in particular not by comparative data performed at said lower temperatures. Figure 2 of D3 shows explicitly that the effect at a temperature of 70°C depends on the silicone used and is not proportional to the protective effect observed at 120°C or 160°C.

The additional data provided with the statement of grounds of appeal do therefore also do not show an improvement over the closest prior art.

1.5.5 Hence, it is not possible to deduce from the tests of the contested patent and the additional experimental data that an effect may be observed at any heating temperature, and the effect observed at the higher temperatures cannot be generalized to the whole scope of claim 1 of the main request.

The problem must therefore be reformulated as the provision of an alternative process of treating thermally and/or chemically damaged hair.

In view of the tests discussed above, this problem appears to have been credibly solved by the claimed process of the main request.

1.6 It remains to be determined whether the solution is obvious.

D1/D2 discloses a process for treating hair by application of a conditioner comprising an alkylaminosilicone according to the invention (see the claims). In several examples, the hair is further dried at 70°C during 20 minutes (see pages 17-18). The compositions using the alkylaminosilicone according to the invention show improved effects over compositions comprising alkyl silicones, with regards to hair shape retention, namely curl retention, hair feeling and smoothness after drying (see Table 2). This document discloses in fact the process as claimed in claim 1 of the main request with the exception that it does not explicitly mention that the treated hair may be chemically damaged hair.

The use of alkylaminosilicone according to the invention in a method for treating hair is known from D1/D2, and the skilled person would implement the alkylaminosilicone disclosed in D1/D2 in methods generalyl known for silicones as disclosed in D3.

Consequently, the subject-matter of claim 1 of the main request turns out to be merely the result of an arbitrary choice known from the disclosure of document D1/D2. It follows that the process of claim 1 of the main request is obvious over D3 combined with the teaching of D1/D2.

1.7 Thus, the subject-matter of claim 1 of the main request does not involve an inventive step (Article 56 EPC).

2. Auxiliary request 1 - Inventive step

2.1 Claim 1 of this request has been restricted to a method for treating thermally and/or chemically damaged hair **"which is straightened,curled, bleached and/or dyed hair"**.

2.2 As specified above for the main request under point 1.2, D3 mentions explicitly the use of silicone compositions on damaged hair, and explicitly mentions dyed hair, i.e. "hair that has been temporarily or permanently dyed is especially in need of protection".

Said added feature does not constitute a further difference over the closest prior art, and the conclusions reached above as regards inventive step for the main request apply also to claim 1 of auxiliary request 1.

Consequently, the subject-matter of claim 1 of auxiliary request 1 does not involve an inventive step (Article 56 EPC).

3. Auxiliary request 2 - Inventive step

3.1 Claim 1 of this request has been amended by the specification of the types of device applying heat in step (ii), namely "ii) applying heat for physically smoothing and/or shaping the treated hair **comprising the use of at least one heat applying device selected from the group consisting of a straightening iron and a curling iron**".

3.2 As specified above in point 1.2, curling irons are explicitly disclosed in D3, as it was also acknowledged by the appellant. There is therefore a direct incentive to use curling irons in D3.

3.3 The appellant argued that temperatures of 130°C to 160°C are the normal and usual temperatures of use of curling irons, and that the results of the additional experimental data filed with the statement of grounds of appeal, which show the existence of an improvement at such temperatures show an effect which should be taken in account in the assessment of inventive step. However the Board could not follow this argument.

It is commonly known that the temperature of use of a curling iron is not limited to high temperatures, such 130 to 160°C, but a curling iron can be used at lower temperatures. As argued by the respondent, curling irons exist indeed for different types of hair, including for fine hair, which work at a low temperature such as 70°C. Hence, it is not possible to

see in the introduction of the type of heating device an implicit limitation as to the temperature applied in step (ii) of claim 1.

3.4 The introduction of this feature cannot constitute another explicit or implicit distinguishing feature over the disclosure of D3, and the conclusions reached for the main request as regards inventive step apply *mutatis mutandis* to claim 1 of auxiliary request 2.

Consequently, the subject-matter of claim 1 of auxiliary request 2 does not involve an inventive step (Article 56 EPC).

4. Auxiliary request 3 - Inventive step

4.1 Claim 1 of this request has been restricted by the respective features introduced in claim 1 of auxiliary requests 1 and 2, namely to a method for treating thermally and/or chemically damaged hair **"which is straightened, curled, leached and/or dyed hair"** and by the specification of the types of device applying heat in step (ii), namely "ii) applying heat for physically smoothing and/or shaping the treated hair **comprising the use of at least one heat applying device selected from the group consisting of a straightening iron and a curling iron".**

4.2 As discussed above for auxiliary requests 1 and 2, these features have no impact on the assessment of inventive step, and the conclusions reached for the main request as regards inventive step apply *mutatis mutandis* to claim 1 of auxiliary request 3.

Consequently, the subject-matter of claim 1 of auxiliary request 3 does not involve an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

K. Götz-Wein J. Riolo

Decision electronically authenticated