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Datasheet for the decision of 16 June 2011

Case Number: T 1109/08 - 3.3.01

Application Number: 99122210.0

Publication Number: 1000950

IPC: C07F 7/08

Language of the proceedings: EN

Title of invention:
Novel indanylidene compounds

Patentee:
DSM IP Assets B.V.

Opponent:
Symrise AG

Headword:
Indanylidenes/DSM

Relevant legal provisions:
EPC Art. 56
RPBA Art. 15(3), 15(6)

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step (yes) - improvement credible within claimed scope"

Decisions cited:
T 1188/00

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1109/08 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 16 June 2011

Appellant: (Opponent)
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 11 April 2008 concerning maintenance of European patent No. 1000950 in amended form.

Composition of the Board:

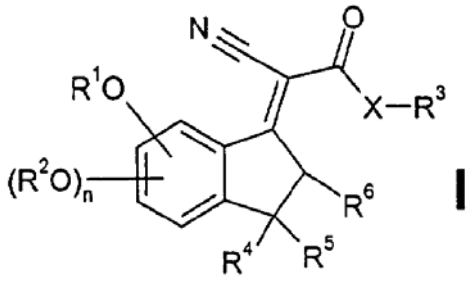
Chairman: P. Ranguis
Members: L. Seymour
L. Bühler

Summary of Facts and Submissions

I. European patent No. 1 000 950, which was filed under patent application number 99 122 210.0, was granted on the basis of twenty-two claims.

Independent claim 1 as granted (main request) reads as follows:

"1. Compounds of the general formula I



I

wherein

X signifies O or NH;

R^1 signifies C_1-C_{20} alkyl, C_2-C_{20} alkyl in which at least one methylene group is replaced by oxygen, C_3-C_{20} alkenyl, C_3-C_{20} alkynyl or a group YS;

R^2 signifies C_1-C_{20} alkyl, C_2-C_{20} alkyl in which at least one methylene group is replaced by oxygen, C_3-C_{20} alkenyl, C_3-C_{20} alkynyl or a group YS; or R^1 and R^2 can combine on adjacent C-atoms to form a dioxomethylene ring;

R^3 signifies C_1-C_{20} alkyl, C_2-C_{20} alkyl in which at least one methylene group is replaced by oxygen, C_3-C_{20} alkenyl, C_3-C_{20} alkynyl or a group YS;

R^4,R^5,R^6 each independently signify H or C_1-C_{20} alkyl;

n signifies 0, 1 or 2;

Y signifies a linker group;

S signifies a silane-, an oligosiloxane- or a polysiloxane-moiety;

with the proviso that at least one of the residues R^1, R^2 or R^3 signifies YS."

II. An opposition was filed and revocation of the patent in its entirety requested pursuant to Article 100(a) EPC, for lack of inventive step.

III. The following documents were cited *inter alia* during the opposition/appeal proceedings:

(l) EP-A-0 823 418

(2) US 5 089 250

(5) US 5 827 509

(9) EP-A-0 350 314

(30) Declaration of Dr. Oskar Koch filed with appellant opponent's statement of grounds of appeal

IV. The present appeals lie from the interlocutory decision of the opposition division to maintain the patent in suit in amended form based on the first auxiliary

request filed during the oral proceedings before the opposition division.

In its analysis of inventive step of the main request (claims as granted), the opposition division considered document (1) to represent the closest prior art.

Referring to the patentee's definition of the problem to be solved, namely, as lying in the provision of alternative indanylidene compounds with better solubility in Cétiol LC and Crodamol DA, the opposition division was of the opinion that insufficient evidence had been provided in the patent in suit to plausibly demonstrate that this problem had been solved for the whole scope claimed. The opposition division referred to the decision of the boards of appeal T 1188/00 in support of its position that the burden of proof in this respect lay with the patentee.

The problem to be solved was therefore to be defined in a less ambitious manner, as lying in the provision of alternative indanylidene compounds with better solubility in cosmetic media, in particular in oil and fats. The solution proposed was considered to be obvious in view of the teaching of document (9) that cinnamic acid derivatives grafted to silicone exhibited excellent solubility in dimethylpolysiloxane (Dimethicone).

Concerning the first auxiliary request, the opposition division considered that, in view of the limitations introduced into claim 1, the examples in the patent in suit now rendered it plausible that the better solubility in Cétiol LC and Crodamol DA could be

achieved across the whole scope of claim 1. This effect was not suggested by document (9), which only taught an increase of solubility in Dimethicone.

V. The patent proprietor (appellant patentee) and the opponent (appellant opponent) each lodged an appeal against the decision of the opposition division.

VI. With its statement of grounds of appeal, the appellant opponent filed additional comparative data (document (30)).

VII. With its response of 25 February 2009, the appellant patentee filed four auxiliary requests.

VIII. The appellant opponent announced by letter of 21 February 2011 that it would not be attending the oral proceedings scheduled for 16 June 2011.

IX. Oral proceedings were held before the board on 16 June 2011.

X. The appellant opponent's arguments submitted in writing, insofar as they are relevant to the present decision, may be summarised as follows:

In its assessment of inventive step of the main request, the appellant opponent referred to the reasoning of the opposition division in the decision under appeal, as summarised under point IV above, in particular with respect to the assessment of inventive step starting from document (1) in combination with document (9), and the relevance of decision T 1188/00.

As further evidence that the more ambitious problem as defined by the appellant patentee had not been solved within the whole scope claimed, the appellant opponent submitted additional comparative data (cf. point VI above). In addition, the appellant opponent argued that documents (2) and (5) were also detrimental to inventive step, since they both taught that products having very good liposolubility could be obtained by grafting known chromophores to silicon moieties of the type claimed.

Finally, the appellant opponent submitted that, based on theoretical considerations, the skilled person would have expected a better solubility in Cétiol LC and Crodamol DA for the present chromophores on grafting, since this would lead to a better match of solubility parameters between solute and solvent.

XI. The appellant patentee's arguments, insofar as they are relevant to the present decision, may be summarised as follows:

Starting from document (1) as the closest state of the art, the problem to be solved was to be seen in the provision of indanylidene compounds having improved solubility in conventional cosmetic oils and fats such as Cétiol LC and Crodamol DA. The solution proposed in the patent in suit lay in the grafting of a silane, oligosiloxane or polysiloxane moiety S to the known chromophores of document (1). The numerous comparative examples provided in Table 1 the patent in suit demonstrated that the problem had been solved within the whole scope claimed. The appellant opponent's allegations that this was not the case had not been

adequately substantiated. The data submitted in document (30) could not be considered as being relevant in this context, since the compounds chosen for comparison not only differed in the presence of the moiety S, but also in the nature of the linker group Y. In fact, comparison of the data from document (30) with that from Table 1 of the patent in suit provided further evidence for an improvement in solubility for the compounds according to the patent in suit.

Finally, the appellant patentee argued that there was no teaching in the prior art that would have led the skilled person to the present solution of the problem posed. In particular, any teaching that could be derived from documents (2), (5) or (9) related to the specific chromophores disclosed therein. The solubility properties of one class of chromophore could not be extrapolated to the next. Thus, for example, Parsol® 340, a chromophore according to document (5), was completely miscible in standard oils and esters used in commercial cosmetic preparations, even prior to grafting (cf. table submitted during the opposition procedure as annex to appellant patentee's letter of 11 January 2008). The present problem therefore did not arise for said chromophores. Finally, the skilled person would not have turned to document (9) at all since this specifically aimed at different purpose than the patent in suit, namely, improving solubility in silicone oils.

XII. The appellant patentee requested that the decision under appeal be set aside and that the patent be maintained as granted (main request), or, alternatively, on the basis of one of the auxiliary requests 1 to 4 filed with the letter of 25 February 2009.

The appellant opponent requested in writing that the decision under appeal be set aside and that European patent No. 1000950 be revoked.

XIII. At the end of the oral proceedings, the decision of the board was announced.

Reasons for the Decision

1. The appeal is admissible.

2. The oral proceedings before the board took place in the absence of the appellant opponent who was duly summoned but chose not to attend, as announced with letter of 21 February 2011. According to Article 15(3) of the Rules of Procedure of the Boards of Appeal (RPBA, see Supplement to OJ EPO 1/2011, 38 to 49), the board shall not be obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of any party duly summoned who may then be treated as relying only on its written case. Hence, the board was in a position to announce a decision at the conclusion of the oral proceedings, as foreseen by Article 15(6) RPBA.

3. *Main request – Inventive step*

3.1 The sole issue arising with respect to the main request consists in deciding whether or not the subject-matter of the claims as granted involves an inventive step.

3.2 The patent in suit is directed to light-screening agents in which an indanylidene residue is grafted via a linker to a silane, oligosiloxane or polysiloxane moiety. These are used in the area of skin protection and sunscreen preparations for everyday cosmetics (cf. point I above; and patent in suit, claims 1 and 20, and paragraphs [0001], [0036]).

3.3 The board considers, in agreement with the appellant patentee, appellant opponent and the opposition division, that document (1) represents the closest state of the art. This document relates to indanylidene compounds and their use as UV absorbers, for example in cosmetic compositions (see page 2, lines 3 to 5 and page 5, lines 23 to 41). It is disclosed that the properties of the claimed compounds can be varied within wide limits by suitable choice of the substituents, whereby the presence of sulfonic acid groups promotes water solubility, and their absence oil solubility (page 3, lines 52 to 57). The compounds specifically exemplified in document (1) are alkyl esters of cyano-(2,3-dihydro-1*H*-inden-1-ylidene)-acetic acids (pages 7, 8).

3.4 The appellant patentee defined the problem to be solved, in the light of document (1), as lying in the provision of indanylidene compounds having improved solubility in conventional cosmetic oils and fats such as Cétiol LC and Crodamol DA.

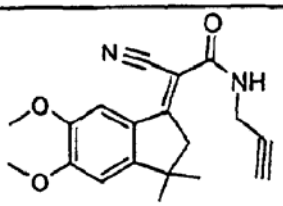
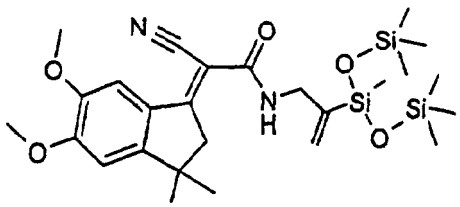
3.5 The solution as defined in claim 1 relates to the grafting of "a silane-, an oligosiloxane- or a polysiloxane-moiety" onto the indanylidene compounds

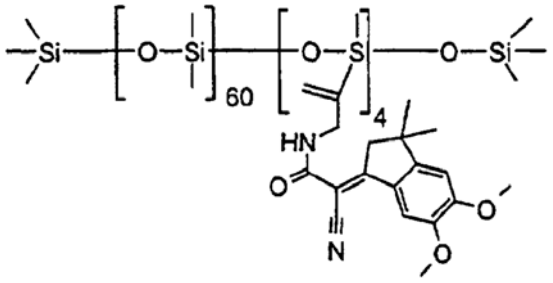
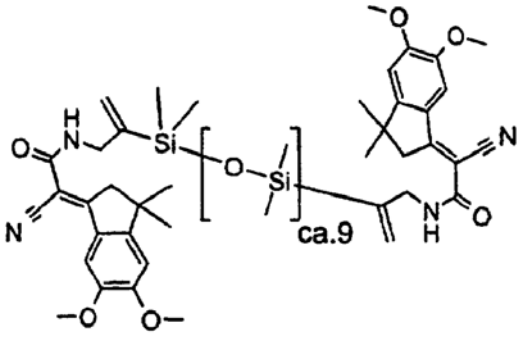
according to document (1) (cf. claim reproduced under point I above, group S).

3.6 As a next step, it has to be decided whether it has been rendered credible that the problem defined under point 3.4 has been successfully solved over the whole breadth claimed.

3.6.1 The appellant patentee relied in this respect mainly on the data provided in Table 1 of the patent in suit.

This table lists solubility data in Cétiol LC and Crodamol DA for four compounds reflecting the teaching of document (1) and twelve compounds according to the patent in suit. An excerpt from this table is reproduce below:

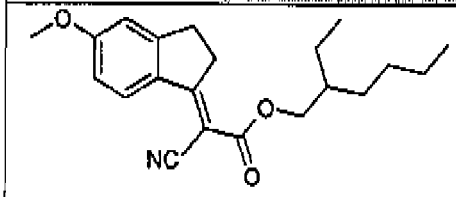
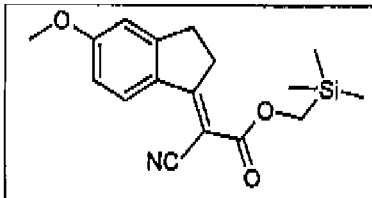
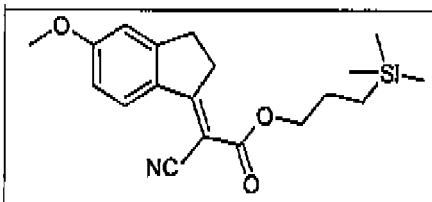
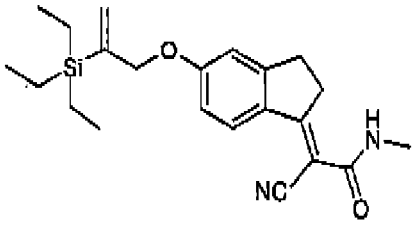
Compound	Solubility in CETIOL LC	Solubility in CRODAMOL DA
	0.04%	—
	miscible	miscible

	miscible	miscible
	miscible	miscible

Thus, it can be seen that the above three examples according to the patent in suit differ from the comparative compound (first compound reproduced above) only in the grafting of an oligo- or polysiloxane moiety to the triple bond. This can be considered to represent a fair comparison since it truly reflects the impact of the distinguishing feature of the invention on solubility. It can be seen from the above data that a substantial increase in solubility in Cétiol LC and Crodamol DA is achieved as a result of this modification.

The further nine examples of Table 1 of the patent in suit demonstrate that a solubility of greater than 20% or miscibility is maintained for a variety of groups YS attached at various positions of the indanylidene core.

3.6.2 The appellant opponent challenged that said improvement in solubility would be observed for the whole scope claimed by submitting additional comparative tests (cf. point VI above), which are reproduced below:

Struktur	Cetiol LC	Crodamol DA
 A1 (Beispiel gemäß D1)	8%	10%
 B1 (Beispiel gemäß Streitpatent)	2%	6%
 B2 (Beispiel gemäß Streitpatent)	2%	6%
 B3 (Beispiel gemäß Streitpatent)	4%	8%

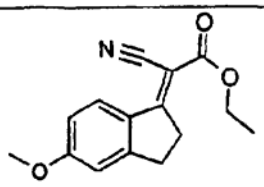
The board observes that comparative compound A1, according to document (1), is an ester bearing an ethylhexyl residue. In contrast, in compounds B1 and B2, according to the patent in suit, the equivalent residues are methyl and propyl groups, respectively. Thus, the compounds chosen for comparison not only

differ in the distinguishing feature of the invention, that is, in the presence of group S, in this case a trimethylsilane group ($-Si(CH_3)_3$), but also show substantial differences in the size of group Y (C8 vs. C1 and C3). Similarly, there are several structural differences between the ester A1 and the amide B3. Therefore, from this data, no conclusion can be reached as to the impact of attaching a group S to the compounds according to document (1), since any differences in solubility may also be caused by the remaining structural differences between the compounds compared.

Consequently, the board cannot agree with the conclusions drawn by the appellant opponent from the data provided in document (30).

On the contrary, the board finds the argument of the appellant patentee persuasive that the results for compounds B1 and B2, as reproduced above, provide further evidence that the problem defined above under point 3.4 has been solved (cf. appellant patentee's letter of 25 February 2009, point 3.1):

Thus, compounds B1 and B2, wherein the groups -Y-S are $-CH_2-Si(CH_3)_3$ and $-CH_2-CH_2-CH_2-Si(CH_3)_3$, respectively, show identical solubilities of 2% in Cétiol LC and of 6% in Crodamol DA. It therefore appears fair to assume that similar results would be obtained for the intermediate homologue bearing a $-CH_2-CH_2-Si(CH_3)_3$ group. These results may be compared with the much poorer solubilities of the corresponding ethyl ester according to Table 1 of the patent in suit, which lacks the $-Si(CH_3)_3$ group:

	0.09%	—

This data therefore provides further evidence that grafting a silane groups onto the chromophores of document (1) also improves solubility in said solvents.

3.6.3 Independently of the data provided in document (30), the appellant opponent also criticised the breadth of the claims when compared to the limited structural variation specifically exemplified in the patent in suit. With reference to decision T 1188/00, the appellant opponent was consequently of the opinion that the appellant patentee had not discharged its burden of proof to plausibly demonstrate that the alleged advantage could be achieved across the whole scope claimed.

The board firstly notes that the circumstances underlying decision T 1188/00 are not comparable to those of the present case. Said decision concerned a situation in which the appellant patentee reformulated a more ambitious problem based on an effect first alleged at appeal proceedings (see Headnote), whereas, in the present case, the patent in suit already contained data to support the alleged technical effect in the form of the comparative data provided in Table 1. In addition, in decision T 1188/00, the board held that the data in the test report filed by the appellant patentee were not pertinent (see Reasons, points 4.4 to

4.8). This also contrasts with the present case, as has been explained under point 3.6.1 above.

Moreover, it has to be stressed that claims almost always represent a generalisation of the examples. It is not a prerequisite for plausibly demonstrating that an alleged effect is achieved over the full scope claimed to provide an illustrative example for every possible specific combination of substituents encompassed by the claims. Thus, in the present case, as explained above under points 3.6.1 and 3.6.2, the appellant patentee has made a convincing case, based on data for a variety of structures, that the alleged effect has its origin in the distinguishing feature of the invention. In this situation, it is then up to the appellant opponent to demonstrate that the evidence relied on by the appellant patentee is not valid or representative for the whole scope claimed.

3.6.4 In view of the above and in the absence of any convincing evidence to the contrary, the board is satisfied that the problem underlying the patent in suit as defined under point 3.4 above has been successfully solved within the whole area claimed.

3.7 It remains to be decided whether the proposed solution would have been obvious to the skilled person in the light of the prior art.

3.7.1 As outlined above under point 3.3, document (1) itself contains a general statement that the properties of the claimed indanylidene compounds can be varied within wide limits by suitable choice of substituents. However, this document does not suggest the incorporation of a

silane, oligosiloxane or polysiloxane moiety in order to achieve this end.

3.7.2 The appellant opponent's attack with respect to inventive step concentrated on a combination of the teachings of documents (1) and (9).

Document (9) aims at providing cinnamic acid derivatives having improved solubility in silicone oil, thus obviating the need for adding further oily bases (see, for example, page 2, lines 31 to 61, and in particular lines 44 to 48). This objective is achieved by attaching silicone-type moieties to the cinnamic acid ester precursors (see page 10, lines 15 to 19).

Thus, this document does not address the problem underlying the patent in suit, since it specifically aims at improving solubility in silicone oil and avoiding the use of other oily media. For this reason alone, document (9) cannot give any hint on how to solve the problem of improving solubility in standard cosmetic esters, such as Cétiol LC or Crodamol DA.

In addition, there is no suggestion in document (9) that any teaching with respect to solubility could be extrapolated to chromophores other than cinnamic acids. Indeed, according to the information provided by the appellant patentee, the grafted indanylidene compounds claimed in the patent in suit display poor solubility in the silicone oil Dimethicone (see statement of grounds of appeal, point 5.3.5, first sentence).

In view of the above, the appellant opponent's obviousness objection based on document (9) must fail.

3.7.3 The appellant opponent additionally regarded documents (2) and (5) as being detrimental to inventive step.

Document (2) concerns the cosmetic use of UV filters in which benzotriazole moieties of specific structure are grafted onto a diorganopolysiloxane backbone (see column 1, lines 5 to 9; column 2, formulae (1), (2) and (3)). Thus, document (2) does not provide any general teaching directing the skilled person to consider the use of further chromophores, and in particularly not the present, structurally remote indanylidene moieties

In addition, in document (2), the liposolubility of the grafted benzotriazole derivatives is contrasted with that of other graft polymers, rather than with that of the benzotriazole precursors (column 1, lines 41 to 58). Therefore, there is no suggestion that the solubility of the benzotriazole chromophores can be improved on grafting.

Document (5) is directed to cinnamonitrile-substituted silicone/silane sunscreen compounds (see e.g. claim 1 and column 2, lines 36 to 38).

The introductory section of document (5) lists a number of known classes of aromatic compounds having sunscreen activity, namely, "p-aminobenzoic acid derivatives, benzylidenecamphor derivatives, cinnamic acid derivatives and benzotriazole derivatives", and generally discloses that "**certain of these** ... do not display all of the properties required for an acceptable UV screening agent in sunscreen

compositions" (emphasis added). The properties referred to include solubility, particular in fats, but also intrinsic screening activity, photostability and resistance to water and sweat (see, in particular, column 2, lines 14 to 32).

Thus, this section is very general and does not allow the skilled person to attribute any particular deficiency to any particular chromophore.

In the following section of document (5) entitled "Summary of the Invention", it is stated that, "by grafting ... one or more **specific** cinnamonitrile screening derivatives ... to a particular linear or cyclic silicone chain or a particular silane" (emphasis added), compounds are prepared which display "very high sunscreen activity, ... very good solubility in the common organic solvents and notably in fatty substances such as oils, excellent photostability, and also excellent cosmetic properties".

The board notes that this passage does not provide a teaching applicable to aromatic sunscreens in general, but rather emphasises that specific grafted cinnamonitrile derivatives display a number of favourable properties. Moreover, it is not specified that any particular property is improved as a result of grafting.

In view of the above, it is concluded that the skilled person would not have been able to extract any valuable teaching from documents (2) or (5) in order to solve the problem posed.

3.7.4 Finally, the appellant opponent based its inventive step objection on theoretical considerations of solubility parameters of the present indanylidene compounds compared to those of the corresponding precursors. However, this reasoning represents a typical ex-post-facto analysis, in other words, an analysis based on the knowledge of the invention as disclosed in the patent in suit.

3.7.5 The further prior art documents available in the present case do not come closer to the claimed subject-matter than those addressed above. Hence, the subject-matter of claim 1 of the main request is considered to involve an inventive step.

Claims 2 to 19 are dependent on claim 1, and claims 20 to 22 are directed to corresponding light-screening compositions and uses, with reference back to previous compound claims. It is therefore concluded that the subject-matter of the claim set according to the main request meets the requirements of Articles 52(1) and 56 EPC.

Since the main request is considered to be allowable, the board need not decide on the lower ranking requests.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is maintained unamended.

The Registrar: The Chairman:

M. Schalow P. Ranguis