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Datasheet for the decision of 13 March 2015

Case Number: T 0710/12 - 3.3.06

Application Number: 01955906.1

Publication Number: 1303582

IPC: C11D3/386, C12N9/96, C12N9/54

Language of the proceedings: EN

Title of invention:
STABILIZATION OF ENZYMES

Patent Proprietor:
Danisco US Inc.

Opponents:
Henkel AG & Co. KGaA
Novozymes A/S

Headword:
Stabilization of proteases / DANISCO

Relevant legal provisions:
EPC Art. 52(1), 56, 114(2)
RPBA Art. 13(1), 13(3)

Keyword:
Inventive step (Main Request and Auxiliary Requests 1 and 2) - (no): obvious alternative
Late-filed auxiliary requests - admitted (no)

Decisions cited:

Catchword:

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Case Number: T 0710/12 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 13 March 2015

Appellant I: (Patent Proprietor)	Danisco US Inc. 925 Page Mill Road Palo Alto, CA 94304-1013 (US)
Representative:	Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Appellant II: (Opponent 2)	Novozymes A/S Krogshøjvej 36 2880 Bagsværd (DK)
Representative:	Potter Clarkson LLP The Belgrave Centre Talbot Street Nottingham NG1 5GG (GB)
Respondent: (Opponent 1)	Henkel AG & Co. KGaA Henkelstrasse 67 40589 Düsseldorf (DE)
Representative:	Henkel AG & Co. KGaA Patente (FJI) 40191 Düsseldorf (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 19 January 2012 concerning maintenance of the European Patent No. 1303582 in amended form.**

Composition of the Board:

Chairman	B. Czech
Members:	P. Ammendola
	S. Fernández de Córdoba

Summary of Facts and Submissions

I. The present appeals by the Proprietor of the patent (Appellant I) and Opponent 2 (Appellant II) are against the decision of the Opposition Division concerning maintenance of European Patent No. 1 303 582 in amended form.

II. Independent claims 1 and 10 of the patent as granted read as follows:

"*1. A method for stabilizing one or more protease enzymes from Bacillus species in a liquid medium, consisting of:*
formulating in said liquid medium an alkali metal halide salt at a level of at least 4% w/w in combination with a polyol solvent at a level of at least 30% w/w."

"*10. A stabilized liquid enzyme formulation, consisting of one or more proteases from a Bacillus species, at least 4% w/w of an alkali metal halide salt and at least 30% w/w of a polyol solvent in a liquid medium.*"

III. The prior art considered by the Opposition Division includes the following documents:

D8: GB 962 321 A and

D9: EP 0 462 460 A2.

Four sets of amended claims had ultimately been pending before the Opposition Division as the Proprietor's First to Fourth Auxiliary Requests.

IV. Claim 1 of said First Auxiliary Request (filed on 7 October 2011) differs from claim 1 as granted in that it reads (amendment made apparent by the Board):

"*1. A method for stabilizing ...polyol solvent at a level of at least **60**% w/w.*"

Claim 1 of the Second Auxiliary Request (filed on 7 October 2011) differs from claim 1 as granted in that it reads (amendment made apparent by the Board)reads:

"*1. A method for stabilizing ... polyol solvent at a level of at least **70** % w/w.*"

Claim 1 of the Third Auxiliary Request (filed at the oral proceedings on 8 December 2011; hereinafter "as **allowed by the Opposition Division**"), only differs from claim 1 as granted in that it reads (amendment made apparent by the Board):

"*1. A method for stabilizing ... polyol solvent at a level of ~~at least~~ **70% to 80%** w/w.*".

Claim 1 of the Fourth Auxiliary Request (also filed on 8 December 2011) only differs from that of claim 1 as granted in that it reads (amendments made apparent by the Board):

"*1. A method for stabilizing ... a polyol solvent at a level of at least 30% w/w, **wherein said polyol solvent is selected from the group consisting of glycerol, propylene glycol and any combination thereof.***".

In each of these First to Fourth Auxiliary Requests claim 9 defined a stabilized liquid enzyme formulation

having the same compositional features in terms of salt and polyol as those formulated according to the corresponding method claims 1.

V. In its decision, the Opposition Division found that the patent in the amended form with the claims of the Third Auxiliary Request complied with the EPC, *inter alia* because the Opponents had failed to convincingly show that the technical problem of providing an "improved (or alternative method) of protection of protease" was not solved with polyol concentrations in the range of from 70% up to 80% w/w.

VI. With its statement setting out the grounds of appeal dated 25 May 2012, Appellant I (hereinafter the **Proprietor**) defended the patent in its granted version, but also re-filed, *inter alia*, the two sets of claims labelled First and Second Auxiliary Request that had already been pending before the Opposition Division. In support of its arguments regarding the disclosure of D9 it also filed

D13: "Volumetric properties of glycerol + water mixtures at several temperatures and correlation with the Jouyban-Acree model", Diana M. Cristancho *et al.*, Rev. Colomb. Cienc. Quím. Farm., Vol. 40(1), 2011, pages 92 to 115.

VII. In its statement setting out the grounds of appeal Appellant II (hereinafter **Opponent** 2) maintained that the claims held allowable by the Opposition Division were objectionable *inter alia* for lack of inventive step, since the data comprised in the patent in suit did not convincingly establish the alleged improvement. To further corroborate its arguments, it enclosed additional experimental data in form of document

D12: First Experimental Report of Opponent 2 - Stability studies investigating the level of protease activity in certain glycerol/salt formulations upon ageing.

VIII. In its letter of 5 September 2012 the Respondent (hereinafter **Opponent 1**) stated that it fully supported the requests and arguments comprised in the statement of grounds of appeal of Opponent 2, and also requested the full revocation of the patent in suit.

IX. With letter of 12 October 2013, Opponent 2 filed the following documents in support of its objections:

D12a: (Second) Updated Experimental Report of Opponent complemented by further data points, and

D14: Excerpt from CRC Handbook of Chemistry and Physics, 51st ed., 1970-1971, section F-4, "Absolute Density of Water".

X. With its response of 15 October 2012 to the statement of grounds of appeal of Opponent 2, the Proprietor (re-)filed the sets of claims labelled Third and Fourth Auxiliary Requests that had been pending before the Opposition Division. It rebutted all objections raised by Opponent 2, including the inventive step objections based on D8 or D9.

XI. With letter of 5 February 2013, Opponent 2 filed the following document in support of its objections:

D12b: (Third) Updated experimental report of Opponent 2, complemented by further data points and including all the data already presented in previously filed documents D12 and D12a.

XII. In November 2014, the parties were summoned to oral proceedings to take place (after postponement) on 13 March 2015.

XIII. By letter of 5 February 2015, Opponent 1 announced that it would not attend the oral proceedings.

XIV. In its further letter of 12 February 2013, Opponent 2 maintained its objections, *inter alia* regarding the lack of inventive step, against all pending claims requests.

XV. By letter of 13 February 2015, the Proprietor withdrew its pending Fourth Auxiliary Request, replacing it by three newly filed sets of amended claims respectively labelled Fourth to Sixth Auxiliary Requests.

The independent claims 1 according to each of these three requests are directed to either a method or a formulation wherein the "*polyol solvent*" component is limited to "*propylene glycol*" only, in each case using the wording "*wherein said polyol solvent is propylene glycol*"

XVI. Oral proceedings were held on 13 March 2015 in the absence of Opponent 1.
In the course of the oral proceedings, the Proprietor withdrew its previously pending main request (to maintain the patent as granted).

XVII. The final requests of the Parties present at the hearing were as follows:

The Proprietor (Appellant I) requested
- that the decision under appeal be set aside and the patent be maintained in amended form on the basis of

the claims according to the request labelled "First Auxiliary Request" (hereinafter **Main Request**)
- or, alternatively, on the basis of the claims according to the request labelled Second Auxiliary Request (hereinafter **Auxiliary Request 1**),
both filed with its statement of grounds of appeal,
- or that the appeal of Opponent 2 be dismissed (i.e. that the patent be maintained in the amended form held allowable by the Opposition Division, hereinafter **Auxiliary Request 2**),
- or that the patent be maintained in amended form on the basis of the claims according to one of the auxiliary requests labelled Fourth to Sixth Auxiliary Requests (hereinafter **Auxiliary Requests 3 to 5**) filed with the letter of 13 February 2015.

Opponent 2 (Appellant II) requested that the decision under appeal be set aside and the patent be revoked.

XVIII. The debate at the oral proceedings focused initially on the issue of inventive step with regard to claim 1 as allowed by the Opposition Division (see IV, *supra*; present Auxiliary Request 2) in view of, *inter alia*, documents D8 and D9.

It was noted and not disputed that any conclusion of the Board regarding lack of inventive step would also apply to the broader respective claims 1 according to the present Main Request and Auxiliary Request 1.

The debate then focused on the admissibility of present Auxiliary Requests 3 to 5 into the appeal proceedings.

XIX. The submissions of the **Proprietor** of relevance here may be summarized as follows.

Auxiliary Request 2 - Inventive step - Claim 1 (as allowed by the Opposition Division)

Document D8 was to be considered as the closest prior art. D8 disclosed ready-to-use sprayable compositions for meat tenderizing, having increased protease stability over long periods of non-refrigerated storage and even in case to exposure to heat (D8, from page 1, line 77 to page 2, lines 17, and Example 1 in Table I). Hence, D8 addressed the same technical problem as the patent in suit. Moreover, D8 only dealt with the manufacture of compositions consisting exclusively of metal halide salt, protease and polyol. The sprayable compositions for meat tenderizing disclosed in document D8 thus represented the closest prior art.

Document D9 was not the closest prior art. It disclosed (lower half of page 7 and upper half of page 8) a composition (A) which formed together with composition (B) a two-pack type system for cleaning contact lenses (hereinafter these compositions are referred to as **Composition (A) of D9** and **Composition (B) of D9**, the system formed by their combination as **the Two-pack system exemplified in D9**). Said Composition (A) of D9 was a concentrated protease-containing liquid composition and did not suffer from the same stability problems addressed in the patent in suit.
Even though also the patent in suit (see paragraph [0012]) mentioned the possibility of preparing a "*concentrate*" including, besides protease, ingredients such as cleaning/detergent products, this would not imply that the formulations according to the invention could be used for cleaning contact lenses, let alone as

one part of a two-pack system for cleaning contact lenses. Moreover, Composition (A) of D9 contained further ingredients which were not mentioned in the patent in suit.

However, even if, purely for the sake of argument, Composition (A) of D9 were to be taken as the starting point, the subject-matter of claim 1 held allowable by the Opposition Division would still not be obvious in the light of the disclosure in document D9 for the following reasons.

Firstly, it was evident in view of the comparison between the stability data in Tables 5 and 6 of Example 2 of the patent in suit referring to samples B7 and B8 that a content of at least 70% w/w glycerol as required by claim 1 resulted in an improved protease stability compared to the one achievable with a glycerol content of 60% w/w. Thus a similar improvement was also to be expected vis-à-vis Composition (A) which comprised an amount of polyol that was certainly closer to 60% w/w than to 70% w/w (although not being determinable precisely, as emphasised by the Proprietor with reference to document D13).

Secondly, the data in D12b (their admissibility into the proceedings remained unchallenged) did not deprive of credibility the improvement shown by experimental data in the patent in suit at 70% w/w glycerol. These data also did not convincingly prove that at other polyol contents between 70% and 80% w/w the levels of protease stability achieved by the claimed method would be worse then the one achievable with a polyol content of about 60% w/w, or manifestly unsatisfactory.

Thus, even taking D9 as the starting point, the

subject-matter of claim 1 as allowed by the Opposition Division credibly solved the technical problem of ensuring improved stability to the protease in the liquid medium.

D9 neither mentioned nor implied that increasing the polyol content to more than about 60% w/w could be beneficial to protease stability. On the contrary, D9 explicitly lead away (page 3, lines 3 to 7, and page 4, lines 7 to 14) from compositions with more than 30% w/v glycerol.

Finally, even considering that the technical problem credibly solved in the light of the preparation of Composition (A) of D9 was merely the provision of an alternative to this latter, D9 did not prompt the skilled person to increase further the glycerol content in Composition (A).

Hence, the method of claim 1 held allowable by the Opposition Division was not obvious in the light of the disclosure of D9 *per se*.

Auxiliary Requests 3 to 5 - Admissibility

These requests were a *bona fide* attempt to reply to the objections raised by Opponent 2 in its statement of grounds of appeal.

Even though none of the independent or dependent claims as granted or as amended according to the requests previously filed during the whole opposition and appeal proceedings were characterized by a further limitation of the "*polyol solvent*" ingredient to exclusively "*propylene glycol*", such methods or formulations as defined in the independent claims of Auxiliary Requests

3 to 5 were explicitly encompassed as alternatives by previously pending versions of the claims. In particular, the alternative of using "*propylene glycol*" as the sole polyol was comprised in independent claim 1 of the Fourth Auxiliary Request that had been pending before the Opposition Division (see IV *supra*), and re-filed in reply to the statement of grounds of appeal of Opponent 2.

Moreover, the restriction of the claimed subject-matter to the methods and/or formulations now claimed according to Auxiliary Requests 3 to 5, had been foreseeable since the novelty objections maintained by Opponent 2 in the appeal proceedings were only based on compositions containing glycerol, and because of a teaching in D8 leading away from the possibility of using high amounts of propylene glycol.

Finally, this amendment did not raise further issues of such a complexity that Opponent 2 could not be expected to deal with it.

Thus, Auxiliary Requests 3 to 5 should be admitted into the proceedings despite their late filing one month before the oral proceedings.

XX. The submissions of **Opponent 2** of relevance here (also relied upon by **Opponent 1**, see VIII *supra*) may be summarized as follows.

Auxiliary Request 2 - Inventive step - Claim 1

The closest prior art was the preparation of Composition (A) of D9, since the patent in suit also related, *inter alia*, to the preparation of a liquid enzyme "*concentrate*" to be diluted to its final

concentration in a fully formulated product only prior to being used (paragraph [0012] and the indication "*further formulated into, for example, a hand cream*" in paragraph [0023]). Moreover, the technical fields referred to in the patent in suit explicitly encompassed "*personal care products, health care products, and cleaning/detergency products*" such as "*liquid detergents*" (see e.g. paragraphs [0012] and [0026] of the patent in suit), i.e. technical field to which document D9 also belonged.

On the contrary, document D8 referred to a totally different technical field, i.e. the tenderizing of meat using a sprayable enzymatic composition. Such a method was not mentioned in the patent in suit and implied a number of peculiar technical constrains that were neither explicitly addressed nor necessarily implied in the technical fields mentioned in patent in suit.

The data reported in D12b proved that no advantage, but rather worse results in terms of protease stability, were obtained using formulations as prescribed by claim 1 at issue.

However, already from Tables 5 and 6 of the patent in suit *per se*, it would be apparent to the skilled person that the differences in stability results for samples B7 and B8 were not significant, but rather well within the large error margins associated to the stability test used.

Hence, already upon considering the patent in suit *per se*, it was apparent that the method of claim 1 as maintained could at most represent an alternative to the one disclosed in D9.

For the skilled reader of document D9 it was also apparent that less severe stability problems were to be expected in two-pack type compositions, where the protease was stored (before being put to its actual use) in concentrated form together with enzyme stabilizing components, but separated from other components, potentially harmful to stability, of the final, fully formulated formulation, such as surfactants (see D9, page 6, lines 16 to 21). This motivated even the skilled person simply searching for an alternative embodiment of the Two-pack system exemplified in D9 (with an overall glycerol content close to the minimum amount of 5% w/v suggested in D9), to prepare slightly modified versions of Compositions (A) and/or (B), including those resulting in a ready-to-use final formulation having a content of glycerol up to the maximum polyol amount (of about 30% w/v) suggested in D9 itself. No inventive step would, thus, be required for preparing any such alternative embodiments also by substantially increasing the glycerol content (e.g. in Composition (A) or in both parts) of the Two-pack system exemplified in D9, thereby arriving, for instance, at contents of glycerol in Composition (A) in the range of from 70% to 80% w/w. Hence, the subject-matter of claim 1 as allowed by the Opposition Division merely represented an arbitrarily selected sub-group of further embodiments in accordance with the teaching D9, and, thus, an obvious alternative to the method for preparing composition (A) described therein.

Auxiliary Requests 3 to 5 - Admissibility

These requests filed about one month before the oral proceedings identified a particular sub-group of the originally patented methods and/or formulations. Prior

to the filing of these requests, this subject-matter had never been presented *per se* in the patent description as a preferred embodiment of the patented invention. Nor did the patent in suit contain an example of formulations as defined in the claims of these requests, i.e. containing salt and propylene glycol as the sole polyol solvent component in the amounts given in these claims. Such embodiments had not previously been individually claimed in any of the independent or dependent claims as granted, or as modified according to all previously filed auxiliary requests. Hence, there had been no indication during the entire opposition and appeal proceedings up to the very late filing of the final Auxiliary Requests 3 to 5, that the Proprietor was possibly considering the option to totally abandon all the clearly preferred embodiments of the initially patented subject-matter based on glycerol and, instead, to request protection specifically for those embodiments of the alleged invention in which the polyol solvent component is exclusively "*propylene glycol*".

The Auxiliary Requests 3 to 5 thus represented a unforeseeable, and hence surprising, change in the defense strategy of the Proprietor. As a result, the Opponents were confronted with a fresh case just one month before the oral proceedings.

Opponent 2 also disputed that the requests were easy to deal with. It argued that they rather increased the complexity of the case, and that it had not been able to adequately address the new issues arising within the short time available until the oral proceedings. Should the Board intend to admit these requests, Opponent 2 would consider requesting remittal of the case to the Department of First Instance so as to have enough time

for evaluating adequate means of defence, such as, possibly, a further search for prior art and/or further experimental tests, possibly similar to those of D12b but based on the use of propylene glycol solvent. Opponent 2 thus considered itself insufficiently prepared to adequately deal with Auxiliary Requests 3 to 5 at the oral proceedings and requested their non-admittance under the provisions of Article 13(3) RPBA.

Reasons for the Decision

Proprietor's Auxiliary Request 2 - Inventive step - Claim 1

1. Method claim 1 according to Auxiliary Request 2 at issue (i.e. claim 1 as allowed by the Opposition Division; see IV and VI *supra*) is narrower in scope ("*70% to 80 % w/w*" of the "*polyol solvent*") than, and thus encompassed by, the respective claims 1 according to the Appellant's Main Request ("*at least 60% w/w*") and Auxiliary Request 1 ("*at least 70% w/w*"). Appellant's Auxiliary Request 2 is thus dealt with first for the sake of conciseness (see point 10, *infra*, as regards the other two requests).

2. The invention

2.1 The invention concerns (paragraph [0001] of the patent as granted; claim 1 at issue) the stabilization of protease enzymes in a liquid medium.

2.2 This is also reflected by the acknowledgement of the background art in paragraphs [0002] to [0005] of the patent as held allowable by the Opposition Division (identically worded in the patent as granted) and the concluding statements in paragraph [0006]). More

particularly, the patent mentions as prior art liquid enzyme concentrates that are pre-formulated, and only at some later point in time blended into e.g. personal care or cleaning products (paragraph [0002]), including formulations for cleaning e.g. contact lenses (paragraphs [0003] and [0004]) and cosmetic formulations (paragraph [0005]) in which stabilization is achieved by using additional ingredients e.g. salts and/or polyols.

2.3 The statement in paragraph [0006] reads as follows:"... *there is a need for protease stabilized liquid formulations that are easy to process, highly effective, inexpensive to produce relative to the previously used stabilizing formulations, relatively inactive* ***until ultimately included*** *as an ingredient in a selected application, and also useful for formulations that are well tolerated physiologically*" (emphasis added).

2.4 Claim 1 at issue is directed to methods for the preparation of formulations wherein the polyol is by far the most abundant ingredient, and claim 6 dependent thereon explicitly refers to, as one preferred alternative, "a *liquid enzyme* ***concentrate***" (emphasis added). Corresponding indications are to be found in paragraphs [0012] and [0017] of the patent as held allowable by the Opposition Division (and as granted), according to which the "*present invention*" expressly also provides, in one alternative, "a *liquid enzyme* ***concentrate***" (emphasis added).

2.5 For the Board, taking into account the above, it is clear that the invention as defined in claim 1 not only concerns methods for providing stabilised, physiologically tolerable ready-to-use compositions,

such as personal care or cleaning liquid products comprising protease, but also methods for providing pre-formulated stable protease liquid concentrates to be blended with further ingredients (and thereby diluted) just before being put to their final use as component of e.g. a personal care or cleaning product.

3. The closest prior art

3.1 It is established case law of the boards of appeal that the closest prior art for assessing inventive step is normally a prior art document disclosing subject-matter conceived for the same purpose or aiming at the same objective or addressing the same technical problem as the claimed invention and having the most relevant technical features in common, i.e. requiring the minimum of structural modifications.

The Proprietor considered document D8 as the closest prior art, whereas for Opponent 2, document D9 was the most appropriate starting point.

3.2 Document D9

3.2.1 D9 belongs to the same patent family as the US patent mentioned as prior art in paragraph [0004] of the patent (and in the application as filed published as WO 02/08398 A2). Moreover, D9 addresses the need for both "ready-to-use" and "concentrate" protease liquid formulations. In particular, the stability advantage of protease "concentrates" is expressly addressed (D9: page 6, lines 16 to 24). D9 points out that a "further stabilized condition" of the proteases is achieved by supplying the protease in concentrated form in the presence of an enzyme stabilizer component, as one of the two parts of the two-pack system.

In D9, such a stable two-pack composition for cleaning contact lenses is exemplified by Compositions (A) and (B) of the Two-pack type system of Example (II) bridging pages 7 and 8.

3.2.2 The Board concludes that D9 is an appropriate starting point for the assessment of inventive step as regards the method of claim 1 at issue. In particular, the preparation of Composition (A) of the Two-pack system (II) exemplified in D9, containing about 60% w/w glycol and about 8 % w/w chloride salts (of sodium and calcium) indisputably represents the (part of an) embodiment of this prior art most similar to the subject-matter of claim 1 as maintained.

3.3 Document D8 - Not closest prior art

3.3.1 For the Board, the sprayable compositions for meat tenderizing disclosed in e.g. Example 1 of D8 (comprising 6.9 % w/v NaCl, 10 % w/v glycol and 32 % w/v dextrose in water as liquid medium) represents a more remote prior art, and generally D8 does not belong to those technical fields in which the claimed subject-matter has been conceived to find application.

3.3.2 More particularly, neither D8 nor meat tenderizing are mentioned in the patent in suit. Moreover, none of the fields of application mentioned in the patent in suit deals with food processing. Furthermore, none of the applications of the invention exemplified in the patent requires sprayability of the formulation. Finally, the explicit disclosure in D8, page 1, lines 11 to 14, indicates, instead, that this document relates to "gastronomically acceptable pressure-dispensed sprayable compositions" which, thus, have to comply implicitly with certain specific constrains in terms of

composition and properties.

3.4 In the Board's judgement the closest prior art to be used as starting point for the assessment of inventive step for the subject-matter of claim 1 of the Auxiliary Request 2 is, therefore, the method for the preparation of Composition (A) described in D9.

4. The technical problem solved according to the Proprietor

The Proprietor argued that the subject-matter of claim 1 at issue solved, also vis-à-vis Composition (A) of D9, the technical problem of improving the stability of protease in liquid formulations.

5. The solution

As a solution to this problem the patent proposes the the method for stabilizing one ore more protease enzymes according to claim 1 at issue, which is characterised in particular in that it consists of

"*formulating in said liquid medium an alkali metal halide salt at a level of at least 4% w/w in combination with a* ***polyol solvent*** *at a level of* ***70% to 80%*** *w/w*" (emphasis added by the Board).

6. The alleged success of the solution

6.1 The patent in suit does not contain any express statement, let alone based on theoretical considerations or experimental data, qualifying the levels of protease stability achieved by the method according to claim 1 as "superior" or "improved" compared to any particular prior art. This was not in

dispute.

6.2 According to the Proprietor's line of reasoning (see XIX, *supra*) the success of the proposed solution is, however, implied by and apparent from the stability data reported in Tables 5 and 6 of Example 2 of the patent in suit. In particular, it argued that sample B7 (containing 70% w/w glycol and, thus, representing the claimed subject-matter) outperformed sample B8 (containing 60% w/w glycerol and being, thus, more similar to Composition (A) of D9). In the Proprietor's opinion, the skilled person would gather from these data that the higher polyol concentration required by the method of claim 1 at issue resulted in a level of protease stabilization which was higher than that observed in the prior art.

6.3 The Board does not find this reasoning convincing in view of the following considerations:

6.3.1 No explicit passage in the patent specification motivates the skilled person to focus in particular to the protease stability results (in "*% original activity*") reported for sample B7. Indeed, and despite the fact that these are among the highest results reported in Tables 5 and 6, the only comment in the accompanying text (in paragraph [0034]) referring to "*surprising results*" rather appears to convey the general teaching that the samples in these Tables which contains less glycerol perform better than those with a higher content of glycerol: "...*Example 2 illustrates the surprising results achieved by* ***reducing the concentration of glycerol*** *and increasing the concentration of salt in the formulation*" (emphasis added). In this respect, it is also worth mentioning that according to paragraph [0036] of the patent as

granted, although no longer present in the amended patent held allowable by the Opposition Division, it is also asserted that "*Table 5 illustrates that a 60% glycerol and 10% salt formulation is exceptionally stable*". Thereby the skilled reader's attention is rather oriented towards the formulations referred to in Table 5 which have with the lowest content of glycerol (see Table 4 of D9), i.e. those of samples B8 and B12, but not particularly towards sample B7.

6.3.2 In any case, as convincingly stressed by Opponent 2, the error margins associated with the measurements of protease activity reported in Tables 5 and 6, are apparently of the order of several % units. This is immediately evident, for instance, from the those values of "*% original activity* " retained upon ageing that are substantially higher than 100% (see e.g. "*100.7*"% after 9 days for B5 or even "*102.1*"% after 113 days for B7 itself). Hence, the Board is convinced that even if a skilled reader would actually note that the stability values of sample B7 were better than those reported for B8,
- he would conclude that the reported differences lay within the error margins and, thus,
- that the reported results for B7 and B8 were more or less comparable, rather than clearly indicative of an improved stability of the activity upon ageing attributable to sample B7, when compared to sample B8.

6.4 Hence, the Board concludes that there is no clear implicit or explicit indication in the patent in suit that the level of protease stability (in terms of loss of activity upon ageing) obtained when using 70% w/w of glycerol would be superior to that obtained using about 60% w/w glycerol. Accordingly, there is no element in the patent in suit rendering plausible that the

technical problem formulated by the Proprietor in the light of D9 is actually solved by any embodiment of the subject-matter of claim 1 as maintained.

7. Reformulation of the technical problem

7.1 As the technical problem proposed by the Proprietor is not successfully solved by the claimed method, the assessment of inventive step requires a reformulation of the problem in less ambitious terms.

7.2 In D9 (page 6, lines 16 to 21), formulations of protease concentrates, such as that exemplified by Composition (A), are qualified as being in a "stabilized condition".

7.3 Hence, in the light of D9, the technical problem can be seen in the provision of a further method for stabilizing protease in a liquid medium to an (at least) satisfactory level, (at least) comparable to the level achieved according to the prior art, i.e. in the provision of a mere alternative to the method for the preparation of Composition (A) described in D9.

8. Success of the solution

8.1 Considering only the information contained in the patent in suit itself, including the data reported for sample B7, it appears that this less ambitious technical problem is effectively solved by the subject-matter of claim 1 at issue across its whole breadth.

8.2 Opponent 2 however argued that the experimental data reported in document D12b proved that the claimed method resulted in less stabilization, compared to a method wherein glycerol in used in a lower

concentration of about 60% w/w. Accordingly, the method of claim 1 would not even solve the less ambitious technical problem indicated under 7.3, *supra*.

8.3 The Proprietor rebutted this argument by disputing the conclusiveness of the data in D12b which it considered, therefore, to be irrelevant.

Considering that for the Board, the claimed method is obvious (point 9 *et seq.*, *infra*) even in case the reformulated, less ambitious technical problem were indeed to be considered as being solved by the subject-matter of claim 1, there was no need for the Board to decide on the conclusiveness of data in D12b.

8.4 The reasoning below is given assuming, for the sake of argument and in favour of the Proprietor, that the subject-matter of claim 1 actually solves the technical problem posed (7.3, *supra*).

9. Obviousness of the solution

9.1 The subject-matter of claim 1 undisputedly differs from Composition (A) of D9 only in terms of the higher polyol content of the former. Hence, the assessment of obviousness boils down to the question whether the skilled person starting from Composition (A) and seeking to solve the less ambitious technical problem posed (7.3, *supra*) would consider increasing the glycerol content of the composition from about 60% to "*70% to 80% w/w*" in the expectation that such modification would (at least) not substantially impair the stability of the protease.

9.2 As already mentioned above (see 3.2.1 *supra*), D9 (page 6, line 16 to 24) identifies as a "stabilized

condition" of the proteases, that in which this latter is present in only one part of a two-pack system, in concentrated form, in the presence of (at least part of) the enzyme stabilizer components. Hence, the skilled person would consider other embodiment of this type, still embraced by the more general teaching of D9, as an obvious solution to the posed technical problem.

9.3 The Proprietor pointed out that D9 teaches at page 3, lines, 3 to 6, and even more clearly at page 4, lines 7 to 14, that liquid compositions for cleaning contact lenses should contain the polyol component, e.g. glycerol, in concentrations between 5 and 30% w/v.

9.3.1 For the Board, this teaching is, however, no ban to increase further the glycerol content of Composition (A) of D9, as alleged by the Proprietor. This teaching is thus not an instruction leading away from the proposed solution. Quite to the contrary, it points to alternative embodiments of this prior art falling within the ambit of claim 1 at issue.

9.3.2 Indeed, for the Board, this teaching concerns exclusively fully formulated compositions for cleaning contact lenses, i.e. either ready-to-use formulations or mixtures to be prepared before use by blending pre-formulated compositions, such as that resulting from the mixing of compositions (A) and (B) of the exemplified Two-pack system (II) of D9.

Thus, this teaching certainly allows for further two-pack systems in which one of the two compositions present therein contains much more than 30% w/v of glycerol, as long as after the blending of the two compositions the overall amount of glycerol in the

resulting fully-formulated mixture remains between 5 and 30% w/v.

9.3.3 It is apparent that this is exactly the case exemplified by the Two-pack type system (II) exemplified at pages 7 to 8 of D9, in which Composition (A) contains substantially more than 30% w/v glycerol. However, when used as indicated at page 8, line 20, i.e. upon mixing with Composition (B) at a volume ratio of (A):(B) = 1:9, the result in a composition for cleaning contact lenses with a glycerol content of much less than 30% w/v. Indeed, as convincingly stressed by Opponent 2 and undisputed by the Proprietor, the Two-pack system exemplified in D9 results in a fully formulated composition with an amount of glycerol very close to the lower end of the range of 5 to 30% w/v.

9.3.4 For the Board, this teaching implies the possibility to prepare further embodiments by substantially increasing the amount of glycerol in at least one of the compositions of the Two-pack type system of D9, as long as the final amount of this polyol (after mixing) remains within the prescribed limits of 5 to 30% w/v of the final fully formulated composition.

9.4 Hence, starting from the preparation of composition (A) of D9, the skilled person, seeking to solve the technical problem posed (7.3, *supra*), would consider increasing the glycerol content of composition (A) to a value in the range of from 70 to 80% w/w as one among many alternative embodiments readily available to him, since embraced by the general teaching of D9. He would therefore, without ingenuity, arrive at a method falling within the ambit of claim 1.

9.5 Thus, in the Board's judgement, the method of claim 1

at issue does not involve an inventive step in the light of document D9 taken alone (Articles 52(1) and 56 EPC).

Proprietor's Main request and Auxiliary Request 1 - Claim 1 - Inventive step

10. The subject-matter of claim 1 of Auxiliary Request 2 is fully encompassed by the respective wordings of claim 1 according to the Main Request and of claim 1 according to Auxiliary Request 1. This was not in dispute.

10.1 The latter claims are thus also directed to subject-matter which does not involve an inventive step for the reasons given at points 2 to 9, *supra* (Articles 52(1) and 56 EPC).

10.2 Hence, the Proprietor's Main request and Auxiliary Requests 1 are not allowable either.

Admissibility of Proprietor's Auxiliary Requests 3 to 5

11. The sets of amended claims of Auxiliary Requests 3 to 5 were filed by the Proprietor after being summoned to oral proceedings, more particularly one month before the oral proceedings. Their admissibility was challenged by Opponent 2. It is within the discretion of the Board to admit or disregard them (Article 114(2) EPC and Article 13(1),(3) RPBA).

11.1 The independent claims according to these three auxiliary requests are limited to subject-matter involving a specific sub-group of the formulations requiring a salt and a polyol as defined in the claims as granted. Whereas dependent claims 6 and 15 as granted define that the "*polyol solvent is selected*

from glycerol, propylene glycol sucrose, and any combination thereof" the claims according to Auxiliary Requests 3 to 6 are restricted by a limitation of the definition of the "*polyol solvent*" component to "*propylene glycol*" only.

11.2 As regards factors having a bearing on the admissibility of these requests the Board notes the following:

11.2.1 The definition of the "*polyol solvent*" as given in claim 6 and 15 as granted and also in the independent claims of the previously pending, now withdrawn Fourth Auxiliary Request (see IV and XV *supra*), indeed encompasses, as one express alternative, the use of propylene glycol only. No dependent claim in this request was, however, directed to this particular alternative only, thereby singling it out.

Hence, for the Board, the fact that one of the previously pending requests comprised an independent claim 1 containing the definition of the "*polyol solvent*" component given in claims 6 and 15 as granted does not represent *per se* a clear indication that the Proprietor was possibly considering to further substantially restrict the claimed subject-matter to embodiments of the claimed invention containing propylene glycol only.

11.2.2 No other pointer to such restriction of the patent claims appears to be disclosed or implied in the description of patent as granted. Indeed, there is not even a single example according to the invention describing the combination of alkali halide and propylene glycol as the sole polyol, let alone in the prescribed concentrations.

11.2.3 The Proprietor alleged that it would have been possible for the Opponents to expect such restriction, considering
- that the novelty objections maintained by Opponent 2 in the course of the appeal proceedings were based on compositions comprising glycerol, and
- the information comprised in D8 (mentioning propylene glycol as polyol component to be added in amounts of up to 20% w/v).

For the Board, this allegation, disputed by Opponent 2, is not convincing because the Proprietor did not provide any details as to why these considerations should have rendered evident to the other Parties that limiting the claimed subject-matter to methods or formulations based on the exclusive presence of propylene glycol was (if not the sole) at least a particularly promising option remaining to the Proprietor for formulating a claim likely to overcome all raised inventive step objections.

11.2.4 In any case, the Proprietor gave no particular reason explaining why Auxiliary Requests 3 to 5 had not been filed earlier, e.g. with its reply (of 15 October 2012) of to the statement of grounds of appeal of Opponent 2, considering that requests in question are supposed to be a reaction to said grounds.

11.2.5 The Board holds that the importance of filing much earlier amended claims restricting the polyol solvent to propylene glycol, was evident in view of the statement of grounds of Opponent 2, which showed that the latter's strategy was based on the filing of experimental ageing data supposed to demonstrate the absence of an improvement of the stabilization attributable to the composition of the "*liquid medium*"

as defined in the claims, such experiments requiring, however, much longer periods than one month (protease stability measured for periods up to 280 days according to the patent in suit and D12b).

11.3 Taking into account all the above aspects, the Board concluded that the filing of the Auxiliary Requests 3 to 5 occurred unacceptably late, since it could not be foreseen by Opponent 2, who, being taken by surprise, was left with insufficient time to adequately react thereto.

11.3.1 Accordingly, the Board, exercising its discretion under Article 114(2) EPC and Article 13(1),(3) RPBA decided not to admit into the proceedings the Proprietor's Auxiliary Requests 3 to 5.

Conclusion

None of the Patent Proprietor's requests is both admissible and allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside

2. The patent is revoked

The Registrar: The Chairman:

D. Magliano B. Czech

Decision electronically authenticated