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D E C I S I O N
of 14 July 2004

Case Number: T 0284/99 - 3.3.2

Application Number: 93202197.5

Publication Number: 0585988

IPC: A21D 8/04

Language of the proceedings: EN

Title of invention:
Enzyme product and method for improving bread quality

Patentee:
DSM IP Assets B.V.

Opponent:
ICI PLC
DANISCO A/S

Headword:
Bread Improver/DSM

Relevant legal provisions:
EPC Art. 84
EPC R. 65(2)

Keyword:
"Appeal of opponent I inadmissible: appeal filed by another company was not an error under Rule 65(2)"
"Article 84 EPC: claim 1 of all the requests lacks clarity"

Decisions cited:
T 0097/98, T 0340/92

Catchword:
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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0284/99 - 3.3.2

D E C I S I O N
of the Technical Board of Appeal 3.3.2
of 14 July 2004

(Opponent I)
Party as of right:
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 15 January 1999 concerning maintenance of European patent No. 0585988 in amended form.

Composition of the Board:

Chairman: U. Oswald
Members: M. Ortega Plaza
J. H. P. Willems

Summary of Facts and Submissions

I. European patent application EP-A 0 585 988, based on application No. 93 202 197.5, was granted on the basis of 11 claims.

Independent claim 1 as granted reads as follows:

"1. A bread improver composition which comprises at least one lipase, at least one hemicellulase and at least one amylase."

Independent claim 5 as granted reads as follows:

"5. A dough which comprises a composition as claimed in any of the preceding claims, flour, water and yeast."

II. The following product information leaflets were cited during the proceedings:

(13): Product specification of Grindsted Products, DK-8220 Brabrand: Grindamyl Fungal Alpha-Amylase

(14): Product specification of Gist-brocades FOOD INGREDIENTS DIVISION: Fermizyme™ 400, 1991

III. Opposition was filed by opponents I and II and revocation of the patent in its entirety was requested pursuant to Article 100(a) EPC on the grounds of lack of novelty and lack of inventive step.

There was a third opponent which filed an opposition on the grounds under Article 100(a) EPC and under Article 100(b) EPC for insufficiency of disclosure. The third opponent withdrew its opposition by letter of 19 November 1998, received on 20 November 1998, i.e. before the decision of the opposition division.

During the oral proceedings before the opposition division, opponent II also requested revocation pursuant to Article 100(b) EPC.

IV. The appeal lies from an interlocutory decision of the opposition division under Article 106(3) EPC maintaining the patent in amended form.

The opposition division rejected the main request filed on 12 November 1998 since it considered that the amendments introduced in claim 1 were not in agreement with Rule 57a EPC.

The opposition division considered auxiliary request I filed during the oral proceedings on 16 December 1998 to meet the requirements of Article 123(2) and (3) EPC. Basically, in the opposition division's view, the originally filed description left no doubt that two of the enzymes were "added" and that the third enzyme also was meant to be "added" to the dough with the other two. This was reflected by the amounts of enzymatic units appearing in the claim which corresponded to the "added" enzymes.

The opposition division considered that the lack of specification in claim 1 for the amount of shortening did not result in a lack of clarity (Article 84 EPC)

for the composition claimed but only related to a broad definition, i.e. any concentration was comprised. The opposition division took the view that the only question which could arise was whether any technically meaningful concentration considered by the skilled person would work. However, in the opposition division's opinion there was nothing to indicate doubt about the workability of the claimed subject-matter due to a lack of definition of the amount of shortening.

With respect to the objection relating to the method of determination of the lipase units, the opposition division submitted that the patent in suit indicated the titrimetic method according to which the units were to be determined. The opposition division considered that in the absence of any experimental proof it had to be assumed that the skilled person had enough information to carry out the invention (Article 83 EPC).

The claimed subject-matter was considered by the opposition division to be novel over the bread improver composition Fermizyme^{R} H400 (document (14)) which comprised amylase and hemicellulase components and only small amounts of lipase.

As regards the assessment of inventive step, document (14) was considered by the opposition division to be the closest prior art. The problem was to improve bread improver compositions with regard to loaf volume and staling, i.e. crumb softness. The opposition division was of the opinion that none of the documents provided an incentive to add lipase to a bread improver composition comprising amylase and hemicellulase in

order to provide the type of enzyme supplementation as claimed.

V. Opponent II (appellant) lodged an appeal against that decision.

VI. Quest International BV, Huizerstraatweg 28, 1411 GP Naarden, Netherlands, filed an appeal against that decision on 15 March 1999. In that letter it named itself "Opponent 1". In the notice of appeal it was stated "Please note that the address for correspondence is ICI Group Intellectual Property Department at the above address".

In the statement of the grounds of appeal filed on 11 May 1999, ICI plc appeared as "opponent 1".

VII. A communication of the board was sent informing the parties of the preliminary opinion that the appeal by Quest International BV was found not to be admissible and that ICI plc was to be considered as a party as of right.

VIII. Opponent I announced in its letter of 8 July 2004 that it would not attend oral proceedings.

IX. Oral proceedings were held before the board on 14 July 2004.

During the oral proceedings, the respondent (patentee) maintained its requests as follows: main request filed with the letter of 14 October 2003 (identical to auxiliary request on which the first instance decision was based), auxiliary requests I and IA filed with the

letter of 10 June 2004 (renumbered during the oral proceedings as auxiliary requests II and IIA) and auxiliary requests II to VII (renumbered during the oral proceedings as auxiliary requests III to VIII) filed with the letter of 14 October 2003. Additionally, during the oral proceedings, the respondent filed a new auxiliary request I and auxiliary requests IX to XIII.

Claim 1 of the main request reads as follows:

"1. A dough which comprises a bread improver composition, flour, shortening, water and yeast, said bread improver composition comprising at least one lipase, at least one hemicellulase and at least one α-amylase so as to add to the dough per kg of flour

400 to 4000 lipase units,
25 to 500 ß-xylanase units of hemicellulase, and
25 to 1250 fungal amylase units (FAU) of α-amylase."

Claim 1 of auxiliary request I reads as follows:

"1. A method of making a dough which comprises a bread improver composition, flour, shortening, water and yeast, said bread improver composition comprising at least one lipase, at least one hemicellulase and at least one α-amylase wherein said bread improver composition is added to the dough so as to add to the dough per kg of flour

400 to 4000 lipase units,
25 to 500 ß-xylanase units of hemicellulase, and
25 to 1250 fungal amylase units (FAU) of
α-amylase."

Claim 1 of auxiliary request II and claim 1 of auxiliary request IIA are identical to claim 1 of the main request.

Claim 1 of auxiliary request III reads as follows:

"1. A dough which comprises a bread improver composition, flour, shortening, water and yeast, said bread improver composition comprising at least one lipase, at least one hemicellulase and at least one α-amylase so as to add to the dough per kg of flour

400 to 4000 lipase units,
25 to 500 ß-xylanase units of hemicellulase,
said dough also comprising 25 to 1250 fungal amylase units (FAU) of α-amylase per kg of flour."

Claim 1 of auxiliary request IV is identical to claim 1 of auxiliary request III.

Claim 1 of auxiliary request V differs from claim 1 of the main request in that the amount of shortening has been defined as follows:

"10-100g of shortening per kg of flour,"

Claim 1 of auxiliary request VI is identical to claim 1 of auxiliary request V.

Claim 1 of auxiliary request VII differs from claim 1 of auxiliary request III in that the amount of shortening has been defined as follows:

"10-100g of shortening per kg of flour,"

Claim 1 of auxiliary request VIII is identical to claim 1 of auxiliary request VII.

Claim 1 of auxiliary request IX differs from claim 1 of auxiliary request I in that the word "fungal" has been introduced before "α-amylase."

Claim 1 of auxiliary request X reads as follows:

"1. A method of making a dough which comprises a bread improver composition, flour, shortening, water and yeast, said bread improver composition comprising at least one lipase, at least one hemicellulase and at least one α-amylase wherein said bread improver composition is added to the dough so as to add to the dough per kg of flour

400 to 4000 lipase units,
25 to 500 ß-xylanase units of hemicellulase, and
provide a dough comprising 25 to 1250 fungal amylase units (FAU) of α-amylase."

Claim 1 of auxiliary request XI differs from claim 1 of auxiliary request IX in that the amount of shortening has been introduced as follows:

"15 to 100g of shortening per kg of flour".

Claim 1 of auxiliary request XII differs from claim 1 of auxiliary request X in that the amount of shortening has been introduced as follows:

"15 to 100g of shortening per kg of flour".

Claim 1 of auxiliary request XIII differs from claim 1 of auxiliary request XII in that the word "fungal" has been introduced before the expression "α-amylase."

X. The respondent's arguments relating to the admissibility of the auxiliary requests filed during the oral proceedings may be summarised as follows:

the first auxiliary request was filed in order to overcome the board's objections with respect to the wording of the product claims. The other auxiliary requests were filed in order to overcome objections further raised during the oral proceedings.

The respondent's arguments in respect of the requirements of Article 84 EPC may be summarised as follows:

The objections relating to Article 84 EPC were raised by opponent I whose appeal was not considered to be admissible. Moreover, with the exception of the expression "so as to add" the wording of the claims resulted from combinations of the claims as granted and hence it was not possible to raise objections under Article 84 EPC.

The claims had to be read in their meaningful technical sense. Claim 1 of the main request reflected the notion that when the baking technologist makes the dough, he/she adds enzymes and he/she is interested in the particular activity in the dough. One adds enzymes but the activity is in the dough. One measures the activities in the starting material enzymes, but one calculates it with respect to the kg of flour. After mixing, one calculates which units are needed to make the dough, depending on the quantity of dough and volume of flour. The claim is directed to a dough as mixed. One can measure the activities in the dough if required.

The bread improver was something added to the flour and was different from the flour (page 2, lines 25 to 27 and example 1 as originally filed). The bread improver was a separate component of the dough. The skilled baking technologist knew that the enzyme had to be added. The dough would comprise per kg of flour these ranges after adding the enzymes. In order to calculate what is added one looks for activity of the dough in order to have the basic level and work out how much is to be added. The reality is that the inherent activity of amylase in the dough is very low -only traces- and hence it is not relevant for baking.

The definitions used were a mathematical way to define the amounts of enzyme which had to be calculated in a conventional way. The units were measured by standard procedures. When the dough rises, the baking technologist quotes them per kg of flour.

Asked by the board as to whether the units were measured in the starting material, the answer was that they have to be relative per kg of flour.

Asked by the board whether the units were measured in the bread improver composition, the answer was negative.

With respect to auxiliary request III the respondent stated that the bread improver had three enzymes. For two of them the ranges were defined in respect of the flour and for one of them in relation to the dough.

The respondent denied any contradiction and stated that all the enzymes were measured in relation to the volume of flour.

In order to make a dough according to the claims one has to test, following the examples, by using the ranges given in the claims and calculate the amounts per kg of flour.

Questioned by the board as to whether the relationship between the components changed, the respondent answered that one has to tailor the bread improver composition to the particular dough. There are many bread improver compositions which apply to the making of dough according to claim 1.

The enzymes had been known for many years and there was no doubt about how people would use them. The flour employed was that normally used in baking, which has only traces of amylase.

XI. Opponent's II arguments with respect to the admissibility of the requests may be summarised as follows:

The new requests were filed too late. The amendments, with exception of the introduction of the term "fungal" in some of the auxiliary requests, resulted from objections raised long before in the appeal proceedings. The first auxiliary request was a reformatio in peius since the method was claimed for the first time, putting the patentee in a better position.

The apparent minor nature of the amendments led to complex discussions and hence the proceedings were delayed because of the late filing.

Opponent's II further arguments may be summarised as follows:

The patentee understood claim 1 of the main request in the sense that these units are in the dough after preparation but there was a lacuna between "so as to add" and "comprise".

In the original description it was stated that "the dough *comprises* from 25-1250 FAU fungal amylase units (FAU) per kg flour" (page 3, lines 17 to 19) (emphasis added).

It was known from the prior art that the dough had inherent amylase activity. With the new wording of the claim it was unclear whether or not this activity was included. Two interpretations were possible.

To measure the activity in the dough was very difficult but could be done. One made an extract from dough and there would be interferences. The results would be dependent also on the nature of the flour.

With respect to auxiliary requests II and IIA, appellant opponent II had no further comment.

With respect to auxiliary request III and auxiliary requests VII and VIII appellant opponent II stated that a difference was made in the claim between the units as added and the units comprised or in the dough. Previously, the expressions "added" and "comprised" were considered as equivalents by the patentee and now they were considered to be different.

Moreover, appellant opponent II pointed out that it appeared that the patentee had revoked its earlier statement that all the enzymes were measured with respect to the dough.

For all the requests, the appellant further argued that the bread improver composition depends on the nature and quality of the flour, which was not defined in the claim. It may be a natural flour or a flour having an enzyme in it. The claim would therefore include bread improver compositions having any amounts of the three enzymes.

XII. The appellant (opponent II) requested that the decision under appeal be set aside and that the European patent No. 0 585 988 be revoked.

The respondent (patentee) requested that the appeal be dismissed and that the patent be maintained in the form as upheld by the Opposition Division in the decision under appeal (main request), alternatively that the decision under appeal be set aside and that the patent be maintained with the sets of claims of the auxiliary requests 1 to 13. (2 and 2a filed with letter of 10 June 2004, 3 to 8 filed with the letter of 14 October 2003 and 9 to 13 filed during today's oral proceedings.

Reasons for the decision

1. Admissibility

1.1 Admissibility of the appeals

1.1.1 The appeal of appellant opponent II is admissible.

1.1.2 The appeal filed by notice of appeal dated 15 March 1999 is considered inadmissible as it was filed by Quest International B.V., Huizerstraatweg 28, Naarden, the Netherlands, which company does not seem to be a party to the opposition proceedings.

As the mention of Quest International B.V. in the notice of appeal does not clearly seem to be an error, (and therefore the situation according to T 97/98, date of decision 21 May 2001, and T 340/92, date of decision 5 October 1994, does not arise), correction under Rule 65(2) EPC is not possible.

The file shows that Quest International B.V. seems to have had an interest in the case from the start. (Original opponents I - Unilever N.V. and Unilever PLC - have stated that they filed the opposition on behalf of the activities of their subsidiary company Quest.) It is not up to the board or to third parties to speculate on (changes in) the exact relationship between first Unilever and Quest and later between ICI and Quest.

Also the fact that the notice of appeal filed by Quest International B.V. mentions the full address of this company but nevertheless expressly requires the address of ICI Group Intellectual Property Department to be used as the address for correspondence, would seem to make it probable that Quest International B.V. was filing the appeal as a result of a conscious decision rather than as the result of an error.

Thus, neither from the notice of appeal nor from the file preceding this notice of appeal can the filing of the appeal by Quest International B.V. be seen to be an obvious error.

It is noted that the grounds of appeal, filed on 11 May 1999, mention Imperial Chemical Industries PLC as the appellant instead of Quest International, but it seems contrary to legal certainty to interpret the notice of appeal on the basis of a later document.

Opponent I did not dispute the analysis made by the board.

Consequently, the appeal lodged by Quest International BV is inadmissible.

1.2 Admissibility of the requests filed during the oral proceedings

1.2.1 The requests filed during the oral proceedings were filed in response to objections raised during the oral proceedings and hence are considered to be admissible.

The appellant was not put in a worse position as it would not have appealed since the method claim of the first auxiliary request represented a major restriction with respect to the product claim.

The proceedings were not delayed by these late-filed amendments since their nature allowed them to be dealt with immediately.

2. *Article 84 EPC*

2.1 The claims have been amended during opposition and appeal proceedings. The board has therefore the power to examine them with respect *inter alia* to their formal requirements. Moreover, the claims are not mere combinations of the granted claims. Therefore the wording of the claims has to be examined by the board in their new context.

2.2 Claim 1 of each of the main request and auxiliary requests I, II, IIA, III to XIII comprises the following wording:
"so as to add to the dough per kg of flour

400 to 4000 lipase units,
25 to 500 ß-xylanase units of hemicellulase".

During the oral proceedings an extensive discussion took place about whether these enzymatic units are related to the dough, an extract of the dough, the bread improver as starting material or the separated enzymes as starting material. As a consequence, the question arose as to whether the units are measured in the dough, an extract of the dough, the bread improver as starting material or the separated enzymes as starting material.

After considering both parties' arguments, the board is convinced that the measurement can take place in almost all of these forms, except the dough.

The respondent did not deny that different environments lead to different values of activity.

The respondent's statements are plausible:

- that the enzymatic units are added to the dough and are in the dough and hence can characterise the dough together with the other features of the claims

- that the values per kg of flour were commonly used by the baker

- and that, in practice, in the baking industry, the baker adds defined amounts of enzyme to the dough per kg of flour.

However, several issues remain unanswered.

If the enzymatic units are in the dough, as stated by the respondent, and serve to characterise it with respect to other dough, then the enzymatic units have to be measured in the dough. However, if the enzymatic units are added to the dough by the bread improver composition, then the enzymatic units have to be measured in the bread improver composition. The respondent denied this point and stated that the enzymatic units are measured in the starting enzymes.

Apart from the fact that the measurements in the extract from the dough and in the starting enzymes would be drastically different due to the preceding use of the enzymes and the completely different environment, the wording of the claim leads one to assume that the enzymatic units are to be measured in the dough or in the bread improver composition.

Additionally, the activity per g of bread improver composition is left open in the claim. Also left open in the claim are the relative proportions of the three enzymes which may vary. This was acknowledged by the respondent. Three separate enzymes may even be added without any relationship as to their amounts.

The mere indication of the ranges of enzyme units per kg of flour does not contribute to a solution of this problem. On page 3, lines 10 to 16, of the original description, it is stated:

"The amounts of the various enzymes to be included in the dough vary depending on various factors such as enzyme activity, baking method, kind of bread, fermentation time and temperature and the kind of raw materials used. It will be appreciated that the skilled person is able without undue experimentation to determine the effective amounts of the enzymes in question".

One would either need to know or measure the enzyme activity in the bread improver composition as units/g, in order to calculate the required amounts per kg of flour, or know which amounts of bread improver are to be added per kg of flour in order to calculate which activity is required in the bread improver composition from the values given in the claims. This information is not however given in the claim and the description contains no indication of how to solve this problem.

The respondent's reference to the original disclosure (page 2, lines 25 to 27), which reads:

"The present invention further provides a dough which comprises the bread improver composition, flour, water and yeast" does not serve to solve the problem either. Apart from the fact that shortening is not mentioned, the only information given is that a bread improver composition forms part of the dough and that flour is also present as another component.

The respondent also cited example 1 on original page 5, lines 26 to 29: "It appears from Table I that addition of a combination of shortening, α-amylase, hemicellulase and lipase results in excellent bread

quality and superior crumb softness". The information in Table I does not however refer to the bread improver composition but to three separate enzymes. Apart from that, the examples stated specific enzyme units per kg of flour, i.e. the relative enzymatic activity.

It was suggested by the respondent that the amounts of bread improver could be tailored by following the baking tests in the description to see whether the effects on crumb firmness and loaf volume were achieved or not. However, this can hardly serve properly to define the bread improver composition appearing in the claims with respect to its activity and the proportionality of enzymes contained, since the claims have to define the subject-matter for which protection is sought.

If the enzymatic activity is not measured in the bread improver composition, then the claims lack features indicating how to produce or modify a bread improver composition in order to achieve the relative activity values appearing in the claims "so as to add per kg of flour".

Therefore, there is an ambiguity in the claim as to whether the relative enzymatic units are measured in the dough or in the bread improver or even if the units are measured in the starting enzymes, which are then tailored into an appropriate bread improver by tests undefined in the claims.

Document (13) was cited by the respondent, as an example, to show that the expression of relative units for the dosage of enzyme per kg of flour was common (30FAU/kg of flour) (page 12).

However, document (13) also discloses the activity of the bread improver in absolute terms as GRINDAMYL S 100 (200 FAU, 10.000 GPU/g) (page 9) and the amounts to be added to the dough as a typical dosage, i.e. 15 g of GRINDAMYL S 100/100 kg of flour (page 11). From this information the relative units and the absolute units can be interconverted.

Document (14) gives the absolute enzyme activity for Fermizyme™ H 400 as 230 FAU/g equivalent to 2300 SKB/g (amylase units) and 400 SHU/g (specific hemicellulase units) (page 4) and the amounts for the dosage as 15-30g/100 kg of flour. From these values the relative enzymatic units can be calculated.

Consequently, the board concludes that claim 1 of all requests does not meet the requirements of Article 84 EPC.

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:

A. Townend U. Oswald