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**D E C I S I O N**  
**of 22 October 2002**

**Case Number:** T 0343/00 - 3.3.4

**Application Number:** 91201441.2

**Publication Number:** 0461725

**IPC:** C12N 1/04

**Language of the proceedings:** EN

**Title of invention:**  
Stabilisation of cream yeast

**Patentee:**  
DSM N.V.

**Opponents:**  
Lesaffre International  
Burns Philp Research and Development Pty Ltd.

**Headword:**  
Cream yeast/DSM N.V.

**Relevant legal provisions:**  
EPC Art. 54, 56

**Keyword:**  
"Novelty - (yes)"  
"Inventive step - (yes)"

**Decisions cited:**  
T 0190/99, T 0079/96, T 0939/92

**Catchword:**  
-



Case Number: T 0343/00 - 3.3.4

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.4**  
**of 22 October 2002**

**Appellant:** Lesaffre International  
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**Decision under appeal:** Interlocutory decision of the Opposition Division  
of the European Patent Office posted 1 February  
2000 concerning maintenance of European patent  
No. 0 461 725 in amended form.

**Composition of the Board:**

**Chairman:** U. M. Kinkeldey  
**Members:** A. L. L. Marie  
V. Di Cerbo

## Summary of Facts and Submissions

- I. Opponent 02 introduced an appeal against the decision of the opposition division dated 1 February 2000 maintaining European Patent EP-0 461 725 in amended form on the basis of the claims of the third auxiliary request, claims 1 and 5 of which read:
- "1. A process for producing dough or a similar product, which process comprises using a cream of baker's yeast comprising 17-23 wt% dry matter characterized by further comprising gum."
- "5. A process to produce bread or a related product which comprises using baker's yeast as claimed in any one of claims 1 to 4 a cream of baker's yeast comprising 17-23 wt% dry matter characterized by further comprising gum."
- II. These claims were found by the opposition division to meet the patentability requirements of the EPC despite the objections raised by the opponents under Articles 54 and 56 EPC in view of documents (2), (10), (11) and/or (18)(cf infra), the latter being considered as the closest prior art by the opposition division, seen alone or in combination with any of documents (6) to (9), (12) to (15).
- III. The following documents are mentioned in this decision:
- (2) EP-0 164 903
- (6) US Code of Federal Regulation, Ch. 21, 1987 edition, section 170.3(28)

- (7) US Code of Federal Regulation, Ch. 21, 1987 edition, section 172.695(4)(e)
- (8) B. Walker, "Gum and Stabilisers in Food Formulations", Proceedings of the 2nd International Conference, Wexham, Wales, July 1983, pages 137 to 161
- (9) M. Glicksman, "Gum Technology in the Food Industry" in "Food Science and Technology", 1969, pages 30 to 31, 341 to 347
- (10) JP-2-124054
- (11) US 3,954,979
- (12) Directives 74/329/EEC and 78/663/EEC
- (13) G.R. Sanderson, Prog. Fd. Nutr. Sci., 1982, Vol. 6, pages 77 to 87
- (14) D.J. Pettitt, "Xanthan Gum" in CRC Food Hydrocolloids, 1982, Vol. 1, Boca Raton, Fla; CRC Press, chapter 5 pages 127-149
- (15) J.F. Kennedy and I.J. Bradshaw, "Production, Properties and Applications of Xanthan" in Modern Applications of Traditional Biotechnologies, 1984, pages 319 to 322 and 358 to 362
- (16) "Comprehensive Biotechnology", M. Moo-Young editor, Pergamon Press, Ltd, Oxford, England 1985, pages 430 to 461
- (17) "Yeast Technology", G. Reed and H.J. Pepler

editors, 1973, The AVI Publishing Company, Wesport  
Connecticut, pages 68, 84, plates 5.3 and 5.4,  
pages 94 and 95

(18) NL-259948

(Annex 7) Declaration of Ms. Wadoux

(Annex 15) "The Yeasts", edited by A.H. Rose and J.S.  
Harrison, 1970, Vol. 3 Academic Press,  
pages 373 to 374, 382 to 386, 409 to 410

(Annex 16) GB-1 445 885

(Annex 17) GB-1 459 085

(Annex 18) US 4,127,447

(Annex 19) "Yeast Technology", second Edition, G. Reed  
and T.W. Nagodawithana editors, 1991,  
published by Van Nostrand Reinhold, New  
York, pages 288 to 314

IV. A communication pursuant to Article 11(2) of the rules  
of procedure of the Boards of appeal was sent and oral  
proceedings scheduled and held on 22 October 2002,  
during which two auxiliary requests were introduced.  
The first auxiliary request deleted from claim 5 as  
maintained the words "*baker's yeast as claimed in any  
one of claims 1 to 4*", whereas the second auxiliary  
request deleted claims 5 to 8 from the set of claims  
maintained by the first instance.

V. Opponent 01 withdrew his opposition (letter of 28 April  
1998). Opponent 03 indicated in his letter of 23 August

2002 his intention not to attend the oral proceedings, but is still a party as of right according to Article 107 EPC to the present appeal proceedings.

VI. The submissions of the appellant (opponent 02) may be summarized as follows:

- the term "yeast cream" referred to a slurry containing 17 to 23 wt% yeast dry matter, whatever its production process was and hence included in this definition the slurry obtained in documents (2), (11) or Annexes (15) to (19) after rehydration of dehydrated yeast cells. A linguistic interpretation of the words "yeast" and "cream" also led to this definition, which found a confirmation in the application as filed, since claim 6 indicated that the yeast cream was made from compressed yeast. As far as the existence of physico-chemical differences between these differently defined "yeast creams" (for instance, the amount of leaching solids) was alleged, the patent in suit was silent about this aspect and experimental data (Annex 7) showed a strong similarity between the creams obtained after centrifugation of the culture broth and those resulting from rehydration of dehydrated yeast.
  
- **Article 54 EPC:** documents (2) and (10) were novelty-destroying, since they disclosed processes for making dough using yeast cream and gum. The fact that the yeast cream was prepared from dehydrated cream was without importance in view of the broad definition of "yeast cream" and of the fact that the application as filed indicated in claim 6 that the yeast cream was made from

compressed yeast.

- **Article 56 EPC:** the claims of the main request were deprived of inventive step in view of the teaching of documents (2) and (10) or of the common general knowledge of the skilled person represented for instance by document (18) or Annex (19). The technical problem underlying document (2) was the difficulty for the baker to obtain a uniform yeast suspension, since yeast cells with, according to document (17), a density of  $1.133 \text{ g/cm}^3$  had the tendency to settle down. The solution proposed was to add gum to the yeast slurry. The technical field of document (10) was bread-making and the problem was two-fold: on one side, to stabilize the yeast slurry in order to rationalize the process of bread-making and, on the other side, to improve the maturation of the dough. The former problem was resolved by the addition of gum to the yeast emulsion and the latter by the synergy between fats and yeast. Starting from the common general knowledge of the skilled person (eg document (18) or Annex (19)), both the problem and the solution were known, since xanthan and, more generally, gums were known to be food additives with a stabilizing action on emulsions and suspensions (cf documents (12) to (15)). Document (18) or Annex (19) could be combined with either documents (2), (10) or (12) to (15) to arrive in an obvious manner to the solution disclosed in the claims of the main request. Finally, in view of the conclusions reached in decision T 939/92 (OJ EPO 1996, 309), the scope of the claims of the main request was not commensurate to the teaching of the patent in

suit, because the examples showed that homogeneity was not achieved for most of the gums at the concentrations used.

- **Article 84 EPC:** the formulation of claim 5 as maintained was confusing. The corrections submitted by the respondent with his letter of 21 May 2001, which finally resulted in the first and second auxiliary requests submitted during the oral proceedings before the Board were, according to decisions G 9/92 and G 4/93 (both EPO OJ 1994, 875), to be rejected, because not submitted in response to the appeal. Furthermore, due to the importance of the deletions made, these amendments could not be considered as typographical errors.

VII. The respondent's submissions were substantially as follows:

- "Yeast cream" was a technical term with a precisely established meaning and only referred to yeast slurry obtained after centrifuging off the fluid part of the culture broth and having a concentration in yeast dry matter of 17 to 23 wt%, as acknowledged by document (2). Attention was further drawn to the negative impact of dehydration and rehydration on yeast cells in view of documents (16), (17) and Annex (19). As far as the linguistic interpretation of the term "yeast cream" was concerned, decisions T 190/99 (6 March 2001) and T 79/96 (20 October 1998) were cited, which requested a technically sensible interpretation taking account of the whole disclosure of the patent.



- **Article 54 EPC:** document (10) concerned an emulsion in which gums were used, among many other possible compounds, as a stabilizer for the emulsion. The resuspended dehydrated yeast of document (2) was not a yeast cream, even in the sense of document (2) itself.
  
- **Article 56 EPC:** basically, the problem solved by the patent in suit, ie the maintenance of the yeast cream in suspension over a long period of time in fact concerned the yeast producer and was not addressed to by document (2) which was dedicated to a problem encountered by the baker, namely the difficulty of re-suspending dehydrated yeast. In the case of document (10), not only the problem addressed to, but also the solution were different, since, because of the presence of fats and oils, the composition was not storable and usable over a long period of time and the stabilisation was not due to the use of gums, but to the complex composition. The scope of the claims of the main request was commensurate to the teaching of the patent in suit, since the examples were sought to provide the skilled person with a general teaching susceptible to be used as a guidance allowing him/her to solve his/her specific yeast cream homogeneity problems.
  
- **Article 84 EPC:** the formulation of claim 5 as maintained contained typographical errors unnoticed during the opposition procedure and the amendment as in the first and second auxiliary requests also complied with Article 123(3) EPC.

VIII. The appellant requested that the decision under appeal

be set aside and that the European patent No. 0 461 725 be revoked.

- IX. The respondent requested that the appeal be dismissed and the patent be maintained (main request) or that the decision under appeal be set aside and the patent be maintained on the basis of the first or second auxiliary requests filed during the oral proceedings.

## Reasons for the Decision

### *Article 84 EPC*

1. The appellant objected against the formulation of claim 5 as maintained by the opposition division and argued that it cannot be amended without contravening to the provisions of Article 123(3) EPC.
2. The Board is convinced that the expression "*baker's yeast as claimed in any one of the claims 1 to 4*" does not place the skilled person in front of insurmountable difficulties of comprehension, even if claims 1 to 4 are actually not directed to said baker's yeast, but to processes using said baker's yeast. Furthermore, the Board interprets "*a cream of baker's yeast comprising 17-23 wt% dry matter*" as a second definition of the baker's yeast used in the process of claim 5, the first one being represented by "*baker's yeast as claimed in any one of claims 1 to 4*". A comma between these two definitions may have rendered claim 5 linguistically nicer. However, linguistic aesthetic cannot render an amendment to a given claim appropriate or necessary, as

long as the matter for which protection is sought in said claim can be clearly identified.

3. Therefore, in the Board's judgement, claim 5 of the main request fulfils the requirements of Article 84 EPC.

*Article 54 EPC*

4. The claims maintained by the opposition division are directed to processes for producing dough (claim 1) and bread or related products (claim 5) making use of a cream of yeast comprising 17-23 wt% yeast dry matter characterized by further comprising gum. However, the patent in suit defines the technical problem to be solved as to keep the yeast cream homogenous (page 2, lines 39 to 41). It can thus be deduced that the essential feature of the invention is the stabilized yeast cream.
5. Both the appellant and the respondent controversially argued on the technical meaning of "cream yeast" (or of its synonyms "cream of yeast" and "cream of baker's yeast"), which thus, before any examination of the novelty and the inventive step of the claims can take place, has to be defined by the Board giving, according to decisions T 190/99 and T 79/96 (cf supra), to this expression its broadest technically sensible meaning, while taking into account the whole disclosure of the patent and ruling out interpretations which are illogical or do not make technical sense.
6. This expression appears, on one side, to be a precisely defined technical term identifying for the skilled person involved in the field of yeast production or

utilisation a slurry containing 17 to 23 wt% yeast dry matter, obtained after centrifugation of the culture broth. This definition is not only to be found in the patent in suit (page 2, lines 15 to 16), but also in document (2) (page 15, second paragraph), document (16) (page 446, second paragraph), document (17) (page 84, second paragraph), Annex 15 (page 385, last line to page 386, line 6) and Annex 19 (page 294, last paragraph).

7. On the other hand, document (2) (page 17, line 32 to page 18, line 4) mentions, besides this above mentioned definition, more general ones, apparently only referring to the viscous or creamy aspect of the slurry. This kind of more general definitions can also be found in Annex 16 (page 10, right column, lines 40 to 50), Annex 17 (page 3, right column, lines 75 to 82), document (11) (column 3, lines 40 to 49), in which this expression even refers to autolysed yeast slurry, or in document (10) in which a milky yeast suspension is produced by resuspending in water yeast cells obtained as a dry product, a wet product or as a cake (page 2, lines 14 to 30).
8. In this context, it has to be noted that these various definitions of the expression "yeast cream" mentioned above cover yeast suspensions with different physico-chemical properties. Annex (19) shows for instance that the drying step causes irreversible damages to the yeast cells, as demonstrated by the amount of leaching solids (Figure 6.20), the amount of leaching glutathione (Figure 6.21) resulting in a slackening effect on the dough (page 306) and the rupture of the cytoplasmic membrane of dried cells (page 299 to page 301, heading "Biology of Yeast Drying").

9. The Board is convinced that the skilled person, whose attitude has been defined in the established case law (Case law of the Boards of Appeal of the European Patent Office, 4th edition, 201, page 111) as being conservative, would choose the definition which is widely accepted in the concerned technical field and defines the yeast cream in a more precise manner, ie the definition mentioned in the patent in suit.
  
10. The appellant also argued that claim 6 as filed stated that the stabilised cream of yeast was prepared by addition of gum to **compressed yeast**. Although this claim was further amended so as to indicate, in its granted form, that gum was added to the **cream yeast**, the skilled person could, nevertheless, consider that, in the applicant/patentee's own view, a slurry containing 17 to 23 wt% yeast dry matter obtained after addition of a certain amount of an aqueous solution to a "compressed yeast" was also encompassed by the expression "yeast cream".
  
11. "Compressed yeast" is for the skilled person, as the expression "yeast cream", a precise technical term with a well established meaning and refers to a preparation containing 27 to 33 wt% yeast dry matter as indicated in the patent in suit (page 2, lines 16 to 20), document 16 (page 446, heading "Filtration") and Annex 19 (page 292, fourth paragraph and page 293, first sentence). On the other hand, any process lowering the aqueous content of the culture broth may be considered as resulting in a "compressed" yeast. In this interpretation, the adjective "compressed" only means that a certain amount of aqueous medium has been taken away from the yeast slurry. The Board is convinced that, here again, the skilled person would take the

whole disclosure of the patent in suit into account and would notice that on page 2, lines 20 to 22 "compressed yeast" is said to require refrigeration for storage and to only last for 2 to 3 weeks before losing its leavening quality, increasing its bacterial contamination and even autolysing. This is also confirmed by the teaching of Annex 19 on page 295 (heading "Stability of Compressed Yeast"), reflecting as a textbook the common general knowledge of the skilled person, who would then conclude that a "compressed yeast" containing 27 to 33 wt% dry matter is not suitable for the purpose of the patent in suit (page 2 lines 50 to 51), so that the adjective "compressed" as used in claim 6 as filed cannot refer to the precisely defined technical term "compressed yeast", but has to be understood as meaning a slurry from which a certain amount of water has been taken away. In that sense, a "yeast cream" is also a compressed yeast and there is no contradiction between the expressions "yeast cream" and "compressed yeast" as used respectively in claims 1 and 6 as filed.

12. Document (2) described a rehydratable instant active dried yeast containing gum used for bread making, in which gum has been added in order to favour the re-suspension of the dry yeast in water. Having regard to the above mentioned definition of the expression "yeast cream", document (2) is not novelty-destroying for process claim 1 of the main request, since it does not use such a "yeast cream". Indeed, the examples of document (2) show that the gum has been added to the yeast filter cake obtained after dewatering a yeast cream in a filter press.
  
13. Document (10) concerned with a yeast suspension

containing fats and oils used for bread making purpose is also not novelty-destroying, since most of the yeast concentrations mentioned on page 3 (lines 33 to 36) do not correspond to the definition of a "yeast cream". Furthermore, the "Working Example 1" states on page 9 (lines 13 to 14) that the yeast composition is prepared from a yeast suspension containing "40% by weight as live yeast". "Live yeast" is defined on page 4 (lines 18 to 23) as being a "compressed yeast" containing approximately 70% by weight of water (ie 30 wt% yeast dry matter) and hence corresponds to the conventional definition of a "compressed yeast" mentioned above (cf supra point 8). Therefore, document (10) does not use a yeast cream as in the patent in suit. Moreover, it does not disclose the crucial product of the patent in suit (cf supra point 1), ie a yeast cream with gum, but an emulsion containing both yeast and gums.

14. Therefore, the subject-matter of claims 1 to 8 of the main request fulfils the requirements of Article 54 EPC.

*Article 56 EPC*

15. In the Board's view, document (2) cannot be the closest prior art, since it addresses a technical problem different from that of the patent in suit. Indeed, its purpose is to favour the dispersion of resolubilized dry yeast and hence to avoid the clumping of the dry yeast cells brought back into suspension. This problem arises from the habit of many consumers and/or bakers to first rehydrate the instant active dry yeast before mixing it with flour and other dough or batter ingredients, which results in a substantial decrease in

the leavening activity of said instant-type active dry yeast. It thus much more concerns the wetting of the yeast cells and the destruction of the forces holding them together. Furthermore, there is no indication in document (2) on the durability of the suspension obtained, which is an important element of the patent in suit, the examples of which use a time period of 10 and 13 days as a reference. It has even to be considered with scepticism whether durability is at all an issue for document (2). Indeed, the problem addressed to by document (2) relates to the baker's need for a yeast composition which can be re-suspended quickly or as defined on page 4 (line 22) "...within a reasonable amount of time..." and document (2) shows in the paragraph between page 10, line 22 and page 11, line 20 that this yeast suspension is then used immediately after its rehydration for bread-making.

16. Document (10) is considered by the Board as the closest prior art, since, as the patent in suit, it addresses *inter alia* the problem of rationalizing and automatizing the process of bread-making (page 3, lines 4 to 6) implying an automatic dosage of the yeast amount needed (page 3, lines 15 to 22). This problem is solved by providing a stable and fluid yeast composition, said composition being an oil in water emulsion (page 3, lines 24 to 32) containing yeast cells. Several kinds of emulsion stabilizers are cited on page 5 (lines 21 to 28), among them gums.
  
17. The objective technical problem in view of document (10) is the provision of an alternative to the yeast composition described therein. Compared to document (10), claim 1 of the main request can be considered as solving the problem of the stability of the yeast



suspension by providing the skilled person with a method based on the sole addition of gums to the yeast slurry. The description of the patent in suit, in particular the examples, makes it plausible, in view of the conclusions reached below (cf paragraph 19) on the question of the breadth of the claims in relation to the teaching of the patent in suit, that this problem has been solved.

18. For the assessment of inventive step the question thus needs to be answered whether the skilled person starting from document (10) would derive a solution from the prior art in an obvious manner, which falls within the scope of claim 1 of the main request.
  
19. In the Board's opinion this question has to be negatively answered, since gums are used in document (10) not to prevent the yeast cells present in the emulsion to settle down and thus to provide a reliably constant homogenous yeast cream, but as stabilizers of the emulsion (page 5, lines 21 to 28). It is the emulsion through its increased viscosity, which in document (10) solves the problem, not the gums, so that, in fact, document (10) even teaches away from the solution disclosed in claim 1 of the main request. Furthermore, gums represent only one possibility among many other cited stabilizers and document (10) does not give any incentive why the use of gums as a stabilizer should be preferred.
  
20. As suggested by the appellant, document (18) or Annex (19) which reflect the common general knowledge of the skilled person may also be considered as the closest prior art, instead of document (10). Document (18), seen as a whole, and Annex (19) in the paragraph

bridging pages 294 and 295 show that attempts had already been made to use yeast cream in bread-making processes. However, this use was restricted by some drawbacks, such as the necessity of continuously stirring/pumping and cooling the yeast slurry. The problem to be solved in view of document (18) or Annex (19) could be defined as the provision of an alternative method to the stirring/pumping and cooling. The question to be answered for the assessment of inventive step is whether the skilled person would have found in the prior art an incentive leading in an obvious manner to the solution proposed in the claims of the main request, ie the use of gums.

21. In the Board's view a negative answer has also to be given to this question. Gums were known as thickeners or stabilizers for suspensions or emulsions (cf documents (14) and (15), which as reviews on xanthan gum reflect the common general knowledge of the skilled person). However, as far as the interaction of gums with living material, such as yeast cells, is concerned, whereas no information can be retrieved from documents (14) and (15), document (13) even teaches away from the use of gums, since xanthan is said to interact with proteins, so that, in the case of citrus pulp and milk proteins, a flocculation and a grainy precipitate respectively occur (page 84). An interaction with proteins is also mentioned on page 86 in the paragraph concerning bakery products. Xanthan has thus exactly the opposite effect to that expected and obtained in the patent in suit.
  
22. According to the appellant, the results shown in the Examples 1 to 4 demonstrate that embodiments covered by the claims do not solve the technical problem

underlying the patent in suit, since a homogenous yeast cream is not obtained with all the gums at all the concentrations mentioned, so that in view of decision T 939/92 (cf supra) the requirements of Article 56 EPC were not met. Appellant's view is in the Board's opinion based on a misinterpretation of said Examples, the purpose of which is in fact twofold. They aim not only at demonstrating that a homogenous yeast cream can be obtained (Example 1: third and fourth xanthan concentrations, Example 2: first guar concentration, Example 3: first and second tragacanth concentrations), but also at providing the skilled person with a guiding teaching to be adapted to the specific needs he/she may encounter. This aspect is addressed to in said examples by first defining the maximum amount of decantation obtained after 10 or 13 days of storage in the absence of gum (Example 1) and then showing the effect of given gum concentrations on the homogeneity of the yeast cream during this period of time. The skilled person, using said examples as a kind of reference curve, is then able to define (in case with a few additional routine trials) the nature and the concentration of the gum necessary for solving his/her own particular problem. The present situation is therefore different from that of decision T 939/92 (cf supra), in which a specific technical effect was not to be reasonably ascribed to the whole spectrum of chemical structures covered by the claims. Therefore, the conclusions of T 939/92 do not apply here.

23. The Board is thus of the opinion that the skilled person would not have come in an obvious manner to the solution proposed in claims 1 and 5 of the main request, the scope of which is commensurate to the teaching of the patent in suit. Therefore, claims 1 and

5 meet the requirements of Article 56 EPC. This conclusion also applies *mutatis mutandis* to claims 2 to 4 and 6 to 8 of the main request.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairwoman:

P. Cremona

U. Kinkeldey