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D E C I S I O N
of 6 May 1999

Case Number: T 0989/95 - 3.3.4

Application Number: 90201124.6

Publication Number: 0398412

IPC: A23D 7/00

Language of the proceedings: EN

Title of invention:

Water-in-oil dispersion and process for preparing such dispersion

Patentee:

Unilever N.V., et al

Opponent:

Winner Livsmedel AB
Koninklijke Brinkers Margarinefabrieken B.V.

Headword:

Water-in-oil dispersion/UNILEVER

Relevant legal provisions:

EPC Art. 54, 84

Keyword:

"Novelty (no)"
"Clarity (no)"

Decisions cited:

T 0487/89, G 0010/91

Catchword:

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Boards of Appeal

Chambres de recours

Case Number: T 0989/95 - 3.3.4

D E C I S I O N
of the Technical Board of Appeal 3.3.4
of 6 May 1999

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Decision under appeal: Interlocutory decision of the Opposition Division

of the European Patent Office posted 23 October
1995 concerning maintenance of European patent
No. 0 398 412 in amended form.

Composition of the Board:

Chairman: L. Galligani
Members: D. D. Harkness
C. Holtz

Summary of Facts and Submissions

I. The appeal lies from the decision of the opposition division to maintain the European patent No. 398 412 on the basis of the second auxiliary request filed during oral proceedings on 26 September 1995. The independent claims 1 and 6 thereof read as follows:

"1. Process for preparing a dispersion comprising a continuous fat phase and a dispersed gelled aqueous phase, wherein a water-continuous composition, containing, calculated on the water:

- (i) more than 200 ppm amino acid residues; and
- (ii) more than the critical concentration of one or more gelling polysaccharides capable of forming a reversible gel,

is cooled from above the gel setting temperature of the water-continuous composition to below said gel setting temperature and subjected to such conditions of shear that the water-continuous composition is converted into small gelled aqueous beads, after which a fat-continuous dispersion is formed while maintaining the temperature at below the gel melting temperature, and wherein the dispersed gelled aqueous phase has a droplet size distribution value σ which exceeds 0.9, preferably exceeds 1.1 micrometers (microns)."

"6. Edible dispersion containing less than 30% by weight of a continuous fat phase and at least 70 wt. % of a gelled aqueous phase which gelled dispersed aqueous phase contains

- (a) one or more gelling polysaccharides capable of forming a reversible gel, at a concentration level of 1-6 times the critical concentration of said gelling polysaccharide(s), and
- (b) more than 200 ppm amino acid residues, wherein the dispersed gelled aqueous phase has a droplet diameter distribution value sigma which exceeds 0.9, preferably exceeds 1.1 micrometers (microns)."

These claims differed from the corresponding claims as granted (claims 1 and 7, respectively) in that they contained the additional feature "wherein the dispersed gelled aqueous phase has a droplet diameter [size in claim 1] distribution value sigma which exceeds 0.9, preferably exceeds 1.1 micrometers (microns)."

II. The relevant prior art documents are:

D1: GB-A-2 084 171

D3: EP-A-0 237 120

D4: EP-A-0 237 132

D6: EP-A-0 011 344

D12: EP-A-0 279 499

III. The opposition division decided that the main request and the first auxiliary request then on file did not meet the requirement of novelty having regard, respectively, to document D6, which was held to be

prejudicial to the novelty of claim 7 of the main request, and D4, which was held to be prejudicial to the novelty of claim 1 of the first auxiliary request. The opposition division, however, found that the subject-matter of claim 1 of the second auxiliary request, against which in its view the opposing parties had filed no arguments, met the requirements of the EPC. Claim 6 of the same request was considered novel and inventive by virtue of the feature "the dispersed gelled aqueous phase has a droplet diameter distribution value sigma which exceeds 0.9, preferably exceeds 1.1 micrometers (microns)". Said feature was not disclosed in any prior published document. Furthermore, it was considered that the properties of the product, oral response, stability and release of flavour components, were advantageously affected by the droplet size distribution, and that for this reason inventive step could be recognised.

- IV. The appellant (opponent 1) filed an appeal with statement of grounds and paid the appeal fee in due time.

- V. In a communication dated 11 August 1998 the board pointed to a possible violation of Rule 68(2) EPC in relation to the decision under appeal and asked the parties to comment. Only the appellant replied thereto. He stated that a remittal to the first instance was not requested in the interest of saving costs. On 3 February 1999 the parties were summoned to oral proceedings.

- VI. The other party (opponent 2) stated in a letter dated 17 February 1999 that they would not attend the oral

proceedings.

VII. At oral proceedings held on 6 May 1999 the respondent (patent proprietor) filed auxiliary requests I to IV. Auxiliary requests I to III comprised a product claim which was identical to claim 6 of the main request, this being represented by the claims as maintained by the opposition division. Process claim 1 of these requests contained further amendments in comparison to claim 1 of the main request, these being either the introduction of the feature "and wherein the water composition is maintained at a temperature below the gel setting temperature for at least 20 seconds prior to the formation of the fat continuous dispersion" (auxiliary request I) or the introduction of the features of dependent claim 2 (auxiliary request II) or the introduction of the features of dependent claims 2 and 3 (auxiliary request III).

In auxiliary request IV product claim 4 was as claim 6 of the main request with the additional feature "and wherein the gelled aqueous phase has a viscosity of less than 30 mPa.s. at 5°C, and at a shear rate of 17090[sec]⁻¹" at the end of the claim. Process claim 1 read as follows:

"1. Process for preparing a dispersion comprising from 5-30% by weight of a continuous fat phase and from 70-95% by weight of a dispersed gelled aqueous phase, wherein the gelled aqueous phase has a viscosity of less than 30 mPa.s. at 5°C, and at a shear rate of 17090⁻¹, wherein a water-continuous composition, containing, calculated on the water:

- (i) more than 200 ppm amino acid residues; and
- (ii) more than the critical concentration of one or more gelling polysaccharides capable of forming a reversible gel,

is cooled from above the gel setting temperature of the water-continuous composition to below said gel setting temperature and subjected to such conditions of shear that the water-continuous composition is converted into small gelled aqueous beads, after which a fat-continuous dispersion is formed while maintaining the temperature at below the gel melting temperature, and wherein the dispersed gelled aqueous phase has a droplet diameter distribution value sigma which exceeds 0.9 preferably exceeds 1.1 micrometers (microns), and wherein cooling regime and residence time employed till the formation of the fat-continuous dispersion are such that under quiescent conditions a gel having a shear modulus of more that 50 Pa., preferably of more than 70 Pa., would have formed."

VIII. The appellant's arguments are summarised as follows:

To the main request:

The introduction of the definition of the values of sigma, being a measure of the droplet diameter distribution of the dispersed gelled aqueous phase in the product, was not an appropriate amendment in process claim 1 as it was irrelevant in terms of the process steps leading to the product. It represented a standard deviation relating to bead sizes which was not clearly expressed. The respondent had not provided a

process which would give the required value for sigma but had merely measured this value after the product had been produced. No comparisons with prior art product sigma values were given and in a case which depended on this feature such a comparison was necessary.

Further the process as claimed did not indicate how a product with such a feature was to be obtained and in this case the patent in suit did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, (Articles 83 and 100(b) EPC). The conditions of shear which were applied to the water continuous phase during the process of the invention using conventional equipment, eg A- and C- units were not specified in the process claim. In fact too heavy a burden was being placed on the skilled person to reproduce the process.

With regard to the prior art the appellant cited document 1, example 1 and document 4, example 2, both of which employed starting materials and process steps falling within claim 1 of the patent in suit, and which in their view resulted in products which would have the required sigma values. These were products falling within the definition of claim 6. It was also pointed out that example 1 of document 1 referred to reworking of the example by melting the product which indicated that a reversible gel had been produced.

To the auxiliary requests I to IV:

None of the auxiliary requests contained a feature which overcame the deficiencies of the main request and

therefore they were open to the same objection as the main request. It was noted that the 20 second limitation in auxiliary request I excluded the examples of the invention. It was not enough to recite a time limit for the gelling stage as other process conditions, shear rates, temperature and apparatus, also determined the product characteristics.

IX. The respondent's arguments are summarised as follows:

To the main request:

The parameter sigma was a term known in the art which followed from the NMR measurements under standard conditions as indicated in the description of the patent in suit. No point of reference (droplet size) was required because the deviation from the maximum droplet size in microns was determined by means of the NMR equipment.

The term "size distribution in claim 1 was to be read as "diameter distribution" as in the product claim 6.

Example 2 of document 4, if anything, only represented an accidental anticipation because the general teaching of this citation was that the setting of the gelled aqueous phase only took place after the phase inversion, this being contrary to the claimed process of the patent in suit. The example did not specify the shear conditions which were necessary to control the droplet size of the aqueous phase. There was vagueness in respect of the state of the emulsion after the first C-unit and indeed phase inversion may have begun at that point. There was no gelation before phase

inversion because phase inversion may have started in the A-unit.

The example of document 1 was also not anticipatory because there was no gelling agent present in an amount above the critical concentration for formation of a reversible gel. The example showed that a mixture of gelling and thickening agents had been employed and this did not give rise to the formation of a reversible gel.

The skilled artisan would have no difficulty in creating the process conditions which would provide a product having the required sigma value. The shear and sigma values were adequately defined and the emulsion making process and apparatus therefore were all well known to the skilled person. The cooling conditions of temperature and time formed part of the skilled persons knowledge and did not constitute a problem for him. Document 3 discussed how to vary the droplet size using conventional apparatus and this would be done to produce sigma values which were restricted by the usual physical conditions in this art.

To the auxiliary requests I to IV:

Auxiliary request I was distinguished over the prior art because the conditions stated did lead to gelling and cross-linking and were not prior disclosed.

The fat content of the spreads manufactured according to the process of auxiliary request II was limited to a maximum of 30 wt% and this distinguished the product from that of example 2 of document 4 which had 40 wt%

and example 1 of document 1 which had 35 wt%.

Auxiliary requests III and IV were further limited over auxiliary request II in that they represented firstly a combination of claims 1, 2 and 3, and secondly a combination of claims 1, 2, 3 and 9 of the claims forming the main request. These requests were not prior published in any of the citations.

- X. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

- XI. The respondent requested that the appeal be dismissed, alternatively that the decision under appeal be set aside and the patent be maintained on the basis of auxiliary requests I to IV as submitted in the oral proceedings.

Reasons for the Decision

- 1. The appeal is admissible.

Article 123(2) and (3) EPC: all requests.

- 2. Having considered the main request and the auxiliary requests, the board has no objections against any of the requests under this article of the EPC, since all the amendments therein are, firstly, of a restrictive nature, and, secondly, they find a basis in the application as filed. No objections were raised in this respect by the appellant.

Main request

3. One of the essential features which characterises both process claim 1 and product claim 6 is the droplet diameter distribution value sigma of the dispersed gelled aqueous phase which should exceed 0.9, and preferably should exceed 1.1 microns. This feature, which did not characterise the claims as granted, was added in order to overcome the substantive objections raised in the opposition phase and is thus open to objection also under Article 84 EPC (cf G 10/91, OJ EPO 1993, 420, point 19 of the reasons). The opposition division in its decision now under appeal considered that the said feature was adequate to confer patentability to the subject-matter of the claims. The appellant submits that this is not the case (cf. Section VIII above). It has thus to be examined whether the said feature contributes in any way to a meaningful definition of the claimed subject-matter so as to allow its clear-cut distinction over the prior art.

4. The patent specification, although referring to sigma value determinations, does not contain a definition of "sigma value". However, the parties agreed that it defines the standard deviation in the droplet diameter distribution.

5. The dispersions of the patent in suit are characterised by the fact that NMR measurements of the volume weighted mean droplet size showed a relatively broad droplet diameter distribution, the figure found for sigma exceeding 0.9 micrometer (page 5, lines 23 to 29). The latter is the lowest value of the open-ended range referred to in the claims at issue. By virtue of

this open-ended definition of the standard deviation in droplet diameter distribution the claims include also water-in-oil emulsions with a minimum degree of mixing. These - as submitted by the respondent - may not have a practical use, however they are envisaged within the definition.

6. Leaving the sigma value out of consideration, it is noted that processes as well as products satisfying all other general features of the claims at issue are known in the art.

For example, document D4 describes in Example 2 the preparation of a water-in-oil fat spread by a process wherein ingredients and operational steps in accordance with the process of claim 1 are used whilst also using the same equipment, ie A- and C- units, as in the patent in suit. Nothing is said about the droplet diameter distribution size value sigma. The similarity of the process and the wide range of sigma values covered by the claim 1 at issue, render a distinction between the process described in the said document and the subject-matter of claim 1 highly problematic.

Document D1 also describes the preparation of a water-in-oil emulsion (covering also low fat emulsions) by a series of operational steps which fall within the general outline set down in claim 1 at issue. Here also nothing is said about the droplet diameter distribution size value sigma.

Document D3 describes an edible dispersion containing 10 to 35% continuous fat phase and 90 to 65% dispersed aqueous phase containing a gel-forming composition with

one or more gelling agents in a concentration at or above the critical concentration including gelatin and thus containing more than 200ppm amino acid residues. Nothing is explicitly said about the droplet diameter distribution size value sigma, however some comments are made on the average droplet size, its measurement and the possibility of varying it eg by changing the shear forces.

7. Since, as already stated, the cited prior art documents do not explicitly refer to the value sigma of the distribution of the droplet diameters, but the processes and the products described therein fall within the general outline of the claims at issue, it is evident that the clarity and unambiguity of the feature "value sigma" is of the utmost importance for a meaningful definition of the claimed subject-matter , in particular as it is the only parameter which could provide a distinction over the prior art.

8. As already noted, the value set down for this parameter in the claims is open-ended, the only requirement being that it exceeds 0.9, preferably 1.1. Because the lowest value is given, broad droplet diameter distributions are covered by the claims which include emulsions wherein the fat and aqueous phases are mixed to a minimum degree.

Neither the claims nor the description refer to any specific controlled measure in terms of operating conditions by which given distribution values of sigma are necessarily obtained. Process claim 1 refers to unspecified conditions of shear in the form of a result to be achieved ("such conditions of shear that.."). As

shown in the description, the mixing of the fat phase with the water phase and phase inversion are carried out in the Votator™ A- and C-units. This is just as described in the prior art. In such units the degree of dispersion of the aqueous phase can be controlled by varying the applied shear during manufacture, eg by varying the rotor speed (cf eg document D3). This is quite empirical. At the end of the operations the droplet size distribution is determined and therefrom the sigma value is measured. That such a determination can be carried out under standard conditions is not in question. The relevant question is rather whether a reference to a value of sigma which should be exceeded in the process and product claims at issue constitutes a technical feature which unambiguously distinguishes what is already known from what is now claimed.

9. As stated, the sigma range of values is open-ended at one side, the lower limit being indicated, but without any upper limit. Such an open-ended definition comprises virtually all forms of broad droplet diameter distribution. The board finds itself not able to accept this sigma definition as a satisfactory characterising and delimiting feature and because of the vagaries of the product and process claims not able to fully define the nature of the final product. As a result, the board is not in a position to recognise either a process or a product feature which does unambiguously distinguish the process and product from the prior art. Because of the extremely relevant prior art the board is unable to agree that the subject-matter is novel. The board is further of the opinion that ill-defined parameters which serve to obscure the boundaries between the prior art and the subject-matter of the patent in suit may

not be allowed to conceal lack of novelty. For these reasons the requirements of Articles 84 and 54 EPC have been considered together and the board therefore decided that the claimed subject-matter does not meet them.

Auxiliary requests I to III

10. These requests all contain a product claim which is identical to claim 6 of the main request and thus they must fail for the same reasons given above in respect of the main request.

Auxiliary request IV

11. In this request the claimed edible dispersion is further defined by the feature "and wherein the gelled aqueous phase has a viscosity of less than 30 mPa.s. at 5°C, and at a shear rate of 17090[sec]⁻¹". This feature, which relates to the viscosity of the gelled aqueous phase, characterises also the process of making the edible dispersion according to document D3 (cf eg page 3 lines 30 to 34). Its introduction in the product claim does not contribute in any manner to remove the objections specified in respect of the main request. This request must thus be refused for the same reasons. As one bad claim is sufficient to render the whole request unacceptable, it is not necessary to discuss here the process claim.
12. The above finding is not in contradiction with that of board of appeal decision T 487/89 of 17 July 1991 in which the board decided that whether the absence of an upper or lower limit was acceptable in a claim depended

upon the particular circumstances. An open-ended parameter was accepted on the basis that the claim sought to embrace values of tenacity and toughness as high as could be obtained above a certain minimum level which high values were not part of the prior art disclosure and were desirable. Such circumstances do not pertain in the case of the present patent in which very high values of sigma were to be found in the prior art.

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:

U. Bultmann

L. Galligani