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Datasheet for the decision of 20 July 2010

Case Number: T 0317/08 - 3.3.09

Application Number: 99936488.8

Publication Number: 1094718

IPC: A23G 9/00

Language of the proceedings: EN

Title of invention:
Method for the preparation of an aerated frozen product

Patentee:
Unilever PLC, et al

Opponent 01: NESTEC S.A.
Opponent 02: Friesland Brands B.V.

Headword:
-

Relevant legal provisions:
EPC Art. 123

Relevant legal provisions (EPC 1973):
EPC Art. 56, 83

Keyword:
"Main first and second auxiliary requests: sufficiency - no"
"Third auxiliary request: sufficiency - yes, inventive step - yes"

Decisions cited:
-

Catchword:
-

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Case Number: T 0317/08 - 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 20 July 2010

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office announced orally on 10 October 2007 and posted 13 December 2007 concerning maintenance of the European patent No. 1094718 in amended form.**

Composition of the Board:

Chairman: W. Sieber
Members: J. Jardón Álvarez
W. Sekretaruk

Summary of Facts and Submissions

I. European patent No. 1 094 718 was granted in respect of European patent application No. 99936488.8, which was filed in the name of UNILEVER PLC and UNILEVER N.V. on 5 July 1999 as International application PCT/EP1999/004737 (WO 2000/001246). The mention of grant was published on 24 November 2004 in Bulletin 2004/48. The patent was granted with five claims, independent Claims 1 and 4 reading as follows:

"1. Process for manufacturing a frozen aerated product having an overrun of between 20% and 180%, preferably between 60% and 100%, comprising the steps of;

- producing a premix comprising a destabilising emulsifier, 2 to 15% fat (w/w), up to 1% (w/w) emulsifier, and 45 to 85% (w/w) of water,
- homogenizing the premix in order to produce fat droplets having a d(3,2) below 0.6 micron, preferably below 0.5 micron, even more preferably below 0.4 micron,
- cooling, freezing and aerating the homogenised premix.

wherein the (destabilising emulsifier/fat) weight ratio of the premix is between 10:1500 and 15:300, more preferably between 15:1200 and 15:600."

"4. Frozen aerated product, having an overrun of between 20% and 180%, preferably between 60% and 100%, and comprising 2 to 15% (w/w) of fat and destabilising emulsifier in a (destabilising emulsifier/fat) weight

ratio of between 10:1500 and 15:300, preferably between 15:1200 and 15:600."

Claims 2, 3 and 5 were dependent claims.

II. Notices of opposition were filed by:

Nestec S.A. (opponent 01) on 16 August 2005, and

Friesland Brands B.V. (opponent 02) on 23 August 2005.

Both opponents requested revocation of the patent in its entirety on the grounds that the claimed subject-matter lacked novelty and did not involve an inventive step (Article 100(a) EPC 1973), the patent did not disclose the invention in a manner sufficiently clear and complete to be carried out by a person skilled in the art (Article 100(b) EPC 1973), and that its subject-matter extended beyond the content of the application as filed (Article 100(c) EPC 1973).

During the opposition proceedings *inter alia* the following documents were cited:

D113:"Ice Cream", Proceedings of the International Symposium held in Athens, Greece 18-19 September 1997, International Dairy Federation, 1998, pages 1-202;

D116 H.D. Goff *et al.*, "Action of Emulsifiers in Promoting Fat Destabilization During the Manufacture of Ice Cream", J. Dairy Sci., 1989, 72:18-29;

D119: EP - 0 147 483 A1;

D136: B.M.C. Pelan *et al.*, "The Stability of Aerated Milk Protein Emulsions in the Presence of Small Molecule Surfactants" J. Dairy Sci., 1997, 80:2631-2638;

D206: N. Krog, "The use of emulsifiers in ice cream", in "Ice Cream", Proceedings of the International Symposium held in Athens, Greece 18-19 September 1997, International Dairy Federation, 1998, pages 37-44; and

EX 27.09.2007: Experimental data filed by the proprietor on 27.09.2007, signed by Susie Turan on 20.09.2007, including "Comparison of air bubble size in ice cream made from high pressure homogenized premixes with and without destabilising emulsifier" (referred to as Annex B in the appealed decision).

III. Taking into account the amendments made by the proprietor during the opposition proceedings, the opposition division found that the patent and the invention to which it related met the requirements of the EPC. The interlocutory decision was announced at oral proceedings held on 10 October 2007 and issued in writing on 13 December 2007.

The opposition division found that the patent in suit was disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC 1973) and that the subject-matter of the claims of the main request fulfilled the

requirements of Articles 123(2),(3) EPC and 54 EPC 1973. However, the opposition division rejected the main request and auxiliary requests 1 to 3 because the subject-matter of Claim 1 of these requests lacked inventive step (Article 56 EPC 1973).

Finally, the opposition division held that the subject-matter of Claims 1 to 3 of auxiliary request 4, filed on 10 October 2007 during the oral proceedings, met the requirements of the EPC.

Independent Claims 1 and 3 of auxiliary request 4 read as follows:

"1. Process for manufacturing a frozen aerated product having an overrun of between 20% and 180%, preferably between 60% and 100%, comprising the steps of;

- producing a premix comprising a destabilising emulsifier, 2 to 15% fat (w/w), up to 1% (w/w) emulsifier, and 45 to 85% (w/w) of water,
- homogenizing the premix in order to produce fat droplets having a d(3,2) below 0.4 micron,
- cooling, freezing and aerating the homogenised premix;

wherein the (destabilising emulsifier/fat) weight ratio of the premix is between 10:1500 and 15:300, more preferably between 15:1200 and 15:600, and
wherein the destabilising emulsifier is an unsaturated monoglyceride.

3. A frozen aerated product having an overrun of between 20% and 180%, preferably between 60% and 100%,

produced by cooling, freezing and aerating a homogenized premix comprising a destabilising emulsifier, 2 to 15% fat (w/w), up to 1% (w/w) emulsifier, and 45 to 85% (w/w) of water, wherein the fat droplets have a d(3,2) below 0.4 micron; wherein the (destabilising emulsifier/fat) weight ratio of the premix is between 15:1200 and 15:600, and wherein the destabilising emulsifier is an unsaturated monoglyceride."

IV. On 5 February 2008 the patent proprietors (appellants 03) filed an appeal against the interlocutory decision of the opposition division and paid the prescribed fee on the same day. A statement setting out the grounds of appeal was filed on 11 April 2008, including a main request and auxiliary requests 1 and 2.

(a) Independent Claims 1 and 4 of the main request read as follows:

"1. Process for manufacturing a frozen aerated product having an overrun of between 20% and 180%, preferably between 60% and 100%, comprising the steps of;

- producing a premix comprising a destabilising emulsifier, 2 to 15% fat (w/w), up to 1% (w/w) emulsifier, and 45 to 85% (w/w) of water,
- homogenizing the premix in order to produce fat droplets having a d(3,2) below 0.4 micron,

· cooling, freezing and aerating the homogenised premix.

wherein the (destabilising emulsifier/fat) weight ratio of the premix is between 10:1500 and 15:300, more preferably between 15:1200 and 15:600.

4. A frozen aerated product, having an overrun of between 20% and 180%, preferably between 60% and 100%, produced by cooling, freezing and aerating a homogenized premix comprising a destabilising emulsifier, 2 to 15% fat (w/w), up to 1% (w/w) emulsifier, and 45 to 85% (w/w) of water, wherein the fat droplets have a d(3,2) below 0.4 micron; and
wherein the (destabilising emulsifier/fat) weight ratio of the premix is between 15:1200 and 15:600."

(b) Independent Claims 1 and 3 of the first auxiliary request were based on Claims 1 and 4 of the main request but specified the destabilising emulsifier as:

"selected within the group consisting in unsaturated monoglyceride, polyglycerol esters, sorbitan esters, stearoyl lactylate, lactic acid esters, citric acid esters, acetylated monoglyceride, diacetyl tartaric acid esters, polyoxyethylene sorbitan esters, lecithin and egg yolk."

(c) Independent Claims 1 and 3 of the second auxiliary requests specified the destabilising emulsifier as:

"selected within the group consisting in unsaturated monoglyceride, polyglycerol esters, lactic acid esters, diacetyl tartaric acid esters and polyoxyethylene sorbitan esters."

(d) Appellants 03 also filed experimental data in order to provide evidence of the technical effect across the whole scope of Claim 1:

EX 11.04.2008: Experimental data for different destabilising emulsifiers, including eight pages with micrographs.

V. On 18 February 2008 opponent 02 (appellant 02) lodged an appeal and paid the prescribed fee on the same day. With the statement setting out the grounds of appeal filed on 23 April 2008, appellant 02 requested that the decision be set aside and the patent be revoked in its entirety because of lack of sufficient disclosure and lack of inventive step. It also filed experimental results in support of its arguments concerning lack of sufficient disclosure:

EX 23.04.2008: test data comparing particle sizes obtained with Mastersizer X and Mastersizer 2000.

VI. On 19 February 2008 opponent 01 (appellant 01) lodged an appeal. The prescribed fee was paid on 20 February 2008. With the statement setting out the grounds of appeal filed on 23 April 2008, appellant 01 requested that the decision be set aside and the patent be revoked because of non-compliance with Articles 84, 56 and 83 EPC 1973.

VII. On 10 November 2008 replies to the grounds of appeal were filed by all the appellants.

Appellants 03 also filed the following further experimental evidence:

EX 10.11.2008: Annex 1 with further experimental results, including two pages of micrographs and Annex 2 concerning the presentation code section taken from the Mastersizer X (two pages).

VIII. On 8 April 2010 the board dispatched a summons to attend oral proceedings scheduled for 20 July 2010. In a communication dated 19 April 2010 the Board drew the attention of the parties to the points to be discussed during the oral proceedings.

IX. With letters dated 13 May 2010 and 10 June 2010 appellants 03 filed better quality copies of photomicrographs originally submitted with EX 11.04.2008 and EX 10.11.2008. By letter dated 18 June 2010 appellants 03 filed further arguments in support of its previous requests. As a third auxiliary request it was requested to dismiss the appeals of the opponents and as fourth auxiliary request, it was requested to maintain the patent on the basis of the enclosed Claims 1 to 3.

Also a new document and a declaration signed by Susan Turan were filed on 18 June 2010:

D300: C. Clarke, "The Science of Ice Cream", RSC Paperbacks 2004, pages 66, 67, 72 and 73; and

D301: Declaration of Susan Turan concerning the solvent extraction method and its application to ice cream premixes /melted ice cream, dated 17 June 2010.

X. With letter dated 21 June 2010 appellant 02 filed further arguments in support of its request.

XI. On 20 July 2010, oral proceedings were held before the board.

XII. The arguments presented by appellant 01 in its written submissions and at the oral proceedings may be summarized as follows:

- Appellant 01 raised in its written submissions objections concerning Article 84 EPC and Rule 80 EPC. However, it did not pursue this objection at the oral proceedings before the board. In particular, it raised no formal objections (i.e. under Articles 84 EPC 1973 and 123 EPC) against the claims of the third auxiliary request.

- Appellant 01 maintained that none of the requests of complied with the requirements of Article 100(b) EPC 1973, basically because the patent did not describe how to carry out the solvent extraction test referred to in paragraph [0014] of the patent specification. The patent specification left the skilled person completely in the dark as to how the solvent extraction test was to be carried out to determine whether or not an emulsifier was destabilising.

– Concerning inventive step, it maintained that the process of Claim 1 of auxiliary request 3 lacked inventive step having regard to the disclosure of document D136. It argued essentially that there was no evidence on file that the distinguishing features of the claimed process were responsible for any technical effect. In the absence of a technical effect, no inventive step could be seen in the selection of generally known features. In particular the use of unsaturated monoglycerides in order to destabilise fat emulsions was also well known in the art.

– It further argued that the aerated frozen product of Claim 3 could also be prepared by another process and lacked therefore inventive step.

XIII. Appellant 02 supported all the arguments of appellant 01 and further argued that:

– The application as filed lacked a basis for the amendments made in Claims 1 of the main and the second auxiliary requests, as well as for paragraph [0040] of the patent specification.

– The invention to which the patent related was insufficiently disclosed because it did not provide the skilled person with sufficient information how to determine the fat droplets size d(3,2).

– The claimed subject-matter lacked inventive step having regard to the disclosure of D119 alone or in combination with either D116 or D206. In particular, it pointed out that D119 disclosed all the features

of the claimed process except the use of the destabilising emulsifier. It would however be clear to the skilled person from D119 itself or from a combination with D116 or D206 that by using an unsaturated monoglyceride he would arrive at the claimed process.

XIV. The arguments of appellants 03 may be summarised as follows:

– Appellants 03 maintained that the solvent extraction test relevant for the determination of "destabilising emulsifiers" was sufficiently disclosed in the patent specification. The reference to D136 in paragraph [0014] of the description indicated how the test had to be carried out and in the event that any condition was missing the skilled person would go back to the solvent extraction method disclosed for ice creams in paragraph [0027] of the patent specification to fill any possible gap. The purpose and methodology of the solvent extraction test on model ice cream premixes and melted ice creams were identical. Moreover if any ambiguity was present, this ambiguity did not go to the heart of the invention but concerned merely the edges of the claim.

In any case the auxiliary requests further defined the destabilising emulsifier by its chemical structure thereby overcoming the objections raised under lack of sufficiency of disclosure.

– Concerning the method of determining the fat droplets size, the patent indicated in

paragraph [0024] how this measurement had to be carried out.

– The claimed subject-matter involved an inventive step. Starting from D136 as closest prior art, the object of the invention was to improve creaminess and sensory properties of ice cream. The solution to this problem was the combination of features according to the claimed process which provided an excellent ice cream, as demonstrated by the experimental evidence on file. There was no hint to this solution in the prior art. On the contrary, D136 actually taught away from the invention as it indicated a preference for saturated monoglycerides to be used as emulsifiers.

XV. Appellant 01 (opponent 01) and appellant 02 (opponent 02) requested that the decision under appeal be set aside and the European patent No. 1 094 718 be revoked.

Appellants 03 (patent proprietors) requested that

– the decision under appeal be set aside and the European patent be maintained on the basis of the main request or on the basis of one of the auxiliary requests 1 or 2, all filed with the letter dated 11 April 2008, or
– the appeals of the opponents be dismissed, or
– the European patent be maintained on the basis of auxiliary request 4, filed with the letter dated 18 June 2010.

Reasons for the Decision

1. The appeals are admissible.

MAIN REQUEST

2. *Amendments (Article 100(c) EPC 1973)*

2.1 During examination, the applicants (ie, appellants 03) introduced the following features into Claim 1 as originally filed:

- that the premix contains a destabilising emulsifier, and
- that the destabilizing emulsifier/fat weight ratio lies between 10:1500 and 15:300, more preferably between 12:1200 and 15:600.

2.2 These features, which are still present in Claim 1 of the main request, are disclosed on page 11, lines 16-27 of the application as originally filed. The relevant passage reads as follows:

"In a second preferred embodiment of the invention, the premix contains a destabilising emulsifier. Preferably the destabilising emulsifier is selected within the group consisting [*sic*] in unsaturated monoglyceride, polyglycerol esters, sorbitan esters, stearoyl lactylate, lactic acid esters, citric acid esters, acetylated monoglyceride, diacetyl tartaric acid esters, polyoxyethylene sorbitan esters, lecithin and egg yolk. More preferably the destabilising emulsifier is unsaturated monoglyceride. Preferably also the (destabilising emulsifier/fat) weight ratio of the

premix is between 10:1500 and 15:300, even more preferably between 15:1200 and 15:600."

2.3 Appellant 02 argued that the second amendment, i.e. the weight ratio, was disclosed in the application as filed only in conjunction with the listed specific destabilising emulsifiers and concluded that the generalization in Claim 1 as to the use of any destabilising emulsifier resulted in added subject-matter.

2.4 The board cannot accept this argument. The above cited paragraph in the application as filed is directed to a second preferred embodiment of the invention, namely the use of a destabilising emulsifier (page 11, lines 16-17). Preferred features within this second preferred embodiment are introduced by the word "preferably", namely the use of specific destabilising emulsifiers (page 11, lines 17-23), and by the term "preferably also", namely the use of a specific weight ratio (page 11 ,lines 24-27). There is no indication in this paragraph that the weight ratio should apply only to the specific destabilising emulsifiers as argued by appellant 02.

Furthermore, the whole structure of the above mentioned paragraph on page 11 of the application as filed shows that there is no mandatory relationship between the specific destabilising emulsifiers and the weight ratio. Thus, when further preferences of the nature of the destabilising emulsifier and the weight ratio are discussed, these further preferences are introduced by the words "more preferably". This is done, for example, on page 11, lines 23-24 to indicate that an unsaturated

monoglyceride is a more preferred destabilising emulsifier within the previously listed group of compounds. The use of the wording "preferably also" (and not "more preferably") in the next sentence to specify the weight ratio indicates without any doubt that this ratio is a preferred feature within the second preferred embodiment, and not a further preference relating to the specific emulsifier of the previous sentence.

2.5 For these reasons the subject-matter of Claim 1 of the main request does not extend beyond the content of the application as filed.

3. *Sufficiency of disclosure (Article 100(b) EPC 1973)*

3.1 Claim 1 is directed to a process for manufacturing a frozen aerated product having an overrun of between 20% and 180% comprising the steps of:
producing a premix comprising a destabilising emulsifier, 2 to 15% fat (w/w), up to 1% (w/w) emulsifier and 45 to 85% (w/w) of water;
homogenizing the premix in order to produce fat droplets having a d(3,2) below 0.4 micron, and
cooling, freezing and aerating the homogenised premix;
wherein the destabilising emulsifier/fat weight ratio of the premix is between 10:1500 and 15:300.

3.2 A key element of the process of Claim 1 is the use of a "destabilising emulsifier". The relevant question to be answered is therefore whether or not the skilled person would have been taught by the patent specification or would have known by applying common general knowledge which emulsifiers are "destabilising emulsifiers".

3.3 It is not in dispute that the term "destabilising emulsifier" has no generally accepted meaning in the field in the sense that the skilled person would immediately know which emulsifiers are "destabilising emulsifiers". It is therefore necessary to investigate whether the patent specification would have provided enough information to the skilled person for him to reliably determine which emulsifiers he would have to use.

3.4 The patent in suit defines in paragraph [0014] a destabilising emulsifier as "… any emulsifier which gives, at a level of 0.3%, a level of extracted fat of at least 25% in an ice cream premix containing 12% butter oil, 13% skim milk powder and 15% sucrose as described in on [*sic*] Figure 4 in 'The stability of aerated milk protein emulsions in the presence of small molecule surfactants' 1997 – Journal of Dairy science 80:2631:2638 [i.e. D136, added by the board]". However, the patent specification neither discloses an example of how the extraction test should be carried out nor gives any values for specific emulsifiers. It merely refers to D136.

However, D136 also does not provide details how the extraction test should be carried out. The only information concerning the extraction test is to be found in D136 in the paragraph bridging pages 2632 and 2633, where it is indicated that "The relative destabilization after 50 min of shear was determined by a solvent extraction technique using petroleum spirit (Fischer Scientific, Loghborough, United Kingdom)".

D136 is completely silent about the methodology (amount of solvent, duration of the extraction, temperature, etc.) used in the test. Whilst taking into account that the object of the test is not the extraction of the total fat content but only of that part of the fat which has been destabilized and partially coalesced as a consequence of the partial replacement of milk proteins with destabilizing emulsifier at the surface of the fat droplets, it is self evident that different extraction methods would lead to different results. Consequently, even with the reference to D136 the patent specification leaves the skilled person completely in the dark as to how the solvent extraction is to be carried out.

3.5 Thus the patent information lacks the information as to which emulsifiers are "destabilising emulsifiers" within the meaning of Claim 1 and therefore suitable for the process of Claim 1. In other words, in view of the insufficiently disclosed solvent extraction method a person skilled in the art is not in a position to select from the undefined and innumerable multiplicity of emulsifiers those which, according to Claim 1, have to be "destabilising". Consequently, the skilled person cannot ascertain all destabilising emulsifiers and is not in a position to carry out the process over the whole range claimed.

3.6 Appellants 03 essentially argued that the patent specification itself discloses a solvent extraction method in paragraph [0027] and that the skilled person would use this method to determine whether or not an emulsifier was destabilising. Although they conceded that the test in paragraph [0027] was disclosed only in

relation to ice creams and not to premixes, they argued that the test was equally applicable to premixes so that the skilled person would use it. In this context, appellants 03 filed a declaration by Susan Turan confirming that both the purpose and the methodology of the solvent extraction test on model ice cream premixes and melted ice creams were fully identical (cf. D301). In the absence of a solvent extraction test for premixes, a person trying to repeat the invention with a mind willing to understand the patent would therefore use the only extraction test disclosed in the patent in suit.

3.7 The board cannot accept the argument of appellants 03 for the following reasons. The fact is that that there is no generally accepted solvent extraction method in the field of ice creams, let alone of ice cream premixes. D113, for example, indicates in the context of solvent extraction that great care has to be taken in the experimental procedure (page 31, first paragraph), but provides no details. D119 uses chloroform in a solvent extraction method, whereas petroleum spirit has to be used in the present case. Thus, when it comes to the solvent extraction test required to determine whether or not a particular emulsifier falls within the definition of "destabilising", the skilled person trying to repeat the invention would be left with the information presented in paragraph [0014] of the patent specification and, ultimately, with the information in D136 itself. However, D136 does not disclose the methodology.

On finding that the methodology of the solvent extraction test is not disclosed in D136, a skilled person trying to repeat the invention would have absolutely no reason to come back to the patent in suit in order to look for the missing information, because the information in paragraph [0014] is crystal clear in itself: As regards destabilising emulsifiers, go to D136. But even if one would come back to the patent, there is no information in the patent in suit which would supplement the methodology disclosed in D136. Paragraph [0027] admittedly describes a solvent extraction method, but for ice creams and not for premixes. In other words, the solvent extraction method of paragraph [0027] is disclosed in a different context. Furthermore, there is no explicit or implicit link in the patent in suit between paragraphs [0014] and [0027]. Thus, a skilled person trying to repeat the invention would have no reason to assume that the solvent extraction method of paragraph [0027] represents the information missing in D136.

The argument that the methodology and the purpose of the solvent extraction test are the same (as confirmed by the declaration of Ms Turan, D301) does not alter the fact that there is no indication whatsoever in the patent in suit that the solvent extraction method described in paragraph [0027] should be used in the context of determining destabilising emulsifiers as described in paragraph [0014] and D136, respectively.

3.8 The board can also not accept the further arguments of appellants 03, that the chemical structure of the emulsifier itself gives a hint as to its nature and

that the lack of sufficiency only affects the edges of the invention.

Concerning the chemical structure of the emulsifiers, it is noted that the term "emulsifier" includes a huge number of chemical structures and that it is not possible for the skilled person to know whether or not all the possible structures would inherently provide a "destabilising emulsifier". Concerning the argument that the objection of lack of sufficiency only relates to the edges of the invention, it is noted that the gist of the invention lies in the selection of specific emulsifiers, that is to say those having the property of destabilising the milk emulsions and thereby allowing partial coalescence of the small fat droplets, in combination with other features of the process. Thus, the nature of the destabilising emulsifier is actually one of the essential features and goes to the heart of the invention.

3.9 For these reasons the board concludes that the requirements of sufficiency of disclosure are not met.

AUXILIARY REQUESTS 1 AND 2

4. *Sufficiency of disclosure (Article 100(b) EPC 1973)*

4.1 The subject-matter of Claim 1 of the first and second auxiliary requests (points IV(b) and IV(c) above) includes, in addition to the functional definition of the emulsifier (i.e. the destabilising effect), a structural definition, i.e. the emulsifiers have to be selected from the group consisting of unsaturated

monoglyceride, polyglycerol esters, sorbitan esters, etc.

4.2 There is still, however, no convincing evidence that all the emulsifiers covered by Claim 1 of the first and second auxiliary requests are inherently destabilising emulsifiers. The emulsifiers covered by Claim 1 of these requests still encompass numerous different structures. In order to know whether or not a given emulsifier is "destabilising", the skilled person would still have to carry out the solvent extraction test which, as explained above for the main request, is not sufficiently disclosed.

The argument of appellants 03 that unsaturated fatty acid esters are known as more effective destabilising emulsifiers than the corresponding saturated acid esters applies only to a very limited group of compounds covered by the claim and is not enough to justify the sufficiency of disclosure for the whole scope of the claim.

4.3 Consequently, the subject-matter of Claim 1 of the first and the second auxiliary requests lacks sufficiency of disclosure for the same reasons as given for the main request.

AUXILIARY REQUEST 3

5. It is convenient to recall at this juncture that the claims of the third auxiliary request correspond to the claims maintained by the opposition division (point III above).

6. *Sufficiency of disclosure (Article 100(b) EPC 1973)*

6.1 The subject-matter of Claim 1 of the third auxiliary request specifies that the destabilising emulsifier is "an unsaturated monoglyceride".

6.2 The subject-matter of the claim is thus limited to the specific emulsifier for which D136 indicates that the extractable fat, under the requirements of paragraph [0014] of the patent, is above 25% (see D136, Figure 4). In view of this limitation it is no longer relevant that the methodology of the extraction test is not disclosed, because the claim now embraces only the destabilising emulsifier specifically mentioned in D136.

Similar considerations apply to the subject-matter of Claim 3, which is a product-by-process claim and equally specifies that the destabilising emulsifier is "an unsaturated monoglyceride".

6.2.1 Appellant 01 still argued that the subject-matter of the claims lacked sufficiency of disclosure because the term "unsaturated monoglyceride" embraces a large number of compounds and the results of Figure 4 of D136 in fact concern only a specific emulsifier.

6.2.2 The board agrees with appellants 03 that this objection is not well-founded. The emulsifier now claimed includes only a small number of compounds having a similar structure. The requirement that the fatty acid chain of the monoglyceride contains a double bond ensures that a less dense packaging on the surface of the fat droplet is achieved and thus that the emulsion is destabilized. Moreover there is no experimental

evidence on file that any unsaturated monoglyceride would not work in the claimed process.

6.3 Appellant 02 argued that the patent did not describe how to determine the fat droplets size d(3,2) in a sufficiently clear and complete manner. In particular, appellant 02 alleged that "sample pre-treatment, measuring conditions, dilutions, light intensity, the type of the Malvern Mastersizer, circulation through the sample chamber, the ultrasonic frequency, *etc*." all had an effect on the outcome of the measurements.

6.3.1 The board notes that the method of measurement is indicated in paragraph [0024] of the patent specification. Appellants 03 have provided undisputed evidence that the Malvern Mastersizer having the presentation code 2NAD cited in paragraph [0024] refers to the Mastersizer X, a well known model used at the priority date of the patent.

Appellant 02 has compared the performance of Mastersizer X and Mastersizer 2000 (EX 23.04.2008) and found that they give different particle sizes, because, according to appellants 03, the newer instrument is capable of measuring smaller particle sizes than the old version, resulting in a smaller mean size. However, there is no doubt about which type of Mastersizer is specified by the patent in suit. As set out above this is the Mastersizer X. Hence the data obtained from the Mastersizer 2000 are not relevant.

6.3.2 Concerning the argument of appellant 02 that there was no standard method at the priority date for the preparation of the sample to be measured and that

different methods could give rise to different results, the board notes that there is no experimental evidence in support of this objection. The measuring of the particle size with a Malvern Mastersizer is a standard method and the skilled person would of course use preparation conditions which do not affect the size of the particle to be measured. Thus, this argument is not convincing.

6.4 In summary, the claims according to the third auxiliary request fulfil the requirements of sufficiency of disclosure.

7. *Amendments (Article 123 EPC)*

7.1 Claims 1 and 3 of the third auxiliary request (point III) above differ from Claims 1 and 4 of the main request (point IV(a) and point 2 above)) only in that the destabilising emulsifier is limited to an unsaturated monoglyceride. This amendment is supported by, for instance, page 11, lines 23-24 of the application as filed. Appellants 01 and 02 did not raise any objection in this connection.

7.2 Additionally, the amendment clearly limits the scope of the claims so that no objection under Article 123(3) EPC arises.

7.3 Appellant 02 observed that paragraph [0040] of the patent specified a specific frozen aerated product as being preferred ("Preferred is a frozen aerated product having … "), while in the application as originally filed this specific product related to a third object of the present invention ("It is a third object of the

present invention to provide a frozen aerated product having … ") and concluded that this amendment extended beyond the content of the application as filed.

However, the board sees no added subject-matter in this change in the presentation of the specific frozen aerated product. It is merely a linguistic amendment in the light of amendments made during prosecution of the case.

7.4 In summary, the subject-matter of the claims of the third auxiliary request fulfils the requirements of Article 123(2),(3) EPC.

8. *Novelty (Article 54 EPC 1973)*

The opposition division acknowledged novelty of the subject-matter of the third auxiliary request. This finding was not challenged on appeal. Nor does the board see a reason to raise an objection on its own.

9. *Inventive step (Article 56 EPC 1973)*

9.1 The patent in suit is concerned with improving the organoleptic properties of ice cream (paragraphs [0005] to [0009] of the patent specification).

9.2 Closest prior art

9.2.1 Appellants 01 and 03 considered D136 as representing the closest prior art document. D136 is concerned with the stability of aerated milk protein emulsions in the presence of surfactants and aims to improve ice cream properties by better understanding the functionality of

surfactants, which in the end should improve product properties, which are, for ice cream, basically organoleptic properties (see abstract). In D136 the functionality of emulsifiers is studied in ice creams containing no emulsifier or saturated or unsaturated monoglyceride (see in particular pages 2635 and 2636 under "Ice Cream Microstructure" and Figures 5 to 7).

9.2.2 The ice premixes of D136 have essentially the same components as the premixes according to the patent in suit but show a mean droplet diameter of 0.5 ± 0.10 microns (see page 2634, last two lines of the left column).

9.2.3 Since D136 has the most features in common with the subject-matter of Claim 1 and also has the same purpose and objective, the board agrees with appellants 01 and 03 that it indeed qualifies as the closest prior art document.

9.2.4 By contrast, appellant 02 relied on D119 as the closest prior art, basically because this document disclosed all the features of Claim 1 except the use of an unsaturated monoglyceride as emulsifier.

However, in the board's view, D119 does not represent a suitable starting point for the assessment of inventive step for the following reasons:

- Although D119 comes close to the claimed subject-matter in terms of technical features, the objective of D119 does not relate to an improvement of the organoleptic properties of ice cream (such as creaminess and sensory properties), but to an

improvement of the stability of ice creams (see page 4, line 30 - page 5, line 11). In order to solve this problem D119 suggests the selection of a specific fat component, namely oils having a solid fat index at 70°F of at least 25 (see page 8, lines 28-30). Moreover, the products of D119 are said to exhibit less fat de-emulsification than conventional ice creams (see page 12, lines 1-9). Finally, the chemical nature of the emulsifiers used in the examples is not given.

– Since D119 is not directed to the improvement of the sensory properties of ice cream, relates to products having less fat de-emulsification and does not include a specific disclosure of unsaturated monoglycerides, it does not qualify as closest prior art document.

9.3 Problem to be solved and its solution.

9.3.1 The main distinguishing feature of the claimed process with respect to the closest prior art D136 lies in the homogenizing step which requires the production of fat droplets having a d(3,2) below 0.4 micron, instead of 0.5 micron. Moreover, the process of Claim 1 is limited to the use of an unsaturated monoglyceride as destabilising emulsifier, while in D136 premixes without emulsifier or with unsaturated or saturated monoglyceride as emulsifier are described.

9.3.2 According to paragraphs [0005] to [0009] of the patent specification the presence of a fine microstructure is critical to produce the correct texture and quality of ice cream. The sensory properties of ice cream are

dependent on the size of the fat droplets wherein an ice cream with the smallest fat droplets scores best on creaminess when blind tested by a trained panel.

9.3.3 The objective technical problem to be solved by the patent can thus be formulated as the provision of a process for manufacturing a frozen aerated product with improved organoleptic properties, namely creaminess and sensory properties.

9.3.4 This problem is solved by the claimed process based on the finding that the production of small fat droplets in the homogenisation step and the use of a powerful destabilising emulsifier in a specified emulsifier/fat weight ratio yield ice creams with reduced gas bubble size and hence improved texture.

9.3.5 The question whether or not this problem has been credibly solved by the claimed process was strongly disputed between the parties.

However, the experimental evidence on file convincingly demonstrates that the above identified objective technical problem is indeed solved by the claimed features. Firstly, Example 3 of the patent in suit proves that a process according to Claim 1 of the third auxiliary request produces ice cream with a mean gas cell size below 20 microns and therefore with very good sensory properties (see [0057] and [0058]). On the other hand, Examples 1 and 2 of the patent in suit are not according to the claimed invention and can therefore not contribute to the question whether or not the claimed process solves the objective technical problem. Secondly, the additional experiments

EX 10.11.2008 of appellants 03 demonstrate that a process using an unsaturated monoglyceride as destabilising emulsifier in combination with fat droplets having a d(3,2) of 0.35 micron yields ice cream having smaller gas bubbles than an ice cream according to the same formulation but having a d(3,2) of 0.49 micron (cf. Annex 1 of EX 10.11.2008). Finally, Examples 5 and 6 of EX 20.09.2007 (saturated *versus* unsaturated monoglyceride) demonstrate that the use of an unsaturated monoglyceride is an essential feature of the claimed process in order to produce small gas cells and thus ice cream with improved sensory properties.

9.3.6 Appellant 01 pointed out that the process described in Example 2 of the patent in suit (not according to the process of Claim 1) also resulted in ice cream which is quite similar to the ice cream of Example 3 (according to Claim 1). Appellant 01 then concluded that the improvements in ice cream properties were not related to the relevant features of the process of Claim 1, namely the use of unsaturated monoglyceride and the size of the fat droplets. Consequently, the alleged improvement was not related to the features differentiating the claimed subject-matter from the prior art.

In Example 2 the homogenised premixes are processed in an ice cream freezer (SSHE) and then in a single screw extruder (SSE), in which process no destabilising emulsifier was used. In Example 3 (according to the claimed process) the premixes are processed only in an SSHE. It is true that Example 2 of the patent specification demonstrates that ice creams with similar properties to those obtained by the claimed process can

be produced by another (not claimed) process. Conversely, this does not mean that the claimed process does not credibly solve the defined objective technical problem.

Concerning the further doubts of appellant 01 that the problem was not credibly solved because the emulsifier used in Example 3 also included a saturated emulsifier, it is conspicuous to the board that the claimed process requires the presence of an unsaturated monoglyceride but it does not exclude the presence of further emulsifiers. Furthermore, appellant 01 did no file any experimental evidence showing that the presence of a further emulsifier had a bearing on the solution of the objective problem.

9.4 Obviousness

9.4.1 It remains to be decided whether, in view of the available prior art documents; it would have been obvious for the skilled person to solve this technical problem by the means claimed.

9.4.2 There is no hint to the claimed process in D136 itself. Although document D136 recognises that fat aggregation as a consequence of fat destabilization has an influence on the stability of the air or gas cells in ice cream (page 2631, right column, lines 4 to 9 from the bottom), it does not perceive the importance of the small fat droplets. Fat droplet size is mentioned in D136 on page 2633, left column, lower paragraph and page 2634, left column, last line. No particular importance is attributed to the fat droplet size, in particular no connection is made between fat droplet

size and any other property of the ice cream. Moreover D136 teaches away from the claimed process for the following reason: D136 confirms that fat can contribute to the stabilization of air cells. This is mentioned on page 2631, right column, second last sentence and on page 2635, right column, second last paragraph. However, D136 does not draw any conclusions or provides any teachings or suggestions going into the direction of the claimed process. On page 2636, left column, D136 comes to the conclusion:

"An increasing in the concentrations of saturated monoglyceride led to increasingly smaller air cells in the ice cream, as shown in Figure 7 for 0,5% saturated monoglyceride. It is not clear why saturated monoglyceride reduced the air cell size more than unsaturated monoglyceride did, but unsaturated monoglyceride may have caused too much fat destabilization and ultimately air cell coalescence."

Thus, when looking for small air cells, D136 suggests the use of saturated monoglyceride. However, saturated monoglyceride does not qualify as destabilizing emulsifiers in the sense of the claimed process. Consequently D136 teaches against the use of unsaturated, i.e. destabilizing, emulsifiers and it is not apparent that there is an important contribution of fat droplet size in combination with the use of appropriate emulsifiers towards air cell stabilisation and therefore creaminess and good sensory properties.

9.4.3 The board is also unable to accept the argument of appellants 01 and 02 that document D119 suggests the use of unsaturated monoglycerides as destabilising

emulsifiers in order to improve the properties of the ice cream.

Although D119 recognizes that some physical properties of ice cream such as dryness and stiffness are related to the degree of de-emulsification of the fat (see page 11, lines 18-36), it does not indicate any preference for any emulsifier (see page 12, lines 26-33). Unsaturated monoglycerides are not mentioned in the document and the argument of appellants 01 and 02 that the skilled person would select this emulsifier in view of its known destabilising properties can only be made with hindsight knowing the invention (*ex-post facto*). Therefore, this argument cannot bring into question the inventive step of the claimed process.

9.4.4 Appellant 02 also objected to the claimed process starting from D119 as closest prior art document and combining its teaching with either D206 or D116, basically because D119 disclosed all the features of the claimed process except the specified emulsifier. However, unsaturated monoglycerides were well known destabilizing agents in ice creams (D206 or D116).

This objection is not well-founded. As already stated above, D119 does not qualify as closest prior art document, because it does not address the same problem as the patent in suit. In fact, it relates to products having less destabilization (see point 9.2.4 above). There would have been no reason for the skilled person to work against the teaching of D119 by using a destabilising emulsifier.

9.4.5 In summary, the finding that an ice cream with improved sensory properties could be obtained by the selected combination of features of Claim 1 cannot be deduced from the cited prior art. It follows that the subject-matter of Claim 1 involves an inventive step.

9.4.6 Similar considerations apply to the subject-matter of Claim 3, which relates to some of the aerated products obtainable by the process of Claim 1 and which thus involves an inventive step, basically for the same reasons as the subject-matter of Claim 1, that is to say, because of the improved sensory properties resulting from the process features.

9.4.7 The basic argument of appellants 01 and 02 against the subject-matter of Claim 3 was that ice cream with the same properties could be obtained by other processes. In this connection, appellants 01 and 02 relied on Example 2 in the patent specification. They maintained that starting from D119 or D113 ice creams having the properties of the ice creams of Claim 3 could be obtained.

However, insofar as appellants 01 and 02 refer to Example 2 of the patent specification, this argument is unfounded as this example does not represent any pre-published state of the art. The information in the patent that ice creams could be prepared by another, not claimed, process is irrelevant for the question of inventive step of the subject-matter of Claim 3. Insofar as appellants 01 and 02 relied on the disclosure of D119 or D113, they failed to show that a combination of the features of the documents would give an embodiment falling within the scope of Claim 3.

9.4.8 It follows from the above that the subject-matter of Claims 1 and 3, and by the same token the subject-matter of dependent Claim 2, involves an inventive step within the meaning of Article 56 EPC 1973.

10. As auxiliary request 3 of appellants 03 is allowed, there is no need for the board to deal with the fourth auxiliary request.

Order

For these reasons it is decided that:

The appeals are dismissed.

The Registrar The Chairman

G. Röhn W. Sieber