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**Datasheet for the decision  
of 13 March 2018**

**Case Number:** T 0277/15 - 3.3.09

**Application Number:** 08804605.7

**Publication Number:** 2194798

**IPC:** A23L1/035, A23L1/0524,  
A23L1/0532, A23L1/0562,  
A61K9/10, A61K8/04

**Language of the proceedings:** EN

**Title of invention:**  
Particle stabilised emulsion composition

**Patent Proprietors:**  
Unilever PLC  
Unilever N.V.

**Opponent:**  
L'Oreal-D.I.P.I.

**Headword:**

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

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

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**  
**Boards of Appeal**  
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Case Number: T 0277/15 - 3.3.09

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.09**  
**of 13 March 2018**

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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 3 December 2014  
rejecting the opposition filed against European  
patent No. 2194798 pursuant to Article 101(2)  
EPC**

**Composition of the Board:**

**Chairman**            W. Sieber  
**Members:**            J. Jardón Álvarez  
                              F. Blumer

## Summary of Facts and Submissions

I. This decision concerns the appeal filed by the opponent against the decision of the opposition division to reject the opposition filed against European patent No. 2 194 798.

II. The opponent had requested revocation of the patent in its entirety on the grounds that the claimed subject-matter lacked novelty and inventive step (Article 100(a) EPC in conjunction with Articles 52(1), 54 and 56 EPC). The following documents were filed during the opposition proceedings:

D1: US 6 136 363 A;

D2: US 5 332 595 A; and

D3: US 2006/0222670 A1.

III. The granted patent included five claims, claim 1 reading as follows:

"1. An emulsion composition comprising as an emulsifier 0.5-25.0% by weight of the composition of gelled particles,  
wherein the gelled particles have a largest dimension of 3-1000 nm, preferably 5-500 nm and most preferably 10-200 nm, wherein the gelled particles comprise at least one gellable polysaccharide,  
wherein the gellable polysaccharide is selected from the group consisting of agar, agarose and gellan."

The remaining claims were dependent claims.

IV. The reasoning of the opposition division may be summarised as follows:

- The subject-matter of claim 1 was novel over the disclosure of D1, because this document did not directly and unambiguously disclose the claimed combination of features.
  
- The closest prior-art document was D3. The difference between the subject-matter of claim 1 and the disclosure of D3 was the nature of the polymers of which the particles were composed. The objective technical problem underlying the patent was the provision of improved emulsion compositions employing nanoparticulate emulsifiers applicable in a wide number of applications such as food products, home and personal care products, and pharmaceutical products.

The solution according to claim 1 involved an inventive step, because the skilled person would not consider the disclosure of D1 or D2 in order to solve the above problem.

- Furthermore, the opposition division noted that, even if the problem underlying the patent were formulated in a less ambitious manner, that is to say the provision of an alternative emulsion, the skilled person would not combine the teaching of D3 with either D1 or D2. The skilled person would not consider replacing the particulate emulsifier of D3 by the gelled particles of D1, since in D1 the gelled particles were not described as acting as an emulsifier. Moreover, the skilled person would not consider replacing the emulsifier of D3 by the alginate membranes disclosed in D2. But even if the

skilled person were to contemplate the combination of D3 with D2, he would not arrive at the subject-matter of claim 1 as granted, since D2 did not disclose gelled nano-particles being used as emulsifiers.

- V. This decision was appealed by the opponent (appellant), which requested that the opposition division's decision be set aside and that European patent No. 2 194 798 be revoked in its entirety.
- VI. With its reply, the joint patent proprietors (respondents) requested that the appeal be dismissed.
- VII. In a communication dated 16 August 2017, the board indicated the points to be discussed during the oral proceedings.
- VIII. Both parties informed the board that they would not be attending the oral proceedings scheduled to take place on 6 February 2018 and that they maintained all requests filed during the written procedure.
- IX. The oral proceedings were then cancelled by the board.
- X. The arguments of the appellant which are relevant for the present decision may be summarised as follows:
- D3 represented the closest prior art. The only difference between the disclosure of D3 and the subject-matter of claim 1 was the chemical nature of the gellable polysaccharide that was selected from agar, agarose and gellan.
  - Taking into account that no effect had been shown in the patent, the technical problem to be solved

by the patent was merely to provide alternative emulsion compositions. The arbitrary choice of the three polymers now claimed lacked inventive step. In any case, it was evident for the skilled person to replace the vinyl polymers used in D3 by the polysaccharides disclosed in D1/D2 for the formation of gelled particles.

XI. The relevant arguments of the respondents may be summarised as follows:

- The respondents agreed with the reasoning of the opposition division that the claimed subject-matter involved an inventive step. They pointed out that the opponent had failed to deal with the technical effect of the invention, namely that the use of the selected polymer provided a stable emulsion that was both non-allergenic/hypo-allergenic and also softer and less abrasive. As a consequence, the technical problem could not be formulated merely as providing an alternative. Rather, it was to provide improved emulsion compositions, specifically ones employing nanoparticulate emulsifiers applicable in a wide number of applications such as food, home and personal care products, and pharmaceutical products. The used polymers were food grade ingredients and as such inert and non-allergenic. D1 and D2 were completely silent with respect to non-allergenic properties and less abrasive properties and could give no hint to the claimed subject-matter.

XII. The appellant requested that the decision under appeal be set aside, and that European patent No. 2 194 798 be revoked in its entirety.



The respondents requested that the appeal be dismissed.

## **Reasons for the Decision**

### *1. Formal issues*

1.1 As both parties requested in writing that oral proceedings be held under Article 116 EPC, the board summoned them to oral proceedings with the intention of arriving at a final decision during the oral proceedings. The board also sent an annex to the summons indicating the issues to be discussed at the proceedings.

1.2 The duly summoned parties chose not to attend the oral proceedings and announced their intention in writing. In deciding not to attend, they chose not to avail themselves of the opportunity to present their observations and comments orally.

1.3 Consequently, the board cancelled the oral proceedings. It is now in a position to issue a decision on the basis of the written arguments submitted by the parties.

### *2. Framework of the appeal*

The appellant did not dispute the finding of the opposition division that the claimed subject-matter was novel over the disclosure of D1. The only objection maintained by the appellant was that the subject-matter of granted claim 1 lacked inventive step over D3 alone or in combination with D1 or D2.

3. *Inventive step*

3.1 The invention relates to emulsion compositions comprising gelled particles derived from naturally occurring food-grade polymers, which can be used in a wide number of applications such as food products, home and personal care products and pharmaceutical products (see paragraphs [0001] and [0002] of the specification).

3.2 Claim 1 is directed to an emulsion composition comprising:

(a) as an emulsifier 0.5-25.0% by weight of the composition of gelled particles,

(b) the gelled particles have a largest dimension of 3-1000 nm, and

(c) the gelled particles comprise at least one gellable polysaccharide selected from the group consisting of agar, agarose and gellan.

3.3 Closest prior art

3.3.1 Like the opposition division, the appellant regarded D3 as the closest prior-art document. The board agrees that D3 is indeed an appropriate starting point for assessing inventive step.

3.3.2 D3 relates to nanocomposite microgel particles as particulate emulsifiers in emulsions, the particles comprising an inorganic component and a cross-linked responsive polymer matrix (see paragraph [0001] and claim 1). In particular in oil-in-water or water-in-oil

emulsions, the nanocomposite microgel particles are used as a stimulus responsive particulate emulsifier.

The term "responsive polymer" is used in D3 to describe any polymer whose hydrophilic/hydrophobic balance can be changed by varying one or more external conditions and the term "stimulus responsive particulate emulsifier" is used to describe a particulate emulsifier wherein the hydrophilic/hydrophobic balance of the surfaces of particles can be changed by varying one or more external condition(s) (see paragraph [0061]).

- 3.3.3 As further set out in paragraph [0046], the term "nanocomposite" refers to particles that have both an organic and an inorganic component and a particle size in the nanosize range, preferably less than 1000 nm.
- 3.3.4 In the example, cross-linked poly(4-vinylpyridine)-silica nanocomposite particles are prepared by copolymerizing 4-vinylpyridine with ethylene glycol dimethacrylate in the presence of an ultrafine aqueous silica sol (see paragraph [0100]). According to paragraph [0114], 1% aqueous dispersions of these lightly cross-linked poly(4-vinylpyridine)-silica nanocomposite particles proved to be effective particulate emulsifiers for the oils used in this study.
- 3.3.5 Neither the general nor the experimental part of D3 discloses gelled agar, agarose or gellan polysaccharides as responsive polymers.
- 3.3.6 Thus, the emulsions of D3 fulfil the requirements of features (a) and (b) of claim 1 but not that of feature (c).

3.4 Problem to be solved and its solution

3.4.1 According to the respondents, the technical problem to be solved by the invention in view of D3 was "to provide improved emulsion compositions, specifically ones employing nanoparticulate emulsifiers applicable in a wide number of applications such as food, home and personal care products, and pharmaceutical products" (see the second paragraph of page 2 of the reply to the grounds of appeal).

3.4.2 There is, however, no experimental evidence on file that this problem has been credibly solved by the claimed emulsions. No comparison has been made between the emulsions of D3 and the claimed emulsions.

The board cannot accept the argument of the respondents that the broad disclosure of D3 would inevitably include allergenic polymers, such as proteins. No proteins at all are mentioned in D3 and, as pointed out by the appellant, the aim of D3 was also to provide non-toxic and non-irritant emulsions which were to be used *inter alia* in food products or pharmaceuticals, just like the emulsions of the patent in suit (see paragraphs [0012] and [0002] of D3).

The board can also not see that the claimed emulsions would be softer/less abrasive than those of D3 due to the absence of silica in the claimed compositions. In fact, the presence of silica is not excluded from the scope of the claims.

3.4.3 As a consequence, the problem has to be reformulated in a less ambitious manner, not involving any improvement of the claimed emulsions over those known from D3.

Hence, the objective technical problem has to be seen in the provision of alternative emulsion compositions, specifically ones employing nanoparticulate emulsifiers applicable in a wide number of applications.

3.4.4 Examples 2 to 7 in the patent show that this less ambitious problem is credibly solved by the emulsions comprising gelled particles of agar, agarose or gellan. This conclusion was not contested by the appellant, and the board is satisfied that this problem is credibly solved.

### 3.5 Obviousness

3.5.1 It remains to be decided whether, in view of the available prior art, it would have been obvious for the skilled person to solve this technical problem by the means claimed, namely by replacing the cross-linked responsive polymer used in D3 by the gelled polysaccharides as defined in claim 1.

3.5.2 D3 itself gives no hint. As indicated above, the responsive polymers used in D3 are those whose hydrophilic/hydrophobic balance can be changed by varying one or more external conditions, such as pH, temperature or ionic strength (see also paragraphs [0070] and [0080] to [0093]. The preferred responsive polymer matrix is cross-linked and comprises a vinyl polymer microgel (see paragraph [0077]). Polysaccharides are not mentioned anywhere in D3.

3.5.3 The appellant argued that the emulsions of D3 could be prepared from polymers of any chemical nature and/or structure, and referred to paragraphs [0075] and [0076] of D3. However, this is not correct, because not all polymers can be used in D3. In fact, only those

polymers can be used which are said to be "responsive polymers". This is clear from paragraph [0075] itself, which states:

"The responsive polymer used according to the present invention can be any suitable polymer **that has variable hydrophilicity**. In other words, any polymer **that changes its affinity for water** (and conversely, oil) in response to an external stimulus or changing environmental condition(s) may be suitable." (emphasis added by the board)

Paragraph [0076] states that "the responsive polymer is not limited by way of polymer architecture", but this sentence is to be understood as including the general limitation for responsive polymers. D3 does not disclose that any polymer can be used.

3.5.4 The appellant also argued that it would have been obvious to replace the vinyl polymers used in D3 by polysaccharides in view of D1 and/or D2, because these documents disclose the use of gelled particles prepared from polysaccharides, in particular gellan, in emulsions.

3.5.5 The board, however, disagrees for the following reasons:

- As pointed out by the opposition division, the skilled person would not consider replacing the particulate emulsifier of D3 by the gelled particles of D1, since in D1 the gelled particles are not described as acting as an emulsifier. The skilled person does not get any incentive from D1 to use gelled polysaccharides in the emulsions of D3. This would actually go against the teaching of

D3 that mandatorily requires the use of polymers having a hydrophilic/hydrophobic balance that can be changed by external conditions. D1 is silent about whether the gelled polysaccharides would fulfil this requirement.

- D2 relates to water-in-oil-in-water and oil-in-water-in-oil multiple emulsions which comprise a gelatinous layer formed at an aqueous/oil interfacial region (see column 1, lines 12 to 16). Interfacial gel layers are formed *in situ* when an aqueous soluble/gellable composition solubilized in an aqueous phase is contacted by a gel promoting agent. The gel promoting agent is thereby capable of being presented to the aqueous phase so as to cause formation of a gelatinous layer at the water/oil interface (see column 3, lines 10 to 17). Gellable polysaccharides in D2 include alginates, carrageenans, chitosans and other (see column 4, lines 61 to 65). D2 is silent about the particle size of the gelled polysaccharides. As with D1, the skilled person would not find in D2 any incentive to replace the polymers of D3 by the polysaccharides used in D2, and even if he did, he would not arrive at the claimed invention because D2 does not disclose gelled nanoparticles of polysaccharides.

3.6 In view of the above, the board concludes that the person skilled in the art would not have arrived in an obvious manner at the subject-matter of claim 1. The subject-matter of claim 1, as well as the subject-matter of dependent claims 2 to 5, thus involves an inventive step.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



M. Cañueto Carbajo

W. Sieber

Decision electronically authenticated