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**Datasheet for the decision
of 20 March 2024**

Case Number: T 0804/22 - 3.3.09

Application Number: 15169266.2

Publication Number: 3097790

IPC: A23L2/62, A23L2/56, A23L2/52

Language of the proceedings: EN

Title of invention:
TURBID BEVERAGES WITH IMPROVED STORAGE STABILITY

Patent Proprietor:
Symrise AG

Opponents:
Döhler GmbH
Givaudan SA
ADM WILD Europe GmbH & Co. KG

Headword:
Turbid beverages/SYMRISE

Relevant legal provisions:
EPC Art. 83, 100(b)
RPBA 2020 Art. 13(2)

Keyword:

Sufficiency of disclosure - main request (no)

Amendment after summons - exceptional circumstances (no)

Decisions cited:

T 0574/17

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0804/22 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 20 March 2024

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 7 February 2022
revoking European patent No. 3097790 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman A. Haderlein
Members: M. Ansorge
 N. Obrovski
 F. Rinaldi
 G. Decker

Summary of Facts and Submissions

- I. The proprietor (appellant) lodged an appeal against the opposition division's decision revoking the patent.
- II. With their notice of opposition, opponents 1 to 3 had requested that the patent be revoked on the ground for opposition under Article 100(b) EPC, *inter alia*.
- III. The opposition division decided that the invention could not be carried out.
- IV. Claim 1 of the main request filed on 31 July 2020 (sole request on appeal) reads as follows:

"A turbid oil-in-water emulsion with improved storage stability, comprising

- (a) 5 to 20 wt.% essential oils;
- (b) 5 to 20 wt.% mid-chain triglycerides (MCT);
- (c) 1 to 15 wt.% emulsifiers; and
- (d) 1 to 9 wt.% refractive index modifier, wherein said refractive index modifier comprises glycerol ester of wood rosin;

on condition that the amounts add with water and additional auxiliary agents to 100 wt.%,

wherein

- (i) the average particle size $x(50)$ of the oil droplets in said emulsion ranges from 0.1 to 0.6 μm and/or

(ii) the difference between the particle size $x(90)$ and the particle size $x(10)$ is less than $0.8 \mu\text{m}$, and wherein

$x(50)$ means the average particle size that 50 wt.% of all droplets in the emulsion show;

$x(90)$ means the average particle size that 90 wt.% of all droplets in the emulsion show; and

$x(10)$ means the average particle size that 10 wt.% of all droplets in the emulsion show."

V. The following documents were cited in the case at hand:

- D11: Chee-Teck Tan et al., "Stability of Beverage Flavor Emulsions", *Perfumer & Flavorist*, vol. 13, February/March 1988, pages 23 to 28, 30, 34, 37, 38, 40 and 41
- D17: D.T. Piorkowski et al., "Beverage emulsions: Recent developments in formulation, production, and applications", *Food Hydrocolloids* 42 (2014), pages 5 to 41
- D19: Chee-Teck Tan, "Beverage Flavor Emulsion - A Form of Emulsion Liquid Membrane Microencapsulation", *Food Flavors: Formation, Analysis and Packaging Influences*, 1998, pages 29 to 42
- D40: Prof. Dr.-Ing. S. Ripperger, TU Kaiserslautern, lecture notes "Grundlagen der Verfahrenstechnik 1", 2005, pages 1 to 67
- D43a: Mastersizer 2000 user manual, 2007
- Annex 1: Experimental data, Mastersizer 2000, filed with the grounds of appeal
- Annex 2: Experimental data, Mastersizer 2000, filed with the grounds of appeal

Annex 3: Wikipedia entry "Coulter-Zähler", filed on
30 January 2024

Annex 4: M. Sakata et al., "Effect of Pressure
Homogenisation in Emulsification with AGP",
Foods Food Ingredients J. Jpn., vol. 211(3),
2006, pages 230 to 237, filed on
30 January 2024

Annex 5: International Standard ISO 9276-2, second
edition, 2014, filed on 30 January 2024

Annex 6: Experimental data, Mastersizer 2000, filed on
30 January 2024

Annex 7: Experimental data, Mastersizer 2000, filed on
30 January 2024

VI. The parties' relevant arguments, submitted in writing
and during the oral proceedings, are reflected in the
reasons for the decision below.

VII. Requests

The appellant requested that the decision under appeal
be set aside and that the patent be maintained on the
basis of the main request filed on 31 July 2020.

Opponents 1 to 3 (respondents 1 to 3) requested that
the appeal be dismissed.

Reasons for the Decision

1. Admittance of the appellant's submission dated 30 January 2024 including Annexes 3 to 7 filed with it
 - 1.1 The appellant's submission of 30 January 2024 is essentially divided into two parts.
 - 1.1.1 In the first part, the appellant provided arguments under the assumption that the density of the emulsifier interface layer of the droplets had no influence on the overall density of the droplets and that this layer was not detected by the Mastersizer. In this respect, the appellant calculated the weight-based values required in claim 1 from the volume-based values resulting from the Mastersizer and concluded that the weight-based values in claim 1 were identical to the volume-based values when the droplets had a constant density.
 - 1.1.2 In the second part, the appellant provided a line of argument relating to the calculation of the alleged error margin under the assumption that the emulsifier interface layer was detected by the Mastersizer and that the overall density of the droplets varied for droplets having different sizes. This calculation was submitted for the first time in the entirety of the proceedings.
 - 1.1.3 Annexes 3 to 7 are new pieces of evidence which were filed to supplement the appellant's lines of argument.
 - 1.2 To the board, at least the submission relating to the calculation of the alleged error margin (see

point 1.1.2 above) and the filing of Annexes 3 to 7 constitute an amendment to the appellant's appeal case.

- 1.3 Contrary to the appellant's argument, the submission relating to the calculation of the alleged error margin was not previously explicitly discussed or insinuated. In particular, this aspect was not mentioned in an implicit manner in the statement of grounds of appeal. The statement of grounds of appeal does not contain any indication or hint in this respect. This line of argument is not a mere refinement of the submissions outlined in the statement of grounds of appeal, either. With regard to the appellant's argument that this submission was a further refinement of the information given in document D40, the board notes that document D40 was not mentioned in the statement of grounds of appeal.
- 1.4 Since the submission relating to the calculation of the alleged error margin and Annexes 3 to 7 were filed after notification of the communication pursuant to Article 15(1) RPBA, the question of its admittance is to be assessed under Article 13(2) RPBA.
- 1.5 Under Article 13(2) RPBA, any amendment to a party's appeal case made after notification of a communication under Article 15(1) will, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.
- 1.6 The appellant argued that this new submission, including the documents or experiments reworking the teaching of the patent, were *prima facie* relevant, so they should be admitted into the appeal proceedings.

1.7 However, even if this submission, including the new calculations and Annexes 3 to 7, were indeed *prima facie* relevant as argued by the appellant, such *prima facie* relevance on its own usually cannot be the sole criterion for justifying exceptional circumstances. The board further notes that there is no need to assess the *prima facie* relevance of an amendment in order to conclude that there are no exceptional circumstances under Article 13(2) RPBA justifying its admittance into the appeal proceedings (see T 574/17, point 2.3.3 of the Reasons).

1.8 In addition, the objection which was addressed by the appellant's latest submission had already been raised in the first-instance proceedings and had also been dealt with in the opposition division's decision (see point 3.1 of the decision). No cogent reasons were provided by the appellant. The appellant only reacted after having received the board's communication. Moreover, due to the fact that the appellant's latest submission is very complex, its admittance at such a late stage in the appeal proceedings would be detrimental to procedural economy as well.

1.9 With respect to Annex 5, the appellant argued that this annex merely related to an international standard which was mentioned in paragraph [0064] of the patent, so it was always part of the patent.

However, the appellant did not refer to or discuss this industrial standard previously, either in the statement of grounds of appeal or in the first-instance proceedings. The mere fact that this industrial standard is mentioned in the patent does not automatically make it part of the appellant's case and does not mean that the appellant may rely on it

whenever it wants. Consequently, also with respect to Annex 5, no exceptional circumstances can be acknowledged.

In view of the above, the submission relating to the calculation of the alleged error margin and Annexes 3 to 7, submitted on 30 January 2024, are not taken into account in the appeal proceedings (Article 13(2) RPBA).

2. Sufficiency of disclosure (Article 83 EPC)

2.1 The appellant argued that the opposition division erred in concluding that the invention could not be carried out by a skilled person. In its view, a skilled person was capable of determining the weight-based values required in claim 1 from the volume-based values obtained by the method disclosed in the patent using the Mastersizer 2000 by MALVERN Instruments (hereinafter "Mastersizer").

The appellant's central arguments were that:

(i) there was no core-shell system in the claimed emulsion, the density being constant over the size distribution of the droplets,

(ii) the emulsifier interface layer surrounding the oil core was not detected by the Mastersizer and

(iii) the conversion of the volume-based values into weight-based values required in claim 1 was possible simply by taking into account the density of the oil components forming the droplet core.

The appellant submitted Annexes 1 and 2 as experimental evidence for supporting its assumptions with respect to argument (ii).

2.2 For the following reasons, the appellant's lines of argument are not suitable for demonstrating that the opposition division's conclusion on lack of sufficiency was wrong.

2.2.1 The appellant argued that in the claimed emulsion there were no oil droplets surrounded by a solid interfacial layer, but there was a dynamic system in which the emulsifiers did not contribute to the volume and density of the oil droplets.

As outlined below, the board does not agree. In particular, the appellant's assumptions are not shared for oil-in-water emulsions comprising orange oil as the essential oil and gum arabic as the emulsifier, which are preferred in the patent (see claims 2 and 4 of the main request).

2.2.2 As can be taken from D11, a gum arabic solution produces a film at an oil interface. This interfacial film is visco-elastic and after some days matures to a "solid", possibly multilayer film (see page 28, section "Adsorption at Interfaces", first and second paragraph, of D11). The thickness of such a film may be up to 0.1 μm (see page 28, section "Adsorption at Interfaces", third paragraph, of D11).

This demonstrates that gum arabic is a special emulsifier which does not represent an emulsifier forming a dynamic system, as argued by the appellant. Instead, the gum arabic interfacial film is described in D11 as being visco-elastic.

2.2.3 The further passage on page 28, third paragraph, of D11 is also relevant:

"Since gum arabic solution is heavier than water, a layer of hydrated gum arabic will provide an added weight to the oil droplet and actually change the density of the total droplet, that is, the oil droplet plus the gum arabic film, to a higher value. When an oil droplet is smaller, the percentage of weight contributed by the gum arabic layer to the total droplet weight is larger than that for a larger droplet."

Therefore, the gum arabic interface layer provides added weight to the droplets and changes the overall density of the droplets.

2.2.4 In a similar manner to D11, D19 also supports the fact that a skin-like film is formed in a gum arabic solution and the oil is encapsulated by the gum arabic film (see point 2.3. "Results" and Figures 2A and 2B of D19). Under the assumption that the film thickness remains constant over the oil-droplet particle size range, the gum arabic film contributes more weight in smaller droplets compared with larger droplets (see page 32 and Figure 1 of D19). D19 confirms that this assumption has been proven to be true in the actual preparation of orange-oil-flavoured emulsions (see the paragraph bridging pages 32 and 33 of D19).

2.2.5 D17 also confirms that, in practice, the particles in beverage emulsions actually have a core-shell structure consisting of an oil core and an interfacial shell (see page 14, left-hand column, second paragraph, of D17). On page 32, left-hand column, second paragraph, of D17,

it is also taught that the overall density of an emulsion droplet depends on the density and volume of the oil phase and the interfacial layer. Point 3.5 of D17 describes that the interfacial region makes up a significant fraction of the volume of a droplet when the droplet diameter is less than 1 μm .

Therefore, D17 also confirms that, in the technical field of the invention, emulsions comprise a core-shell structure. In addition, D17 (as well as D11) confirms that the overall density of the whole emulsion droplets depends on the density and volume of the oil phase and the interfacial layer.

2.2.6 In view of the above evidence provided by D11, D17 and D19, the board concludes that the emulsifier interface layer cannot be ignored for the aqueous system comprising orange oil as the essential oil and gum arabic as the emulsifier. Instead, this gum arabic interface layer has an influence on the overall density of the droplets. Consequently, it contributes to the volume and the density of the oil droplets. Contrary to the appellant's arguments, D11, D17 and D19 support the fact that there is indeed a core-shell system at least in aqueous emulsions comprising orange oil as the essential oil and gum arabic as the emulsifier.

2.2.7 The appellant argued that emulsifier molecules are not detected by the Mastersizer. In this context, the appellant submitted the experiments set out in Annexes 1 and 2 as evidence of this.

(a) However, in Annex 1 it is not an emulsion that is measured, but an aqueous gum arabic solution. It is evident that the laser diffraction method does not detect any particle in the low micron range in a

solution, since in such a homogeneous system there is no droplet forming an interface with a different refractive index compared with a surrounding matrix. The experiment in Annex 1 has no probative value in terms of how gum arabic behaves in a laser diffraction system when it is part of a film surrounding oil droplets.

(b) Although in Annex 2 an emulsion containing aqueous gum arabic and orange oil is measured and a peak is detected at 50 μm , nothing can be derived from this experiment about the influence of a gum arabic interface layer on light diffraction. Therefore, Annex 2 is not suitable for proving the appellant's assumption that the gum arabic interface layer is not detected by the Mastersizer either.

(c) Consequently, the evidence in the form of Annexes 1 and 2 fails to support the appellant's case.

(d) Likewise, the appellant's reference to D43a (the Mastersizer user manual), in particular Chapter 8 relating to the use of surfactants, does not support the appellant's case either. It is true that D43a teaches adding surfactant "in minute quantities, typically one drop per litre of dispersant" (see page 8-7, third paragraph) to avoid the sample floating or clumping together, suggesting that the presence of a surfactant may be negligible in certain circumstances; however, D43a does not refer to gum arabic as such a surfactant and does not address situations in which gum arabic is present in significant amounts of 1 to 15 wt. % (see claim 1; cf. paragraph [0055] of the patent).

2.2.8 In view of the above, the board concludes that the opposition division correctly considered that there

were serious doubts substantiated by verifiable facts (D11, D17 and D19) that the invention could be carried out, i.e. that the weight-based values required in claim 1 could be reliably calculated from the volume-based values determined by the Mastersizer when considering the information given in the patent. In the specific circumstances of the case at hand, the opposition division did not err in that the burden of proof had shifted to the appellant's side. For the reasons set out above, the appellant has not discharged this burden.

2.2.9 The appellant also argued that it was possible to convert the volume-based values into weight-based values required in claim 1 in a simple way only by taking into account the density of the oil components forming the droplet core, i.e. without considering the emulsifier interface layer. In its view the density of the emulsifier interface layer had no influence on the overall density of the droplets, since the emulsifier interface layer was not detected by the Mastersizer.

2.2.10 For the following reasons, the board is not convinced by this line of argument.

(a) First, as outlined above and as evidenced by D11, D17 and D19, the density of the whole droplets in an aqueous system comprising orange oil as the essential oil and gum arabic as the emulsifier is not constant, but droplets having different sizes have different overall densities. In these circumstances, it is not sufficient to state without any further explanation, as done in the statement of grounds of appeal, that a skilled person is capable of converting the volume-based values into weight-based values.

(b) Second, at least for the emulsifier gum arabic, which is a preferred emulsifier according to the patent which forms a visco-elastic and, after some days, a "solid", possibly multilayer film (see D11), the board is not convinced that this gum arabic interface layer is not detected by the Mastersizer.

(c) It is true that the respondents did not provide positive evidence that the whole droplets including the gum arabic interface layer are indeed detected by the Mastersizer; however, in view of the opposition division's conclusion, shared by the board, that there are serious doubts substantiated by verifiable facts that the invention can be carried out (see point 2.2.8 above), the appellant at least would have had to demonstrate its point more conclusively in this respect. In these circumstances, the appellant cannot rely exclusively on the absence of positive and unambiguous proof that the gum arabic interface layer is indeed detected by the Mastersizer. In view of the overall circumstances and the evidence in the form of D11, D17 and D19, the board considers it more credible that, in the specific orange-oil-containing system, the gum arabic interface layer is detected by the Mastersizer so that the layer contributes to the overall volume and density of the droplets.

(d) Even if the droplet size of each individual droplet were not necessary for calculating weight-based values from volume-based values, for the above reasons, the gum arabic interface layer contributes to the overall density of the droplet.

(e) In its letter of 30 January 2024, the appellant provided calculations in an attempt to estimate the weight-based values required in claim 1 from the

volume-based values determined by the Mastersizer. Even if these calculations were correct, in view of D11, D17 and D19, it is not credible that the density of the droplets along the droplet size distribution is constant. Therefore, the weight-based values required in claim 1 cannot be reliably determined from the volume-based values resulting from the Mastersizer.

2.2.11 In view of all of the above, the board agrees with the opposition division's decision that there is a lack of sufficiency of disclosure.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



K. Götz-Wein

A. Haderlein

Decision electronically authenticated