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Datasheet for the decision of 27 November 2024

Case Number: T 0147/23 - 3.3.09

Application Number: 16779040.1

Publication Number: 3358961

IPC: A23F5/08, A23F5/40

Language of the proceedings: EN

Title of invention:
PROCESS FOR MICRONIZING COFFEE PARTICLES

Patent Proprietor:
Société des Produits Nestlé S.A.

Opponent:
Koninklijke Douwe Egberts B.V.

Headword:
Coffee Particles/NESTLÉ

Relevant legal provisions:
EPC Art. 100(a), 101(3)(a), 54(2), 56
RPBA 2020 Art. 12(4)

Keyword:
Main request: novelty - (yes); inventive step - (no)
Auxiliary request 1: novelty and inventive step - (yes)

Decisions cited:

Catchword:

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European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 0147/23 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 27 November 2024

Appellant: (Patent Proprietor)	Société des Produits Nestlé S.A. Entre-deux-Villes 1800 Vevey (CH)
Representative:	Plougmann Vingtoft a/s Strandvejen 70 2900 Hellerup (DK)
Respondent: (Opponent)	Koninklijke Douwe Egberts B.V. Vleutensevaart 35 3532 AD Utrecht (NL)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 21 November 2022 revoking European patent No. 3358961 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	G. Decker
Members:	A. Veronese
	M. Ansorge

Summary of Facts and Submissions

I. The appeal was filed by the patent proprietor (appellant) against the opposition division's decision to revoke the European patent.

II. Claim 1 of the patent as granted reads as follows:

"*1. A process for micronizing coffee particles, the process comprising:*

a) preparing an aqueous suspension of coffee particles comprising 1-20% coffee particles and 0.1-30% dissolved water soluble coffee solids and with a total solids content of 40% or less; and
b) micronizing the aqueous suspension of coffee particles comprising 1-20% coffee particles and 0.1-30% dissolved water soluble coffee solids and with a total solids content of 40% or less to an average particle size, $d_{90,3}$, of less than 50 micron to produce a suspension of micronized coffee particles;

wherein coffee particles in step a) are mixed with soluble coffee solids obtained by a separate extraction of coffee beans with water, and wherein steps a) and b) are conducted at a temperature of 5-50°C."

III. With its notice of opposition, the opponent had requested revocation of the patent in its entirety on the grounds of Article 100(a) EPC (lack of novelty and lack of inventive step).

IV. The documents submitted by the parties during the opposition proceedings included:

D1: RU 2 553 546 C1
D1a: English translation of D1
D2: EP 0 220 889 A2
D3: WO 2015/075535 A1
D4: Malvern Instruments Limited, "Basic principles of particle size analysis", 2014

V. Concerning the claims of the patent as granted and of auxiliary request 1 as filed by letter of 21 June 2021, the opposition division concluded, *inter alia*, as follows.

- The claimed subject-matter was novel over D1, which did not disclose coffee particles having a size, $d_{90,3}$, of less than 50 micron.

- The claimed subject-matter did not involve an inventive step over D1, the closest prior art. The claimed process differed from that of D1 in that the average particle size, $d_{90,3}$, of the particles was less than 50 micron. In the case of auxiliary request 1, it further differed in the amount of dissolved coffee solids. These differences were not associated with a new effect over the entire scope claimed.

- The objective technical problem was to provide an alternative process for micronising coffee particles having a reduced sedimentation rate. When confronted with this problem, and taking into account common general knowledge, the skilled person would reduce the particle size and use the claimed amounts of soluble coffee solids, thereby

arriving at the claimed invention without having to employ any inventive skill.

VI. With its statement setting out the grounds of appeal, the appellant filed auxiliary request 1, which corresponded to auxiliary request 1 on which the decision under appeal was based. It also filed the following documents:

D7: B. Folmer, "The Craft and Science of Coffee", 2017, chapter 13, 323-325

D8: M.E. Aulton, "Pharmaceutics: The Science of Dosage Form Design", 2nd ed., 2002, 184, 189, 411, 412 and 457

D9: WO 2008/110626 A1

VII. Claim 1 of auxiliary request 1 reads as follows:

"*1. A process for micronizing coffee particles, the process comprising:*

a) preparing an aqueous suspension of coffee particles comprising 1-20% coffee particles and 0.1-5% dissolved water soluble coffee solids and with a total solids content of 40% or less; and

b) micronizing the aqueous suspension of coffee particles comprising 1-20% coffee particles and 0.1-5% dissolved water soluble coffee solids and with a total solids content of 40% or less to an average particle size, $d_{90,3}$, of less than 50 micron to produce a suspension of micronized coffee particles;

wherein coffee particles in step a) are mixed with soluble coffee solids obtained by a separate extraction of coffee beans with water, and

wherein steps a) and b) are conducted at a temperature of 5-50°C."

VIII. In its communication pursuant to Article 15(1) RPBA, the board set out its preliminary opinion that the decision under appeal should be set aside and that the patent be maintained on the basis of auxiliary request 1. In response to this communication, both parties withdrew their requests for oral proceedings on the conditions that the other party also withdrew their request for oral proceedings and that the board did not deviate from its preliminary opinion. Subsequently, the board cancelled the date for the oral proceedings.

IX. The relevant arguments submitted by the parties during the proceedings are reflected in the reasons for the decision below.

The requests

X. The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted (main request) or, alternatively, on the basis of auxiliary request 1 as filed with the statement setting out the grounds of appeal.

XI. The opponent (respondent) requested that the appeal be dismissed.

Reasons for the Decision

Main request

1. *Novelty*

1.1 The respondent contested the opposition division's conclusion that the claimed process was novel over the process disclosed in D1. In the following, the cited passages are those of the English translation of D1, i.e. those shown in D1a.

1.2 The respondent argued that D1 inherently disclosed particles having a $d_{90,3}$ size of less than 50 µm. The respondent noted that some passages of D1, e.g. claim 1 and page 2, lines 34 to 44, referred to particles having a size of "no more than 30 µm". An "average" was not mentioned in these passages. This meant, therefore, that the particles had a $d_{90,3}$ size of less than 50 µm.

1.3 This argument is not convincing. As noted by the opposition division in its decision, D1 refers interchangeably to an average size of less than 30 µm and to a (non-averaged) size of less than or equal to 30 µm. For example, page 2, line 31, page 3, lines 25 to 27, and page 4, lines 6 to 7, refer to an average size, whereas claim 1, page 2, line 41, page 3, line 27, and page 4, lines 31 and 36, refer to an (absolute) value of no more than or less than 30 µm.

1.4 This inconsistent terminology results in it being unclear whether D1 defines an average or an absolute size when defining the described method.

1.5 The respondent argued that in all instances in which D1 referred to an average size, reference was made to less than 30 µm. It further argued that, when absolute particle sizes were indicated, reference was made to "no more than" 30 µm, or in other words to a size of less than or equal to 30 µm. Therefore, these two requirements were both clear and complementary.

1.6 This argument is not convincing because certain passages of D1 refer to a size of "less than 30 µm", i.e. using the same wording as that used when reference is made to an average size, see, for example, page 4, lines 31 and 36.

1.7 Furthermore, when reading claim 1, the skilled person would understand that a size of $d_{90,3}$ of less than 50 µm is a diameter calculated based on a volume-weighted size distribution. This terminology is not used in D1.

1.8 For these reasons, as decided by the opposition division, D1 does not directly and unambiguously disclose the particle size specified in claim 1. Consequently, as already decided by the opposition division, the claimed subject-matter is novel over the teaching of D1 (Articles 100(a) and 54(2) EPC).

2. *Inventive step*

The closest prior art

2.1 The opposition division concluded, and the parties did not dispute this, that D1 was the closest prior art. D1 relates, as does the claimed invention, to a coffee product containing fine coffee particles which can be used to prepare an instant coffee.

2.2 It was not disputed that D1 discloses the micronization of an aqueous suspension of roast coffee particles which, like the aqueous suspension defined in claim 1, contains:

- 1 to 20% roast coffee particles
- 0.1 to 30% dissolved water soluble coffee solids
- 40% or less of total coffee solids

2.3 Reference is made, in particular, to page 2, lines 28 to 45, to claim 1 and to the examples.

2.4 The parties agreed that the suspensions of Examples 1 and 2 represented the most promising starting points of D1. Furthermore, they agreed that the suspension of Example 1 contained 8% dissolved water soluble coffee solids, 20% pre-ground roast coffee particles and 28% total coffee solids, and that Example 2 contained 9.1% dissolved soluble coffee solids, 9.1% pre-ground roast coffee particles and 18.2% total coffee solids. It was also not disputed that these particles have an average size of 30 µm, see page 6, lines 45 to 47.

Distinguishing feature

2.5 As already explained above, the claimed process differs from that of D1 in that the micronized coffee particles of the suspension have a $d_{90,3}$ of less than 50 µm.

2.6 According to the appellant's calculations, the particles of the suspensions of D1 have a larger diameter than the claimed ones, namely a $d_{90,3}$ diameter of 70 micron, in place of 50 micron. The calculations are based on the assumption that the average size of the particles of D1 is 30 micron and that the shape of

the curve defining the size of those particles follows the pattern shown in Figure 4 of the opposed patent. No evidence to the contrary has been provided and there are no reasons to consider this assumption incorrect.

Technical effect

2.7 The opposed patent teaches (see paragraphs [0002] and [0005]) that:

- the addition of finely ground coffee particles to soluble coffee powders enhances the taste and aroma of soluble coffee powders

- a small particle size is desirable for improving the sensory perception and avoiding a sandy and gritty mouthfeel

- coffee particles become sticky and tend to aggregate and sediment when they are finely milled

- aggregation and sedimentation can be prevented if the coffee particles are micronised in a water suspension comprising water soluble coffee solids obtained from a separate extraction from coffee beans with water

2.8 The tests in Figure 2 of the patent show that smaller particles can be obtained by micronizing coffee particles in a suspension comprising 1% powdered coffee extract (PSC), i.e. in the presence of soluble coffee solids. In this case, the X_{90} ($d_{90,3}$) size of the particles is less than 20 micron and is lower than the 60 micron obtained in the absence of PSC.

2.9 However, these tests also show that if the micronization is further continued, the particles tend again to aggregate. The cohesive forces then prevail, and the PSC is not able to prevent aggregation, see Figure 2 and column 7, lines 30 to 35.

2.10 Furthermore, as noted by the opposition division, a reduction in the size of the coffee particles to a $d_{90,3}$ of less than 50 µm does not necessarily correlate with the prevention of aggregation. In fact, aggregation occurs in the composition of Sample 2, comprising particles having a $d_{90,3}$ of 40 µm, but does not occur in that of Sample 3, which comprises particles of the same size.

2.11 Moreover, as noted by the respondent, there is no evidence that the composition obtained by carrying out the claimed process is more stable to sedimentation than that of Examples 1 and 2 of D1, which allegedly contain particles having a larger $d_{90,3\ size}$ of 70 µm. In fact, as conceded by the appellant, there is no evidence that the coffee mixtures obtained by the process of D1 are unstable due to aggregation and sedimentation after micronization or reconstitution.

2.12 In addition, as far as an effect associated with the inclusion of water soluble coffee solids during the micronisation step could be acknowledged, this effect would not relate to the feature distinguishing the claimed invention from the closest prior art.

2.13 For these reasons, it is concluded that there is no evidence that the distinguishing technical feature is associated with any effect going beyond the teaching of the prior art. This is particularly true if the effect is to be achieved across the entire scope claimed.

Underlying technical problem

2.14 In view of the aforementioned finding, the underlying technical problem is to provide an alternative process for producing micronised coffee particles suitable for preparing instant coffee products which can be dissolved without the formation of a precipitate.

Obviousness of the claimed solution

2.15 As noted by the respondent, D1 teaches milling coffee particles to a size - apparently an average size - of no more than 30 micron. D1 does not indicate any lower threshold for the size of the coffee particles and does not discourage the reader from using particles having an average size which is lower than 30 micron. Consequently, when working within the ambit of the teaching of D1, the skilled person would consider using particles having a smaller size.

2.16 According to the appellant, "D1 nowhere suggests to reduce the particle size of the roast coffee particle disclosed in D1 even further". However, this is not a correct interpretation of the wording "no more than 30 µm", which is used to define the invention disclosed in claim 1 of D1, for example. This wording clearly envisages the use of particles having a smaller size.

2.17 Accordingly, starting from D1 and confronted with the underlying problem, the skilled person would consider providing particles having an average size of less than the maximum value specified in this document of 30 micron. As noted by the respondent, merely reducing the average particle size from 30 micron to 20 micron would result in a $d_{90,3}$ of less than 50 micron. Thus,

following the teaching of D1, the skilled person would arrive at the claimed invention without having to make any inventive effort.

2.18 Furthermore, as argued by the opposition division and the respondent, the skilled person was already aware of the fact that the sedimentation rate of particles in suspension typically decreases if their size is decreased before the relevant date of priority. This concept is confirmed in D2, which teaches that the sedimentation of coffee particles can be prevented by reducing their size to a $d_{90,3}$ of 45 µm (column 1, lines 21 to 26, and claim 15). It is further confirmed by D3 (page 1, lines 26 to 30, and page 5, lines 10 to 13) and by the general teaching in D4, in the section "sedimentation", which deals with Stokes' law.

2.19 The appellant also argued that "D1 nowhere indicates that the avoidance of aggregation is due to the stabilizing effect of the soluble coffee solids present in the suspension to be micronised". Moreover, it argued that in D1 the main reason for carrying out milling in a suspension containing soluble coffee solids was to prevent dust and loss of flavour. This argument is not persuasive because D1 explicitly teaches that one of the aims of the disclosed process, which involves the use of a coffee extract comprising solids extracted from milled coffee, is to prevent the formation of precipitates when brewing, see page 2, line 31, and page 8, lines 19 to 20.

2.20 In view of the aforementioned considerations, the skilled person would not have any reason not to mill coffee particles to an average size of 20 µm, which corresponds to a $d_{90,3}$ of less than 50 µm. Consequently,

by simply working within the ambit of D1, the skilled person would arrive at the claimed solution without having to make any inventive effort. Therefore, the claimed subject matter does not involve an inventive step (Articles 100(a) and 56 EPC).

3. Admittance of D7, D8 and D9

3.1 With its statement setting out the grounds of appeal, the appellant filed D7, D8 and D9. It stated that these documents addressed the argument raised by the respondent during the oral proceedings before the opposition division that, to minimise particle aggregation, the skilled person would reduce the size of the coffee particles taking into account Stokes' law. In its opinion, D7, D8 and D9 provided evidence that coffee particles did not necessarily follow Stokes' law. Thus, these documents were highly relevant and had to be admitted into the appeal proceedings.

3.2 The board does not agree and takes the view that, as requested by the respondent, D7, D8 and D9 should not be admitted. Stokes' law was apparently mentioned for the first time during the oral proceedings before the opposition division. However, during the written proceedings before the opposition division the respondent had already clearly pointed out the well-known fact that smaller particles had less of a tendency to aggregate and sediment compared to larger ones. Therefore, the reference to Stokes' law during the oral proceedings was merely the provision of a "label" to a physical principle which had been mentioned earlier in the proceedings.

3.3 Furthermore, D7, D8 and D9 are not *prima facie* relevant to the issues to be decided and they raise new issues

which should have been discussed during the proceedings before the opposition division.

3.4 According to the appellant, D7 teaches that finely-ground coffee particles tend to agglomerate. However, this document relates to problems associated with dry grinding, rather than to grinding in suspension as in the claimed invention. Furthermore, D7 relates to coffee obtained from capsules and to the problem of filters clogging during percolation, rather than to the problem of particle sedimentation in instant coffee, as in the claimed invention. Thus, D7 is not *prima facie* relevant and raises new complex issues, such as whether its teaching can be generalised to the instant coffee product comprising particles of the claimed invention.

3.5 Concerning D8, the appellant referred to some passages relating to the aggregation of small particles. However, D8 is a textbook relating to a completely different technical field, namely the dosage of pharmaceutically active compounds and the preparation of pharmaceutical tablet formulations comprising finely divided particles. The main problem is the release of active agents from tablets manufactured by high compression, see pages 411 and 412. This problem has nothing to do with the claimed invention, which relates to the properties of instant coffees. D8 does not relate to the milling of suspended particles either.

3.6 The appellant mentioned a passage on page 189 of D8, which deals with the problem of mixing different active ingredients to avoid segregation. However, this passage suggests milling the ingredients so that the particle size is below 30 µm (resulting in a $d_{90,3}$ below 50 µm). Thus, this passage does not teach away from producing particles of the claimed size. Rather, it teaches that

achieving a $d_{90,3}$ of below 30 µm is a technically feasible and desired objective. Furthermore, this passage does not relate to milling in suspension, nor to the problems associated with the preparation of instant coffees. Thus, like D7, D8 raises new complex issues including whether its teaching can be generalised to the present case.

3.7 Concerning D9, the appellant submitted that the background section of this document confirmed that fine particles, as such, have less of a tendency to sediment than larger ones. However, it also taught that small particles can easily form aggregates which settle, forming a sediment.

3.8 The board does not consider D9 to be highly relevant. Firstly, D9 is a patent application and does not, as such, represent common general knowledge. Moreover, the cited passage is very generic. There is no indication of the size at which the aggregation of particles may become a problem, let alone in the case of coffee particles. D9 focuses primarily on the production of compositions comprising particles of organic compounds. One example relates to particles made of coffee (Example 16). Yet, as noted by the respondent, these particles were ground to a size which is essentially the same as that stipulated in claim 1: 89.8% of the particles have a size of less than or equal to 50 µm. Consequently, besides not being relevant, D9 raises new complex issues including whether its teaching can be generalised to the present case.

3.9 For these reasons, D7, D8 and D9 are not admitted into the appeal proceedings and cannot be relied on as evidence that the prior art teaches away from reducing

the size of the particles of the coffee product of D1 (Article 12(4) RPBA).

Auxiliary request 1

4. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the range defining the amount of dissolved water soluble coffee solids in the suspension defined in step a) is restricted from 0.1-30 wt% to 0.1-5 wt%. The respondent has not disputed that the claimed subject-matter is novel over D1, or that the aforementioned restriction further distinguishes the claimed process from that of D1.

5. *Inventive step*

Closest prior art and distinguishing features

5.1 The parties did not dispute that, as in the case of the main request, D1 is the closest prior art to the subject-matter of auxiliary request 1. Furthermore, they did not dispute that the claimed process differs from that disclosed in D1 in:

- the smaller size of the coffee particles and

- the amount of dissolved water soluble coffee solids in the suspension; in particular, the concentration in the suspensions of the examples of D1 is higher (e.g. 8% in Example 1) than that defined in claim 1 (0.1 to 5%)

Technical effect

5.2 It was not disputed that the properties of the compositions obtained by carrying out the process

according to the claimed invention were not compared with those of the closest prior art D1.

5.3 According to the respondent, Figure 5 of the patent showed that the best results, i.e. those showing the lowest amount of sedimentation, were observed when pre-ground roast coffee particles were micronised in an aqueous suspension containing a relatively low amount of dissolved soluble coffee solids. The results provided evidence of the benefits of using these low amounts of soluble solids.

5.4 This argument is not convincing: Figure 5 relates to tests in which the total amount of solids (TS) was progressively decreased. However, only one of the tests was performed by using a composition comprising powdered coffee extract, i.e. soluble coffee solids. Thus, the tests do not provide any evidence that using a low amount of these solids provides any new effect extending beyond the teaching of the prior art.

Underlying technical problem

5.5 For these reasons, as in the case of the main request, the underlying technical problem is to provide an alternative process for producing micronised coffee particles suitable for preparing instant coffee products which can be dissolved without the formation of a precipitate.

Non-obviousness of the claimed solution

5.6 As argued by the appellant, D1 teaches against lowering the concentration of water soluble coffee solids to 0.1-5% in the aqueous suspension in which the particles are micronised, i.e. in the suspension which

corresponds to the suspension prepared in step a) of claim 1.

5.7 When referring to the liquid concentrated extract (LCE) of instant coffee, i.e. to the solution containing the dissolved water soluble coffee solids, D1 teaches that "[t]he *concentration of soluble solids of the supplied LCE may be in the range of 10 to 65%*". Furthermore, D1 teaches that "*the best quality indicators of the final product [are] at 30-60% concentration of dry solids in the LCE*", see page 7, lines 26 and 27.

5.8 Moreover, D1 teaches that the ratio between the amount of roasted and ground coffee and the LCE in the suspension to be micronised is 10-40 wt.%.

5.9 Following this teaching, even when preparing a suspension using:

- the minimum amount of water soluble coffee solids dispersed in the LCE mentioned in D1 (10 wt%.) and

- the maximum amount of roasted and ground coffee particles (40%) mentioned in D1,

the skilled person would obtain an aqueous suspension containing an amount of water soluble coffee solids which is above that of 0.1 to 5% as specified in claim 1.

5.10 The respondent argued, in line with item 3.2.7.2 of the decision under appeal, that no indication could be found in D1 that amounts of soluble coffee solids below 10% were not suitable for carrying out the disclosed invention. In other words, it argued that D1 did not teach away from using low amounts of these

soluble solids. Hence, in the respondent's opinion, when confronted with the underlying problem, the skilled person would prepare suspensions comprising the claimed concentrations of soluble coffee solids. It also argued that it was not clear whether the reference to LCE on page 7, lines 29 to 31, of D1 concerned an extract added to ground coffee before milling, or the liquid added before drying.

5.11 These arguments are not convincing. As far as the amount of soluble coffee solids in the LCE (and in the suspension) is concerned, page 7, line 27, of D1 provides a clear teaching to work at a concentration which is higher than that characterising the claimed process. Furthermore, it is readily apparent from D1 that the LCE is the solution added to the ground coffee before micronisation.

5.12 For these reasons, D1 does not provide an incentive to prepare an aqueous suspension of coffee particles comprising an amount of water soluble coffee solids within the claimed range of 0.1 to 5 wt%. Consequently, the claimed subject-matter involves an inventive step (Article 56 EPC).

Result

6. The patent is to be maintained as amended on the basis of the claims of auxiliary request 1 as filed with the statement setting out the grounds of appeal and with a description to be adapted thereto, if necessary (Article 101(3)(a) EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the claims according to auxiliary request 1 as filed with the statement setting out the grounds of appeal and a description to be adapted thereto, if necessary.

The Registrar: The Chairman:

K. Götz-Wein G. Decker

Decision electronically authenticated