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D E C I S I O N
of 20 November 1995

Case Number: T 0676/91 - 3.3.4

Application Number: 82200147.5

Publication Number: 0066304

IPC: A23G 1/00

Language of the proceedings: EN

Title of invention:

Alkalized cocoa powders and foodstuffs containing such powder

Patentee:

Cacaofabriek De Zaan B.V.

Opponent:

Berisford Cacao Nederland B.V.

Jacobs Suchard GmbH

Bensdorp B.V. / Cacao Barry / Gerkens Cacao-industrie B.V.

Headword:

Alkalized cocoa powder/DE ZAAAN

Relevant legal provisions:

EPC Art. 83, 56

Keyword:

"Unreliability of certain parameters in the claims (no) "

"Inventive step (yes) "

Decisions cited:

T 0292/85

Catchword:

-



Case Number: T 0676/91 - 3.3.4

D E C I S I O N
of the Technical Board of Appeal 3.3.4
of 20 November 1995

Appellant: Bensdorp B.V. / Cacao Barry / Gerkens
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office dated 24 June 1991
concerning maintenance of European patent
No. 0 066 304 in amended form.

Composition of the Board:

Chairwoman: U. M. Kinkeldey
Members: R. E. Gramaglia
W. Moser

Summary of Facts and Submissions

I. European patent No. 0 066 304 with application No. 82 200 147.5 was granted on the basis of claims 1 to 6.

II. Three oppositions were filed on the grounds of Articles 100(a) and 100(b) EPC, i.e., lack of novelty, lack of inventive step and insufficiency of disclosure having regard in particular to the following documents:

- (1) The Manufacturing Confectioner, issue of March 1981, pages 52 to 53
- (2) US-A-3 997 680
- (3) Letter from Van Houten International GmbH dated 7 May 1987
- (4) Letter from U.S. Cocoa Corporation dated 16 November 1987
- (5) Declaration of Dr Zijderveld dated 29 October 1987

III. Opponents O1 and O2 withdrew their oppositions. By its decision given orally on 23 April 1991 and issued in writing on 24 June 1991, the Opposition Division maintained the patent with claims 1 to 7 in amended form. Claim 1 reads as follows:

"1. Alkalized cocoa powder having colour coordinates L less than 16, a between 4.0 and 8.0 and b between 2.0 and 6.0; the ratio b/a being below 0.6, said coordinates having been determined with the Hunterlab Digital Colour Difference Meter, type D 25 D 2A, by weighing 1.2 g of the cocoa powder into a 100 ml beaker, adding 5 ml of

water at 60°C, stirring until a homogeneous paste is obtained, adding 45 g of a freshly prepared 2.5% agar solution, kept at 50°C and mixing rapidly until the mixture is homogeneous, then pouring the agar suspension as quickly as possible into a Petri dish which is lying exactly level and allowing to cool for 15 minutes, followed by removing the agar slab thus obtained from the Petri dish by means of a broad spatula and placing it on a white tile, and bringing the tile with the slab into the calibrated Hunterlab Digital Colour Difference Meter and pressing the agar slab lightly against the measuring orifice, without protrusion of the surface in the apparatus and reading the L-, a- and b-values characterized in that colour coordinate L is between 9.0 and 14.0, the pH of the cocoa powder is 7.5 or less, while no more or other acid radicals are present than those by nature present in fermented cocoa, and the ratio of pH/alkalinity of the ash is below 0.046".

Claim 2 differs from claim 1 in that the alkalized cocoa powder is further characterized by its process of manufacture; claims 3 to 6 relate to specific embodiments; claim 7 relates to foodstuffs containing the cocoa powder of claims 1 to 6.

IV. The Appellant (Opponent 03) filed a notice of appeal against this decision with the payment of the fee on the same day and filed a Statement of Grounds of Appeal. The Respondent (Proprietor of the patent in suit) filed counterarguments.

V. Oral proceedings were held on 20 November 1995 during which the Appellant filed an auxiliary request based on claim 2 submitted on 11 October 1989.

VI. The submissions by the Appellant can be summarized as follows:

The requirements of Article 83 EPC were not fulfilled because the colour measuring method recited in claim 1 was so inaccurate that it was impossible to determine with certainty which material came within the claim, ie., said colour measuring method was not sufficiently reliable for an unequivocal determination of the parameters L, a, b. Therefore, since the skilled person could not determine which product satisfied the claims, there existed a fundamental impossibility to carry out the invention. In support of the above line of argument, an experimental test report established by Dr. Zijderveld (document (5)) was provided. In the test, four previously calibrated Hunterlab meters A, B, C and D gave different values for L, a and b and thus this result showed that the Hunterlab colorimeter used according to the patent in suit was a good instrument to determine relative changes in the course of production, as long as only one colorimeter was used, since it gave a standard deviation of 0.1 only. However, when two or more colorimeters were used, there was no correlation between them. As a consequence, the skilled person wishing to reproduce the invention was prevented from doing so by the impossibility of establishing which colorimeter was wrong and which was correct.

To examine inventive step (Article 56 EPC) the closest prior art was considered to be the prior use of the US Cocoa Corporation product with product code USC 50-S (see document (4)), which exhibited all the parameters listed in claim 1 of the patent in suit, with the exception of the b/a ratio which was 0.72 rather than < 0.6. It was argued that there was nothing inventive in changing the b/a ratio of 0.72 of the known cocoa product USC 50-S into the ratio b/a of less than 0.6

according to the invention, because not only was USC 50-S devoid of the drawbacks pointed out by the Respondent but there were also no difficulties in bringing the b/a ratio from 0.72 to a value of less than 0.6 by conventional alkalization techniques or by mixing two or more cocoa powders. This last mentioned possibility was shown by document

(6) Experimental Report filed on 31 October 1991.

VII. As to the Article 83 EPC objection the Respondent counterargued that Dr. Zijderveld's deviations obtained with colorimeter C (document (5)) were the result of an incorrect use (wrong calibration) of the apparatus. It was impossible that colorimeter C gave in July 1987 values for L, a and b that strongly deviated from those displayed by meters A, B and D, while in September 1987 these values, as determined with the same device C, were in line with the values found with meters A, B and D. The only conclusion was that colorimeter C did not function properly in July 1987.

As to the inventive step question, it was emphasized that the material of the US Cocoa Corporation USC 50-S exhibited an orange shade linked with the b/a value of more than 0.6. Therefore, at least one drawback affected the material. In connection with the possibility of mixing two or more powders to obtain the correct b/a ratio of less than 0.6, this procedure was not recommended because, the resulting mixture, while exhibiting the advantages of the components, also shared the drawbacks thereof, since the soapy and/or salty taste dominated.

VIII. The Appellant requested that the decision of the Opposition Division be set aside and that the patent be revoked. The Respondent requested that the appeal be dismissed and, as an auxiliary request, that the patent be maintained on the basis of claim 2 submitted on 11 October 1989.

Reasons for the Decision

1. The appeal is admissible.
2. The points at issue are Articles 83 and 56 EPC, the novelty being no longer questioned by the Appellant.

Sufficiency of disclosure (Article 83, EPC)

3. There is agreement between the parties that the claimed cocoa powders may be arrived at by using conventional methods, such as those disclosed by documents (1) and (2). The objection raised by the Appellant that the patent in suit does not satisfy the requirements of Article 83 EPC, does not relate to this, but rather to the unreliability of a series of parameters recited in claim 1, namely the colour coordinates L, a and b and consequently, the ratio b/a, too. The Appellant argues that, when these colour coordinates were measured with a Hunterlab Colour Difference Meter type D25D2A as prescribed in claim 1, they were so unreliable that it was not possible to determine with certainty which material came within claim 1. Therefore, since the skilled person was prevented from establishing whether a given product satisfied the claim, there existed a fundamental impossibility to carry out the invention.

4. The Board observes that the Appellant does not seem to have experienced any uncertainty arising from the unreliability of the Hunterlab meter when faced with measuring the L, a, b and b/a values of the cocoa powder Berisford D and of a cocoa powder mixture comprising Berisford D (53.3%), GT78 (44.2%) and GP80A (2.5%) (see Experimental Report (6)). Document (6) indeed ends with a sentence "This experiment **clearly** shows that..." (emphasis added). Here the Appellant obviously relied on the measured parameters L, a, b and b/a. The Board finds it equally difficult to believe that the Appellant might have succeeded in turning the cocoa powder Berisford D with a b/a ratio of 0.66 into a mixture with a b/a ratio of 0.59, had the colour measures been affected by unreliability.

5. Furthermore, the Appellant argues, although in the context of the inventive step question (see point 14 *infra*), that the closest prior art underlying the present invention is represented by the prior use of the U.S. Cocoa Corporation product USC 50-S (see document (4)), because this product measured according to the method recited in claim 1 is found to differ from the material claimed in the patent in suit by the b/a ratio which is outside the claim. The Appellant was again in a position to determine with certainty whether a commercial product fell within or outside claim 1 of the patent in suit.

6. Also document (3), which a cocoa manufacturer provided, is no proof for any unreliability of the Hunterlab D25D2A Meter in measuring the colour coordinates L, a, b and b/a. The cocoa firm did not avail of the Hunter D25D2A device, but as soon as it borrowed one, it was able to establish that its cocoa products termed N, D, R, and Z did not fall under the scope of claim 1 of the patent in suit (*loc. cit.*, see Table 1) but that some

mixtures of R, N and Z did (*loc. cit.*, see Table 2). This evidence does not support the Appellant's argument that the skilled person using a Hunterlab D25D2A Meter would not be able to establish with certainty whether a given cocoa product comes within or outside claim 1 of the patent in suit.

7. Turning to document (5) reporting L-, a- and b-values obtained by Dr Zijderveld, these are, in the Board's judgement, to be carefully analyzed. It becomes apparent upon reviewing Dr Zijderveld's values that meter C is not in line with meters A, B and D, which in the July series gives darker, more reddish and more bluish values for L, a and b, respectively, when compared with meters A, B and D. In the September series it yields greener and more bluish values for a and b, respectively, in comparison with meters A, B and D. The Board concludes that the different behaviour of meter C in the July and September series is not impossible, as the Respondent argues, but it might reflect a different calibration method, and in fact Dr Zijderveld applied different calibration methods (see sections 5 and 6 of document (6)).

The L-, a- and b-values read on meters A, B and D are mutually consistent and fall within a tolerance of ± 0.3 around the mean value for the three meters. For the sake of simplicity, this Board's finding is illustrated below for cocoa powder I only, but it should be understood that it extends to cocoa powders II to VII as well:

Mean value of L = $1/3(19.5 + 19.2 + 19.0) = 19.2$

Interval of variation with a tolerance of $\pm 0.3 = 19.5$
to 18.9

L-values read on meters A, B and D, respectively: 19.5,
19.2, 19.0

Mean value for a = 10.3

Interval of variation with a tolerance of $\pm 0.3 = 10.0$
to 10.6

a-values read on meters A, B and D, respectively: 10.2,
10.2, 10.5

Mean value for b = 8.9

Interval of variation with a tolerance of $\pm 0.3 = 8.6$ to
9.2

b-values read on meters A, B and D, respectively: 9.1,
9.0, 8.7.

The above calculation shows that meters A, B and D perform satisfactorily because they yield L-, a- and b-values falling within a still acceptable tolerance of ± 0.3 around the average value, which tolerance is slightly larger than the experimental deviation reported by the Hunterlab Society (± 0.2) (see the Respondent's submission in the opposition phase of 1 March 1988, page 2). A slight drop in reliability as reflected by a slight increase of 0.1 unit in the experimental deviation is tolerable and thus, in the Board's opinion, meters A, B and D reflect the availability of reliable instruments.

8. The Appellant argued at the oral proceedings that cocoa manufacturers usually have only one meter, so that it is impossible to know in advance whether it performs well or not. The Board disagrees. In the present case it has been shown that only one colorimeter (ie., colorimeter C of document (6)) was flawed out of 7 colorimeters (ie., those of documents (4) and (3) and meters A, B, C and D of document (6)). One colorimeter that went wrong in some unspecified way over a total of seven is, in the Board's view, not sufficient proof of the above

argument. The Board therefore does not agree to Dr. Zijderveld's general conclusion drawn in Section 8 of document (6) that the Hunterlab colorimeter is not suitable for determining the colour of a cocoa powder as a definite value.

9. The Respondent admits that a product fulfilling the requirements of claim 1 might also be arrived at by mixing two or more cocoa powders of the prior art, eg., a dark-brown to black cocoa powder with a lighter powder however, he also emphasizes that this route to the claimed product should be avoided because the adverse organoleptic properties of the dark-brown to black cocoa powder would prevail. This fact, though, is no reason to objecting claim 1 under Article 83 EPC on the grounds that it may cover inoperable embodiments. In fact, by virtue of decision T 292/85 (OJ EPO 1989, 275, see point 3.2) the unsuitability of some methods for arriving at the claimed cocoa powders is immaterial to the effect of Article 83 EPC, as long as there are suitable methods known from the disclosure of the invention or common general knowledge (see eg., documents (1) and (2)) for achieving the invention.
10. Therefore, in the Board's judgement, the patent in suit satisfies the requirements of Article 83 EPC.

Inventive step (Article 56, EPC)

Closest prior art

11. An intense red-brown colour and high colouring capacity are obtained by a well-known process called "alkalization" or "Dutch processing" of cocoa, which process essentially consists of adding up to 5% w/w of an alkali (K_2CO_3 , KOH etc) to the raw cocoa, which originally exhibits an orange colour. However, the

strong alkalization needed for the above purpose is linked with a series of disadvantages, namely a strong alkaline and salty taste for the cocoa powder as such and poor crumb structure and soapy flavour for the foodstuffs including said powder. There is agreement between the parties, and the Board agrees as well, that the closest prior art is represented by the prior use of the US Cocoa Corporation product with product code USC 50-S (see document (4)), which exhibits all the parameters listed in claim 1 of the patent in suit, with the exception of the b/a ratio which is 0.72 rather than less than 0.6 as recited in claim 1. This higher b/a ratio is responsible for the drawback that an orange shade affects the product. Thus, there is a great need for cocoa powders with intense red-brown colour and a great colouring capacity reflecting the fact that red-brown cocoa is more attractive than eg. orange cocoa, since the public associates a chocolate taste with a dark red-brown colour rather than with an orange shade, and that a high colouring capacity is desirable because it is possible to colour eg., milk, ice cream or cakes with less cocoa powder.

Problem to be solved

12. In the light of this prior art the problem to be solved is thus the provision of a cocoa powder with the desired colour and without salty taste and/or soapy flavour.

Solution to the problem

13. The solution lies in the fine tuning of a series of parameters during the preparation of cocoa. In accordance with claim 1 this fine tuning should be performed in such a way that the colour parameters L, a, b, measured with a Hunterlab colorimeter D25D2A should be: $9.0 < L < 14.0$, $4.0 < a < 8.0$, $2.0 < b < 6.0$, $b/a <$

0.6; the pH should be < 7.5 ; the ratio of pH/alkalinity of the ash should be < 0.046 , while no more or other acid radicals should be present than those by nature present in fermented cocoa. Having regard to the experimental evidence disclosed in the patent in suit itself, the Board is satisfied that the present invention solves the above problem and that, when the alkalization process is performed in such a manner, the cocoa powder exhibits the parameters recited in claim 1 and the desired intense red-brown colour and the high colouring capacity are obtained, however, without the above drawbacks.

14. The Appellant essentially argues that there is nothing inventive (i.e., it is routine work for the skilled person) in changing the b/a ratio of 0.72 of the known cocoa product USC 50-S into the ratio b/a of less than 0.6 according to the invention, because not only was USC 50-S devoid of the drawbacks pointed out by the Respondent but there were also no difficulties in bringing the b/a ratio from 0.72 to a value of less than 0.6 by conventional alkalization techniques.

15. The Board, however, cannot follow the above reasoning of the Appellant. The first step for arriving at the claimed invention was already the selection of a reliable measuring method for the colour of the cocoa powder. The prior art colour measuring techniques were not satisfying because they were either based on the mere visual colour assessment or on the old X-, Y-, Z-colour system dating back to the thirties. According to claim 1 of the patent in suit the colour of the cocoa powder should be measured according to a method developed by R.S Hunter (see the patent in suit, column 2, lines 15 to 28). The Opponents at the opposition stage and the Appellant in the appeal proceedings have strongly criticized the colour measuring

method adopted in the present invention. Opponent O1 (see submissions of 5 June 1987, paragraph bridging pages 4 and 5) stated " Measurement...as the patentee does...has not been approved, nor proposed for international standardisation, may be valuable, but can only have local acceptation." The Appellant's expert, Dr. Zijderveld (see document (5), paragraph 8) declared: "...up to now no cocoa powder producer has used Hunterlab (or other) colour values in its product specifications". These facts suggest that the skilled person would not have turned to colour measuring system of the present invention and thus the Board already sees an inventive contribution in the selection of the more reliable although not yet internationally accepted colour measuring technique of the patent in suit.

16. The second step leading to the claimed cocoa powders consisted of fine tuning a series of colour- , pH- parameters as well as the acidity of the powder and the ratio of pH/alkalinity of the ash. There was no prior art suggesting a correlation between fine tuning of a series of parameters and the advantageous organoleptic properties of the product. Since no cocoa manufacturer had previously adopted the L, a, b colour measuring system, there could a *fortiori* be no prior art suggesting a correlation between the fine tuning of a series of parameters including the L-, a- and b- parameters and the advantageous organoleptic properties of the so fine-tuned cocoa powder.

17. Thus, before the priority date of the patent in suit the skilled person could not be aware of the technical teaching disclosed by the patent in suit and could not have any incentive for fine tuning the parameters of a known cocoa powder as recited in claim 1. Even by starting from the prior art USC 50-S product, known a *posteriori* to share all the technical features of the

claimed cocoa powders, excepted the b/a ratio, there also existed no technical reason for lowering said b/a ratio to a value of less than 0.6.

18. Even by conceding that, despite the absence of any pointer in that direction, the skilled person would have performed a series of trial and error tests on the USC 50-S product of document (4) in order to find an advantageous compromise between the colour and organoleptic properties of the product, he would not have had any reasonable expectation of success. This is because the colour parameters, the pH, the ratio of pH/alkalinity of the ashes were known to be intimately interconnected. The skilled person could not have reasonably expected that by altering the b/a parameter, the remaining parameters of the USC 50-S product would have not varied from their initial values in an undesired way, thus leading to a product not solving the problem. At the oral proceedings, the Appellant was not in a position to show that an overall shift of the other parameters would not have occurred upon altering the b/a ratio.

19. When the skilled person's reluctance to adopt the L, a, b colour measuring system (see *supra*) is added to the poor expectations of success and the uncertainties arising upon changing the b/a ratio or any other parameter of the USC 50-S product of document (4) or of any other product, the Board must conclude that the skilled person would not have arrived at the claimed product.

20. Claim 1 is thus found to satisfy the requirements of Article 56 EPC. Claim 1 being allowable, the same applies to Claim 2, being an independent product-by-process claim comprising all the features of claim 1, and to claims 3 to 7, dependent on claims 1 and 2.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:



L. McGarry

The Chairwoman



U. M. Kinkeldey