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**Datasheet for the decision  
of 27 January 2023**

**Case Number:** T 1398/19 - 3.3.06

**Application Number:** 12820381.7

**Publication Number:** 2738243

**IPC:** C11B3/10, A23D9/02, B01J20/12

**Language of the proceedings:** EN

**Title of invention:**  
PURIFIED GLYCERIDE COMPOSITION AND METHOD FOR PRODUCING  
PURIFIED GLYCERIDE COMPOSITION

**Patent Proprietor:**  
The Nisshin Oillio Group, Ltd.

**Opponent:**  
Cargill, Incorporated

**Headword:**  
Nisshin/Purified palm oil

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

**Keyword:**  
Inventive step - (no)

**Decisions cited:**

**Catchword:**



**Beschwerdekammern**

**Boards of Appeal**

**Chambres de recours**

Boards of Appeal of the  
European Patent Office  
Richard-Reitzner-Allee 8  
85540 Haar  
GERMANY  
Tel. +49 (0)89 2399-0  
Fax +49 (0)89 2399-4465

Case Number: T 1398/19 - 3.3.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.06**  
**of 27 January 2023**

**Appellant:** The Nisshin OilliO Group, Ltd.  
(Patent Proprietor) 23-1, Shinkawa 1-chome  
Chuo-ku  
Tokyo 104-8285 (JP)

**Representative:** Dehns  
St. Bride's House  
10 Salisbury Square  
London EC4Y 8JD (GB)

**Respondent:** Cargill, Incorporated  
(Opponent) 15407 McGinty Road West  
Wayzata, MN 55391 (US)

**Representative:** Elseviers, Myriam  
Cargill R&D Centre Europe BVBA  
Bedrijvenlaan 9  
2800 Mechelen (BE)

**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 1 March 2019  
revoking European patent No. 2738243 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman** J.-M. Schwaller  
**Members:** S. Arrojo  
J. Hoppe

## Summary of Facts and Submissions

- I. An appeal was filed by the patent proprietor contesting the decision of the opposition division to revoke European patent No. 2 738 243 for non-compliance with the requirements of Article 56 EPC.
- II. In its statement of grounds of appeal, the appellant requested to set aside the above decision and to maintain the patent on the basis of the claims of the main request or, alternatively, of one of auxiliary requests 1 to 5, all requests having been filed on 11 July 2019 with the grounds of appeal.
- III. Claim 1 of the **main request** reads:

*"1. A method for producing a purified palm oil, characterized by comprising an alkaline white clay treatment step wherein a palm oil, which has not been subjected to a deodorization step, and an alkaline white clay are brought into contact with each other, wherein the amount of alkaline white clay used in the alkaline white clay treatment step is 0.5% to 3% by mass based on the amount of said palm oil, wherein the alkaline white clay has the following composition: 50 to 60% by mass of SiO<sub>2</sub>, 10 to 20% by mass of Al<sub>2</sub>O<sub>3</sub>, 3 to 10% by mass of Fe<sub>2</sub>O<sub>3</sub>, 2 to 9% by mass of MgO and 1 to 5% by mass of CaO, wherein the alkaline white clay treatment step is a bleaching step, and a deodorization step is further included after the alkaline white clay treatment step, wherein the deodorization step is performed under temperature conditions of 100 to 260°C."*

Claim 1 of **auxiliary request 1** differs therefrom by the additional feature that *"the method further comprises a re-bleaching step after the deodorization step, wherein the re-bleaching step is performed by bringing into contact with an acid clay"*.

Claim 1 of **auxiliary request 2** corresponds to that of the main request with the additional feature that *"the alkaline white clay has a pH of 8.5 or higher when provided as an aqueous solution"*.

Claim 1 of **auxiliary request 3** corresponds to a combination of the independent claims 1 of auxiliary requests 1 and 2.

Claim 1 of **auxiliary request 4** corresponds to that of the main request, wherein the deodorisation temperature is performed *"at a temperature of 150 to 230°C"* (instead of 100 to 260°C).

Claim 1 of **auxiliary request 5** corresponds to a combination of the independent claims 1 of auxiliary requests 2 and 4.

- IV. In its reply, the opponent and respondent requested that the appeal be dismissed. It also requested not to admit document D15 and auxiliary requests 2, 4 and 5 into the appeal proceedings. It argued *inter alia* that the subject-matter of claim 1 of the main, 4<sup>th</sup> and 5<sup>th</sup> auxiliary requests was not inventive in view of document **D8** (M. R. Ramli et al, *"Effects of Degumming and Bleaching on 3-MCPD Esters Formation During Physical Refining"*, J. Am. Oil Chem. Soc., 88, (2011)) in the light of **D14** (O.G. Caldwell and C.E. Marshall, *"A study of some chemical and physical properties of the clay minerals nontronite, attapulgite and*

saponite", (1942)); that the subject-matter of claim 1 of auxiliary request 2 was not inventive in view of D8 combined with **D9** (D.R. Taylor. "*Bailey's Industrial Oil and Fat Products*", 6<sup>th</sup> Ed., 2011, pp. 285-322) in the light of D14 or **D4** (G. Wypych, "*Handbook of Fillers*", (2010), ChemTec Publishing); and that the subject-matter of claim 1 of auxiliary requests 1 and 3 was not inventive in view of D8 combined with **D6** (WO 2011/069028 A1) in the light of D14.

- V. In its preliminary opinion, the board concluded that none of the claims requests on file appeared to meet the requirements of Article 56 EPC.
- VI. Since with letter of 10 January 2023 the proprietor-appellant withdrew its request to hold oral proceedings, the board is in a position to issue a written decision without holding oral proceedings.

## **Reasons for the Decision**

### 1. Main request - Inventive step

The Board has concluded that the requirements of Article 56 EPC are not fulfilled for the following reasons:

- 1.1 The closest prior art is represented by document D8, which discloses (page 1839, left column) a method for producing purified palm oil comprising a bleaching step with 1% of clay selected from acid activated clays or natural clays, followed by a deodorisation step performed at 260°C. This document also indicates (page 1842, right column; table 2 and figures 2 and 3) that clays with higher pH values lead to lower

concentrations of 3-chloropropane-1,2-diol esters (hereinafter referred to as 3-MCPD), and that best results are obtained when using natural attapulgite with a pH of 7.7 as bleaching clay.

- 1.1.1 The appellant argued (point 2.1.4 of the grounds of appeal) that document D8 did not disclose an alkaline white clay with the composition specified in claim 1. While D8 established a correlation between the pH of the clays and the formation of 3-MCPD, the skilled person would question the validity of this trend in the light of the disclosure in **D7** (WO 2010/063450 A1), which showed (table 1) that acid-activated clays, in particular highly active bleaching earths, were the most preferred options. Furthermore, D8 compared two different clays (attapulgite and bentonite) and tested a limited pH range (5.3-7.7), wherein 5 out of the 6 clays were acid bentonite and the only clay having an alkaline pH was attapulgite. There was thus no solid evidence to support the conclusion that an alkaline pH would lead to better results, so the skilled person would have no motivation to select a method using alkaline clay as a starting point.
- 1.1.2 While the board agrees that document D8 does not directly and unambiguously disclose the composition of the clay defined in claim 1, it is apparent that the natural attapulgite clay (with a pH of 7.7) disclosed therein represents an alkaline clay (i.e. a clay with a pH higher than 7). The appellant's justification for why a skilled person would not consider this alkaline clay as a starting point is not convincing, because D8 clearly states that clays with higher pH reduce 3-MCPD formation and that natural attapulgite provides the best results (see table 2 and fig. 2).

- 1.1.3 The board therefore concludes that the closest prior art is a method of treating palm oil with an attapulgite alkaline clay (pH 7.7) as disclosed in D8, from which the subject-matter of claim 1 **differs** in the specific composition of the clay.
- 1.2 According to par. [0007] of the patent, the object of the invention is to *"provide a purified glyceride composition containing less amount of 3-chloropropane-1,2-diol and a fatty acid ester of 3-chloropropane-1,2-diol..."*.
- 1.2.1 To support the alleged reduction of 3-MCPD, examples 1 to 6 show a reduction of the 3-MCPD concentration when an alkaline clay is used instead of an acid clay (comparative examples 1, 2 and 3).
- 1.2.2 The appellant argued that the examples in the patent demonstrated that the use of an alkaline white clay according to claim 1 led to a reduction in the formation of 3-MCPD. The problem solved was therefore to provide a method with a reduced formation of 3-MCPD, as proposed in the patent.
- 1.2.3 The board disagrees with this argumentation, because according to the examples and to par. [0047] of the patent, the reduction in the formation of 3-MCPD is attributed to the use of an alkaline clay instead of an acid clay. However, the use of an alkaline clay is anticipated in the closest prior art, so the solution proposed in claim 1 (i.e. the differentiating feature) only relates to the actual composition of the clay. In this respect, the board notes that the patent does not indicate that the composition of the clay plays any role in reducing the formation of 3-MCPD or in providing any other technical effect.



- 1.2.4 It follows that the problem to be solved must be reformulated in a less ambitious way than the one presented in the patent. In the present case, the invention is considered to solve the problem of providing an alternative method for the production of purified palm oil.
  
- 1.3 As to the question whether the proposed solution is obvious or not from the known prior art, document D14 discloses (table 3) the composition of five natural attapulgites, wherein two of them ("Attapulgius Molmoiron France (16)" and "Attapulgius Georgia (35)") have compositions falling within the claimed ranges (note that the 9.16% concentration of MgO in Attapulgius Georgia (35) can be rounded off to 9% because the claim does not define decimals). In view of this information, in the board's view, it appears that the subject-matter of claim 1 would be anticipated by simply working with known natural attapulgites.
  - 1.3.1 The appellant argued (point 2.1.7 of the grounds of appeal) that D14 related to mineralogy and was published nearly 70 years before the priority date of the patent, so that it was questionable whether a person skilled in the art would have consulted its contents in order to solve the underlying technical problem. In any case, even if documents D8 and D14 were combined, there would be no reason for the skilled person to select the clays in D14 falling within the scope of protection of claim 1, so this combination would not inevitably result in a method as defined in claim 1. Consequently, the subject-matter of claim 1 was not obvious in view of the cited prior art.
  
  - 1.3.2 The board first notes that the underlying inventive step argumentation is not based on combining the

teachings of D8 and D14 but on illustrating the meaning of the feature "attapulгите" in document D8 (i.e. the usual compositions of natural attapulгите) in the light of D14. It is therefore irrelevant whether the skilled person would have consulted document D14 or not, as this would not have modified the meaning of the term attapulгите in this document.

Moreover, since the only problem solved by the invention is that of proposing an alternative method for producing purified palm oil, the relevant question is not - as the appellant implies - whether the skilled person would have found reasons to select a clay composition falling within the claim at issue among the different alternatives, but whether by working with natural attapulгите as proposed in D8, the skilled person would have fallen within the scope of protection in an obvious manner, or in other words, whether by exploring the different natural attapulгites with their respective compositions, the skilled person would have worked with at least one alternative falling within the scope of claim 1.

It is apparent in view of D14 that several of the alternative natural attapulгites (not all, as some do not include CaO in their composition) fall within the scope of the ranges defined in claim 1. The board therefore concludes that a skilled person would arrive at the subject-matter of claim 1 by merely exploring alternative natural attapulгites.

- 1.4 It follows from the above considerations that the subject-matter of claim 1 at issue is obvious in view of D8 in the light of D14.

2. Auxiliary requests - admittance

Since the auxiliary requests corresponds to those on which the contested decision is based,, they cannot be excluded under Article 12(4) RPBA 2007 as requested by the respondent.

3. Auxiliary request 1 - inventive step

3.1 Claim 1 of this request differs from that of the main request in that *the method further comprises a re-bleaching step after the deodorization step, wherein the re-bleaching step is performed by bringing into contact with an acid clay.*

3.2 As in the main request, the method of treating palm oil with an alkaline natural attapulgite as proposed in D8 is considered to represent the closest prior art.

3.3 As regards the problem underlying the invention, the appellant argued that the results in examples 4 to 6 of the patent demonstrated that the use of an alkaline clay surprisingly reduced the formation of 3-MCPD precursors, such that 3-MCPD formation was not only reduced after a single deodorisation step but also in processes with additional re-deodorisation and re-bleaching steps. Consequently, the inventiveness of this claim was further supported by an additional surprising effect.

3.3.1 In the board's view, the above argumentation relies on the assumption that document D8 does not anticipate the use of an alkaline clay as defined in claim 1. However, as indicated in the discussion of the main request, document D8 does not only disclose a bleaching step using an alkaline clay, but furthermore teaches that

clays with higher pH are more effective in reducing the formation of 3-MCPD when purifying palm oil (which essentially corresponds to the allegedly inventive contribution of the invention according to the appellant).

Since the closest prior art anticipates the use of an alkaline clay, the only technical effect which can be plausibly associated with the addition of a re-bleaching step using an acid clay appears to be to further purify the palm oil. The problem solved by the invention is therefore to provide an alternative method for further purifying the palm oil.

- 3.4 As to the question whether, the proposed solution was obvious from the know prior art, document D6 teaches (see for example table 1D on page 11) - as pointed out by the opposition division - that the addition of a re-bleaching step to a previously bleached and deodorised palm oil reduces the concentration of glycidyl esters.

It also appears self-evident for the board that introducing further bleaching steps will improve the purity of the oil, since this is basically what such steps are intended to do (i.e. adding more purifying steps obviously leads to a more purified oil).

The board therefore concludes that the subject-matter of claim 1 at issue is not inventive in view of D8 (in the light of D14) combined with the teachings of D6.

4. Auxiliary request 2 - Inventive step
- 4.1 The subject-matter of claim 1 at issue corresponds to that of the main request with the additional feature

that *the alkaline white clay has a pH of 8.5 or higher when provided as an aqueous solution.*

- 4.2 As in the main request, the method of treating palm oil with an alkaline natural attapulgite as proposed in D8 is considered to represent the closest prior art.
- 4.3 As regards the problem underlying the invention, the board notes preliminary that the pH of 8.5 or higher is regarded as a further differentiating feature with respect to D8, as the attapulgite in this document has a pH of 7.7.
- 4.3.1 In view of the examples in the patent (as well as the contents of D8), the board considers it plausible that the use of clays having a higher pH would give rise to a reduced formation of 3-MCPD, so that the problem solved by the invention can be seen in the provision of a method for producing purified palm oil with a reduced formation of 3-MCPD.
- 4.4 As regards the obviousness of the solution, the board notes that, as indicated in the discussion of the main request, document D8 explicitly teaches (page 1842, right column; table 2 and figures 2 and 3) that clays having higher pH values lead to a reduced formation of 3-MCPD in the purified palm oil.
- 4.4.1 The appellant argued that the tests in D8 did not validly demonstrate a clear effect of the pH, because they only concerned a narrow pH range and there was no direct comparison between clays having different pH but the same or similar compositions.
- 4.4.2 The board does not follow this argumentation, because there is no reason to disregard a direct and clear

teaching in a document simply because the experiments used to justify the conclusions are allegedly suboptimal. In fact, the teachings in D8 could be considered to be more informative (at least in certain aspects) than those in the patent in suit, because clays with four different pH values are tested (versus two in the patent) and because D8 also provides (see page 1843) a detailed theoretical discussion of the correlation between pH values and 3-MCPD formation. There is thus no reason to conclude that a skilled person would purposefully ignore the clear teachings in D8.

Document D8 therefore provides a direct and clear hint to consider clays with higher pHs in order to reduce formation of 3-MCPD in a process for purifying palm oil. Thus, it would be obvious for the skilled person to solve the underlying technical problem by exploring natural attapulgites having higher pH values, which would automatically lead to the subject-matter of claim 1, because according to document D4 (see page 28), the pH range of water suspensions of attapulgite is 6.5-10.

4.5 In the board's view, the subject-matter of claim 1 at issue is therefore obvious and thus not inventive in view of D8 in the light of D14 and D4, so that the thus claimed invention does not meet the requirements of Article 56 EPC.

5. Auxiliary request 3 - Inventive step

5.1 Claim 1 at issue is a combination of the independent claims 1 of auxiliary requests 1 and 2.

5.2 As in the main request, the method of treating palm oil with an alkaline natural attapulgite as proposed in D8 is considered to represent the closest prior art.

5.3 Problem solved by the invention

The board has concluded that the features "*clay has a pH of 8.5 or higher*" and "*the method further comprises a re-bleaching step after the deodorization step*" do not provide a combined effect. The problem solved is therefore a simple addition of those solved in auxiliary requests 1 and 2, namely the provision of a method for further purifying palm oil while reducing the formation of 3-MCPD.

5.4 Obviousness of the solution

Having established that using clays with a pH of 8.5 to reduce the formation of 3-MCPD is obvious in view of the teachings in D8 (in the light of D14 and D4), and that adding a re-bleaching step to further purify the oil is obvious in view of D6, it follows that the same arguments and conclusions (i.e. those presented for auxiliary requests 1 and 2) apply to claim 1 at issue, which is thus considered to be obvious and not inventive in view of D8 combined with D6 in the light of D14 and D4.

The requirements of Article 56 EPC are therefore not met.

6. Auxiliary request 4 - Inventive step

6.1 Claim 1 at issue corresponds to that of the main request, wherein the deodorisation temperature is performed at a temperature of 150 to 230°C.

6.2 As in the main request, the method of treating palm oil with an alkaline natural attapulgite as proposed in D8 is considered to represent the closest prior art.

6.3 Problem solved by the invention

The defined temperature range for the deodorisation step represents a further differentiating feature with respect to D8 (which discloses a deodorisation step at 260°C). Example 4 of the patent demonstrates that the formation of 3-MCPD decreases when lower deodorisation temperatures are used. It is however noted that the specific range of 150°C to 230°C has not been linked to any additional technical effect (beyond the reduction in the formation of 3-MCPD resulting from the lower temperatures), so this is considered to simply represent an appropriate range for the deodorisation step. The invention thus solves the problem of proposing a palm oil purifying method with a reduced formation of 3-MCPD.

6.4 Obviousness of the solution

6.4.1 The appellant argued (point 2.5.2 of the grounds of appeal) that the decrease in the formation of 3-MCPD observed in example 4 (i.e. when the deodorisation temperature was lower) represented an additional unexpected technical effect of the invention. The requirements of Article 56 EPC were therefore complied with.

6.4.2 The board does not follow this argumentation, as D8 (page 1840, left column) explicitly teaches that the formation of 3-MCPD increases with higher deodorisation temperatures. Selecting a higher or a lower temperature would therefore be a matter of balancing the



effectiveness of the deodorisation step and the formation of 3-MCPD. In any case, when seeking to reduce the formation of 3-MCPD, it would be obvious for the skilled person to explore lower deodorisation temperatures.

Since, as indicated above, the specific range of 150°C to 230°C is simply considered to provide suitable values for the deodorisation step, the board finds that the skilled person would arrive at values falling within this range without exercising inventive skills by simply exploring lower temperatures that are still suitable for the deodorisation step.

The board therefore concludes that the subject-matter of claim 1 is obvious in view of D8 (in the light of D14).

7. Auxiliary request 5 - Inventive step

7.1 Claim 1 at issue is a combination of the independent claims 1 of auxiliary requests 2 and 4.

7.2 As in the main request, the method of treating palm oil with an alkaline natural attapulgitic as proposed in D8 is considered to represent the closest prior art.

7.3 Problem solved by the invention

The Board has concluded that the features "*clay has a pH of 8.5 or higher*" and performing the deodorisation step at a temperature "*of 150°C to 230°C*" contribute to the reduction in the formation of 3-MCPD. There is however no indication that these features provide a synergistic effect (i.e. an effect going beyond the mere addition of the individual effects). The invention

at issue therefore solves the same problem as those in auxiliary requests 2 and 4, namely proposing a palm oil purifying method with a reduced formation of 3-MCPD.

#### 7.4 Obviousness of the solution

Having established that using clays with a pH of 8.5 and selecting a deodorisation temperature of 150°C to 230°C are obvious features to reduce the formation of 3-MCPD in view of the teachings in D8 (in the light of D14 and D4), it follows that the same arguments and conclusions (i.e. those presented for auxiliary requests 2 and 4) apply to claim 1 at issue, which is thus not considered to be inventive in view of D8 in the light of D14 and D4.

The requirements of Article 56 EPC are therefore not met.

8. Since none of the claims requests on file meets the requirements of Article 56 EPC, the appeal is to be dismissed. There is therefore no need to address the additional objections or the question of admittance of document D15, as this document is not relevant for the board's conclusions.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated