

**Internal distribution code:**

- (A) [ - ] Publication in OJ  
(B) [ - ] To Chairmen and Members  
(C) [ - ] To Chairmen  
(D) [ X ] No distribution

**Datasheet for the decision  
of 25 April 2018**

**Case Number:** T 2135/15 - 3.3.03  
**Application Number:** 10731239.9  
**Publication Number:** 2388278  
**IPC:** C08B37/06, A23L1/035, A23L1/05,  
B01F17/36  
**Language of the proceedings:** EN

**Title of invention:**

MODIFIED SUGAR BEET PECTIN AND METHOD FOR USING THE SAME

**Applicant:**

San-Ei Gen F.F.I., INC.

**Relevant legal provisions:**

EPC Art. 84, 56, 111(1)

**Keyword:**

Essential features missing (no)  
Inventive step - reasons for the decision do not take into  
account all features of the claim  
Remittal (yes)

**Decisions cited:**

G 0001/04, T 2001/12



**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 2135/15 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 25 April 2018**

**Appellant:** San-Ei Gen F.F.I., INC.  
(Applicant) 1-1-11, Sanwa-cho  
Toyonaka-shi, Osaka 561-8588 (JP)

**Representative:** Müller-Boré & Partner  
Patentanwälte PartG mbB  
Friedenheimer Brücke 21  
80639 München (DE)

**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 7 May 2015  
refusing European patent application No.  
10731239.9 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman** M. C. Gordon  
**Members:** F. Rousseau  
R. Cramer

## Summary of Facts and Submissions

I. The appeal lies from the decision of the examining division posted on 7 May 2015 to refuse European patent application No. 10 731 239.9, filed as International application PCT/JP2010/050243. The decision was based on the sole request then on file, i.e. claims 1 to 13 as submitted with letter of 11 March 2014.

II. Claim 1 of that request read as follows:

"1. Modified sugar beet pectin comprising a water-insoluble component, the water-insoluble component absorbing water to form a hydrogel, when the modified sugar beet pectin is dispersed in water at 25 °C to a final concentration of 0.1 mass%, wherein the modified sugar beet pectin has a weight average molecular weight of at least  $6.5 \times 10^5$  g/mol, as determined by homogenizing a 1.5 mass% aqueous dispersion of the modified sugar beet pectin at a pressure of 50 MPa and subjecting the homogenized dispersion to size-exclusion chromatography coupled with a multi-angle light-scattering detector and a refractive index detector, and the modified sugar beet pectin has a root mean square radius of gyration of at least 50 nm, as determined by homogenizing a 1.5 mass% aqueous dispersion of the modified sugar beet pectin at a pressure of 50 MPa and subjecting the homogenized dispersion to size-exclusion chromatography coupled with a multi-angle light-scattering detector and a refractive index detector."

III. The contested decision referred to the following documents:

D1: P.A. Williams et al: "Elucidation of Emulsification Properties of Sugar Beet Pectin", Journal of Agricultural and Food Chemistry, Vol. 53, no. 9, pages 3592-3597.

D2: US 5,008,254

Experimental Reports 1 and 2 submitted with letter of 19 September 2013.

IV. According to the reasons for the decision, the technical problem defined in the application, i.e. improving emulsifying ability and emulsion stability, was solved by the step of heating the aqueous dispersion of sugar beet pectin at 60 to 100°C. This measure, however, was absent from claim 1, which therefore did not meet the requirements of Article 84 EPC, taken in combination with Rule 43(1) and (3) EPC. Moreover, the subject-matter of claim 1 lacked an inventive step over D1 or D2, each of which represented the closest prior art. The experimental evidence on file (Table 2 of the application and Experimental reports 1 and 2) could not demonstrate the alleged improvement of emulsifying properties over the closest prior art, since such effect could not be unambiguously associated with the identified distinguishing features of weight average molecular weight and the root mean square radius of gyration as defined in claim 1. Accordingly, the objective problem lay in the provision of an alternative sugar beet pectin. Without a corresponding surprising technical effect the selection of said parameters was considered to be arbitrary, and thus obvious. The subject-matter of claim 1 of the sole claim request therefore lacked an inventive step.

- V. The decision was appealed with letter of 6 July 2015 and the statement setting out the grounds of appeal was submitted with letter of 4 September 2015 to which were attached a main request and auxiliary requests I and II. The claims of the main request were indicated to correspond to those on the basis of which the contested decision was taken.
- VI. The appellant essentially argued that the present invention did not focus only on the weight average molecular weight or the root mean square radius of gyration recited in claim 1, but demonstrated with Table 2 of the application that when the modified sugar beet pectin had in addition a specific water-insoluble component as defined in claim 1, the modified sugar pectin produced the desired effect, i.e. excellent emulsifying properties. Moreover, the analysis of inventive step in the contested decision starting from either D1 or D2 as closest prior art also did not take into account the feature of the specific water-insoluble component defined in claim 1, which feature in combination with the weight average molecular weight and the root mean square radius of gyration recited in claim 1 brought about the technical effect of the invention. In addition, the processes described in D1 and D2 did not lead to the production of a water-insoluble component as recited in claim 1, as had been shown with Experimental Reports 1 and 2. Accordingly, the request to set aside the contested decision was justified.
- VII. With a communication dated 9 March 2018, sent in advance by facsimile on 6 March 2013, the Board informed the appellant that it intended to set aside the decision under appeal and remit the case to the examining division for further prosecution.

- VIII. With letter of 8 March 2018 the applicant withdrew the request for oral proceedings.
- IX. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 13 according to the main request, or alternatively on the basis of claims 1 to 13 according to auxiliary request I, or on the basis of claims 1 to 12 according to auxiliary request II, all requests submitted with the statement setting out the grounds of appeal.

### **Reasons for the Decision**

1. Claim 1 of the main request, which was found by the examining division to contravene the requirements of Articles 84 and 56 EPC, is based on a combination of claims 1, 3 and 4 as filed. The Board is therefore satisfied that claim 1 of the main request meets the requirements of Article 123(2) EPC.

#### *Lack of essential features (Article 84 EPC)*

2. Article 84 EPC requires that the claims are clear, concise and supported by the description. According to established case law of the boards, Article 84 EPC is to be interpreted as requiring that an independent claim must recite all the essential features which are necessary for clearly and completely defining a particular invention (see opinion of the Enlarged Board of Appeal G 1/04, point 6.2.4 for the reasons). All features which are necessary for solving the technical problem with which the application is concerned have to be regarded as essential features (see Case Law of the

Boards of Appeal, 8<sup>th</sup> edition 2016, II.A.3.2). Hence, if the claims do not comprise a feature which is described in the application as essential, or which is disclosed in the description as being indispensable for solving the problem defined in the application, then an objection under Article 84 EPC may properly arise (see decision T 2001/12 of 29 January 2015, point 4.2 of the reasons).

- 2.1 Claim 1 of the pending main request is directed to a modified sugar beet pectin. According to paragraph [0006] of the application as filed, in line with paragraphs [0001] and [0004] the present invention aims at providing a modified sugar beet pectin that can provide an emulsion with excellent properties, particularly emulsion stability, compared to known generally available sugar beet pectin. The claim does not contain the definition of the heating step at 60 to 100°C of the aqueous dispersion of sugar beet pectin, a step which was considered to be essential by the examining division.
- 2.2 The problem identified in above section 2.1 with which the application is concerned can be solved according to paragraphs [0007] and [0050] of the application by heating sugar beet pectin in a water-dispersed state. This heating step is indicated to lead to intermolecular or intramolecular bonding of sugar chains via a proteinaceous moiety of the molecule as a linker, which increases the amount of a hydrophobic component that is not dissolved in water when the modified sugar beet pectin is dispersed in water. As can be inferred from paragraph [0008], the heating step results in a modified sugar beet pectin which has a higher molecular weight than natural sugar beet pectin and contains a hydrophobic component (water-insoluble

component). Further according to the same paragraph "The present inventors further confirmed that when the modified sugar beet pectin having those properties is used as an emulsifier, an emulsion having a small initial particle diameter of oil droplets and high emulsion stability can be obtained due to an increased amount of adsorption of sugar beet pectin on the surface oil droplet particles. The present invention has been accomplished based on these findings." This also is repeated in paragraph [0018] "In other words, the modified sugar beet pectin of the present invention is more highly polymerized than natural ordinary sugar beet pectin, and contains a large amount of a water-insoluble hydrophobic component (water-insoluble component). It is presumed that the modified sugar beet pectin has high emulsion stability for this reason." Paragraph [0026] makes clear that the amount of water-insoluble component (hydrogel component) can be used as an indicator of the degree of modification of the modified sugar beet pectin, on which depends the ability of the modified pectin to provide the sought emulsifying properties.

- 2.3 According to paragraph [0022] and in line with the wording of present claim 1 a feature of the modified sugar beet pectin of the present invention is that it contains a water-insoluble component which absorbs water to form a hydrogel when the modified sugar beet pectin is dispersed in water at 25°C to a final concentration of 0.1 mass%. In other words claim 1 contains the feature indicated in the description to be indispensable for solving the problem defined in the application. Accordingly, the Board does not share the view of the examining division that pending claim 1 would not meet the requirements of Article 84 EPC, because it lacks an essential feature. The temperature



range of 60 to 100°C which is employed to treat the sugar beet pectin is merely a means indicated in the application to achieve the water-insoluble component. Moreover, it appears that the introduction of such a process feature for the purpose of defining the modified pectin could be held to result in a lack of clarity (see section 6.3 below).

*Novelty over D1 and D2*

3. Novelty over D1 and D2 was not contested. Neither of these prior art documents describes the parametric features recited in operative claim 1. Also, having regard to the evidence and teaching contained in the application as filed concerning the process steps required to achieve those parametric values (see in particular Table 1 on page 30 and Table 2 on page 35 and section 4.1 below) the Board has no reason to conclude that claim 1 is anticipated by any of those documents, as in particular they have not been shown to disclose the process steps necessary for obtaining the modifications of the sugar beet pectin expressed by the parametric definition contained in claim 1.

*Inventive step starting from D1 or D2 as closest prior art*

4. The Board is unable to concur with the reasoning of the examining division with respect to inventive step on the following two grounds:
  - 4.1 Firstly, the reasoning ignores the presence in claim 1 of the feature that the modified sugar beet pectin contains a water-insoluble component within the meaning of that claim. In that context the Board understands that the test indicated in claim 1 according to which a hydrogel is formed is indicative of requiring a minimum

amount of water-insoluble component in the modified pectin. As can be seen from a comparison of Examples 1 to 3 and Comparative Example 1 (see Tables 1 and 2), an increase in the heating time provides an increase in the amount of water insoluble product accompanied by an improvement of the emulsifying properties (immediately after emulsification and after 3-day preservation at 60°C). Hence, the Board does not agree with the examining division that the problem solved over D1 or D2 (should they qualify as the closest prior art, see additional comments in section 6.1 below) would be the provision of an alternative (or further) sugar beet pectin.

- 4.2 Secondly, the decision does not contain any indication as to which measures would be known to the skilled person in order to achieve the particular values of the alleged "arbitrary" parameters (weight average molecular weight and the rotation square radius), which, as can be inferred from the application, are the result of a specific treatment.
- 4.3 Accordingly, there is no justification resulting from the reasons invoked by the examining division to conclude that the subject-matter of claim 1 lacks an inventive step.
5. Hence, none of the objections raised by the examining division against claim 1 are found to be convincing.

*Remittal*

6. As explained in the communication of 9 March 2018, and agreed upon by the appellant, the Board considers it appropriate to remit the case to the department of first instance for further prosecution

(Article 111(1) EPC), because essential issues not addressed by the examining division require attention. Those issues are listed below:

- 6.1 Contrary to D1 and D2 relied upon in the contested decision as starting point for assessing inventive step, other documents cited in paragraph [0004] of the present application, in particular JP 2006-274226 A and JP 2006-274227 A, which were also cited in the written opinion of the international searching authority relating to the PCT application from which the present application originates, appear to disclose a polymerisation step of the sugar beet pectin or a treatment thereof resulting in an increase of its molecular weight. In addition at least JP 2006-274226 A appears to be concerned with the use of the resulting product as emulsifier. It is referred in this respect to paragraph [0004] of the present application, the abstract of said documents in Patent Abstracts of Japan and the written opinion of the international searching authority. There is therefore a prima facie argument that at least JP 2006-274226, if it does not disclose a modified sugar beet pectin meeting the parametric definition of present claim 1 (which might need to be assessed first) constitutes a more appropriate starting point for assessing inventive step.
  
- 6.2 Present claim 4 defines a method for producing modified sugar beet pectin solely defining the step of heating an aqueous dispersion of sugar beet pectin at a temperature of 60 to 100°C. As that step alone does not imply that a product meeting the requirements defined in claim 1 is obtained that claim would necessitate a separate assessment of its patentability. In particular the sole definition of the temperature appears to be necessary but not, on its own, sufficient to ensure

that the modification of the pectin meant to provide the beneficial effect provided by the present invention indeed occurs. Also the question might arise whether that claim contains all essential features, as it does not contain the features of the modified pectin which bring about an improvement of the emulsifying properties, namely those recited in present claim 1. Accordingly, the question would arise whether claim 4 is not to be made dependent on claim 1.

- 6.3 Claim 6 defines a modified sugar beet pectin according to any one of claims 1 to 3 prepared by the method of claim 4 or 5. The question arises whether the definition of the process steps recited in claims 4 and 5, i.e. the use of a certain temperature and of a certain concentration of sugar beet pectin during the preparation of the modified pectin, constitute recognizable features of a product as defined in present claims 1 to 3. Accordingly, the clarity of claim 6 appears to be questionable. The same would therefore apply to claim 7 as it refers to claim 6 for the definition of the emulsifier.
- 6.4 It appears that claim 9 contains all the features of claim 8 and should be made dependent on that claim.
- 6.5 The main request contains two independent method claims 4 and 12. The question arises whether those claims can be considered to comply with the requirements of Rule 43(2) EPC. The same question arises having regard to claims 1 and 6 directed to a modified sugar beet pectin.
- 6.6 Moreover, it appears that both the weight average molecular weight and the root mean square radius of gyration are both "*determined by homogenizing a 1.5*

*mass% aqueous dispersion of the modified sugar beet pectin at a pressure of 50 MPa and subjecting the homogenized dispersion to size-exclusion chromatography coupled with a multi-angle light-scattering detector and a refractive index detector"* so that the wording of claim 1 might need to be shortened for the sake of conciseness (Article 84 EPC).

## **Order**

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

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:



B. ter Heijden

M. C. Gordon

Decision electronically authenticated