

**Internal distribution code:**

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

**Datasheet for the decision  
of 7 September 2018**

**Case Number:** T 0225/14 - 3.3.02

**Application Number:** 06786199.7

**Publication Number:** 1916899

**IPC:** A01N59/00

**Language of the proceedings:** EN

**Title of invention:**

OXIDATION METHOD AND COMPOSITIONS THEREFOR

**Applicant:**

ECOLAB INC.

**Headword:**

ECOLAB / MEAT DISINFECTION BY CHLOROUS ACID

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - (no) - obvious alternative

**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 0225/14 - 3.3.02

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.02**  
**of 7 September 2018**

**Appellant:** ECOLAB INC.  
(Applicant) Ecolab Center  
370 North Wabasha Street  
St. Paul, MN 55102-2233 (US)

**Representative:** Godemeyer Blum Lenze Patentanwälte  
Partnerschaft mbB - werkpatent  
An den Gärten 7  
51491 Overath (DE)

**Decision under appeal:** **Decision of the Examining Division of the  
European Patent Office posted on 19 August 2013  
refusing European patent application No.  
06786199.7 pursuant to Article 97(2) EPC**

**Composition of the Board:**

**Chairman** M. O. Müller  
**Members:** M. Maremonti  
L. Bühler

## Summary of Facts and Submissions

I. The appeal by the applicant (hereinafter "appellant") lies from the decision of the examining division to refuse European patent application No. 06 786 199.7.

II. The following documents were among those cited during the examination proceedings:

D5: US 5 407 656 A

D6: WO 95/02965 A

The examining division came to the following conclusion:

The subject-matter of claims 2 and 19 according to the then pending main request and of claims 1 and 18 of the then pending sole auxiliary request did not involve an inventive step in view of D6 taken as the closest prior art.

III. With its statement of grounds of appeal, the appellant filed three sets of claims, submitted as a main request and auxiliary requests 1 and 2. It contested the examining division's reasoning and maintained that the subject-matter according to all claim requests involved an inventive step starting from D6 as the closest prior art.

IV. In preparation for the oral proceedings, the Board issued a communication drawing the appellant's attention to salient issues that might possibly be debated at the oral proceedings. In particular, it expressed the preliminary opinion that the claimed subject-matter did not appear to involve an inventive step.

V. In its reply to the Board's communication dated 29 August 2018, the appellant filed a new main claim request. This request contains sixteen claims, the sole independent claim 1 reading as follows:

*"1. A method of treating a meat product to reduce a microorganism population comprising a human pathogen in the meat product, the method comprising the steps of:*

- (a) providing a two-part disinfecting system comprising a first part and a second part adapted to be mixed to yield an aqueous disinfecting composition wherein the first part comprises a chlorite and the second part comprises an acid, wherein the acid is sodium acid sulfate or a chemical moiety that provides the bisulfate ion in situ; wherein the chemical moiety is selected from the group consisting of potassium hydrogen sulfate and cesium hydrogen sulfate, wherein the metal chlorite is an alkali or alkaline earth metal chlorite, wherein the chlorite is present in the first part in an amount so that when combined with the second part it is present within the oxidizing composition at a concentration ranging from 0.001% to 2.0% by weight, and wherein the acid is present in the second part in an amount so that when combined with the first part it is present within the oxidizing composition at a concentration ranging from 0.001% to 2.0% by weight,*
- (b) mixing the first part and the second part to form an aqueous disinfecting composition; and*
- (c) applying to the meat product the resulting aqueous disinfecting composition;*

*wherein the disinfecting composition is applied in an amount and time sufficient to reduce the microorganism population."*

Dependent claims 2 to 16 define specific embodiments of the method of claim 1.

VI. Oral proceedings before the Board were held on 7 September 2018. During the oral proceedings, the main request filed by the appellant on 29 August 2018 was admitted into the proceedings. All previous requests were withdrawn.

VII. Final requests

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request filed by letter of 29 August 2018.

VIII. The appellant's arguments where relevant for the present decision may be summarised as follows:

- Document D6 represented the closest prior art since it disclosed a method of treating meat by means of chlorous acid generated by mixing a chlorite with an acid. The degradation of chlorous acid to chlorine dioxide should be minimised.
- The subject-matter of claim 1 differed from the method taught by D6 in that one of sodium acid sulfate, potassium hydrogen sulfate or cesium hydrogen sulfate was used as the acid to be mixed with the chlorite instead of the phosphoric acid used in D6.
- Admittedly, in the absence of comparative tests, no effect could be considered to be linked to this difference.

- However, even if not explicitly mentioned in claim 1 of the main request, the chemistry of the reaction deriving from mixing the chlorite and the acid according to claim 1 had to be taken into account on the basis of the teaching provided in the description.
- The description made clear that, as in D6, the conversion of chlorous acid to chlorine dioxide should be minimised.
- The technical problem should thus be formulated as the provision of an alternative method of treating a meat product to reduce a microorganism population by reaction of a chlorite and an acid with formation of chlorous acid.
- The skilled person would not consider D5 when looking for a solution to the technical problem posed. In fact, D5 proposed a method of disinfecting by means of chlorine dioxide. According to D5, all chlorous acid formed by the reaction between chlorite and acid should rapidly disproportionate to yield chlorine dioxide.
- Even considering D5, the skilled person would not be prompted by this document to replace the phosphoric acid of D6 with one of the acids mentioned in claim 1 at issue.
- In fact, D5 taught (column 2, lines 20 to 24) that the stronger the acid, the lower the pH and the faster the conversion of chlorous acid to chlorine dioxide.
- D6, on the contrary, disclosed (page 13, bottom) that not only the pH but also the nature of the

acid played a role in the conversion of chlorous acid to chlorine dioxide.

- Therefore, the skilled person would not necessarily select one of the acids mentioned in claim 1 from the list of the acids said to be preferred in D5 (column 5, lines 4 to 18) because he would not know whether or not they would allow high concentrations of chlorous acid to be maintained.
- The subject-matter of claim 1 at issue thus involved an inventive step.

## **Reasons for the Decision**

*Main request - claim 1 - lack of inventive step*

### 1. The invention

The invention as defined in claim 1 of the main request concerns a method of treating meat by means of a disinfecting composition. The latter is obtained by mixing an alkali or alkaline earth metal chlorite with an acid selected from sodium acid sulfate, potassium hydrogen sulfate and cesium hydrogen sulfate.

### 2. The closest prior art

2.1 The appellant indicated document D6 as the closest prior art. Considering the issues addressed and the disinfecting method disclosed, the Board has no reason to take a different stance.

2.2 In fact, D6 discloses (page 5, "Summary of the Invention") a method for removing microorganisms from a



meat product by contacting the meat product with an aqueous solution obtained by mixing a metal chlorite with an acid. As metal chlorite, sodium or potassium chlorite is preferred.

- 2.3 As to the acid to be employed, D6 mentions hydrochloric, sulfuric or phosphoric acid as preferred compounds (page 6, lines 1 to 7). In nearly all examples of D6 (see examples 1 to 7, 9 and 10), the disinfecting compositions are obtained by mixing sodium chlorite with phosphoric acid.
- 2.4 The Board thus concludes that the method of treating a meat product by means of a disinfecting solution obtained by mixing sodium chlorite and phosphoric acid according to the vast majority of the examples of D6 represents the most appropriate starting point for the assessment of inventive step.
3. The technical problem
  - 3.1 As acknowledged by the appellant, the subject-matter of claim 1 at issue differs from said closest prior art only in that one of sodium acid sulfate, potassium hydrogen sulfate or cesium hydrogen sulfate is used instead of phosphoric acid.
  - 3.2 As likewise acknowledged by the appellant, no comparative tests comparing the claimed subject-matter with the method of the closest prior art are present, and thus no technical effect is associated with the above difference.
  - 3.3 In view of the above, the appellant formulated the technical problem as the provision of an alternative method of treating a meat product to reduce a

microorganism population, comprising the reaction of a chlorite and an acid with formation of chlorous acid.

3.4 The Board considers this definition of the technical problem to be too ambitious. Claim 1 does not require the formation of chlorous acid and thus does not necessarily solve this problem of forming chlorous acid. In the following assessment of inventive step, however, for the sake of argument only and in favour of the appellant, the Board accepts this formulation of the technical problem. This problem will therefore be regarded as the objective technical problem.

4. Obviousness of the solution

4.1 Document D5 discloses a method of disinfecting various products, particularly food-related products (column 1, lines 22 to 26, and column 17, lines 40 to 53), by means of compositions obtained by mixing a metal chlorite, especially sodium or potassium chlorite (column 4, lines 26 to 32), with an acid.

4.2 The Board acknowledges that the disinfection treatment taught by D5 involves the application of compositions comprising chlorine dioxide (cf. e.g. the "Objects of the present invention" in column 3 of D5).

4.3 However, according to D5 (cf. column 8, lines 57 to 62, and column 9, line 59, to column 10, line 9), such chlorine dioxide compositions are produced by a two-step process wherein:

- in a first step a metal chlorite is combined with an acid "*effective to produce **a substantial quantity of chlorous acid***" (emphasis added by the Board) and

- in a second step an appropriate amount of a disproportionation agent is added to enhance chlorous acid disproportionation to chlorine dioxide.

Therefore, D5 discloses that "*a substantial quantity of chlorous acid*" is produced by mixing a metal chlorite, especially sodium or potassium chlorite, with an acid.

- 4.4 As to the acid to be used, sodium bisulfate, potassium bisulfate and phosphoric acid are said to be preferred (column 4, lines 26 to 61, and column 5, lines 4 to 18). In fact, these three acids are reported in D5 to have about the same pKa value (cf. *loc. cit.*). D5 therefore discloses that sodium or potassium bisulfate is equivalent to phosphoric acid for the purpose of being mixed with a metal chlorite in order to generate chlorous acid in the first reaction step mentioned in point 4.3 above.
- 4.5 On the basis of this teaching of D5, the Board is convinced that the replacement of phosphoric acid as used in the closest prior art (see point 2.4 above) by sodium or potassium bisulfate as mentioned in claim 1 at issue is a possibility that the skilled person would immediately consider in order to solve the technical problem posed (see point 3.3 above). This replacement would lead to the subject-matter of claim 1, without the exercise of any inventive skill.
- 4.6 The Board notes that D5 pertains to the same technical field as document D6, i.e. the field of disinfection of products by means of compositions obtained by the reaction of metal chlorites with an acid. Food-related products are explicitly mentioned in D5 (column 1, lines 22 to 26, and column 17, lines 40 to 53). Contrary to what was submitted by the appellant (see

point VIII above), the skilled person would thus clearly consider D5 when looking for a solution to the technical problem posed.

- 4.7 Furthermore, as set out in point 4.3 above, D5 does teach the production of chlorous acid by means of a first reaction step in which sodium or potassium chlorite is combined with the acids mentioned in point 4.4 above and especially with bisulfates.
- 4.8 As a consequence, the appellant's argument (in point VIII above) that the skilled person would not necessarily select sodium or potassium bisulfate from the acids disclosed in D5 is also not convincing. These acids are said in D5 to be suitable for chlorous acid production.
- 4.9 The Board thus comes to the conclusion that the subject-matter of claim 1 at issue derives in an obvious way from the combination of the closest prior art (see point 2.4 above) with document D5 and therefore does not meet the requirements of Article 56 EPC with respect to inventive step.
5. The appellant's main and sole claim request is thus not allowable.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



N. Maslin

M. O. Müller

Decision electronically authenticated