Internal distribution code:

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

Datasheet for the decision of 17 July 2025

Case Number: T 1957/23 - 3.3.02

Application Number: 17772250.1

Publication Number: 3319948

IPC: C07D291/06

Language of the proceedings: EN

Title of invention:
ACESULFAME POTASSIUM COMPOSITIONS AND PROCESSES FOR PRODUCING SAME

Patent Proprietor:
Celanese International Corporation

Opponent:
Aechter, Bernd

Relevant legal provisions:
EPC Art. 83

Keyword:
Sufficiency of disclosure - (no)

Decisions cited:
T 0063/06

Europäisches Patentamt
European Patent Office
Office européen des brevets

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

Case Number: T 1957/23 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 17 July 2025

Appellant: (Patent Proprietor)	Celanese International Corporation 222 W. Las Colinas Blvd., Suite 900N Irving, TX 75039 (US)
Representative:	Bird & Bird LLP Maximiliansplatz 22 80333 München (DE)
Respondent: (Opponent)	Aechter, Bernd Ter Meer Steinmeister & Partner Patentanwälte mbB Nymphenburgerstrasse 4 80335 München (DE)
Representative:	Ter Meer Steinmeister & Partner Patentanwälte mbB Nymphenburger Straße 4 80335 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 24 October 2023 revoking European patent No. 3319948 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	M. O. Müller
Members:	P. O'Sullivan
	R. Romandini

Summary of Facts and Submissions

I. The appeal of the patent proprietor (hereinafter appellant) lies from the decision of the opposition division to revoke European patent 3 319 948.

II. An opposition was filed on the grounds of Article 100(a) EPC (lack of inventive step), (b) and (c) EPC.

III. In a communication pursuant to Article 15(1) RPBA, the board provided its preliminary opinion, in particular that the ground for opposition under Article 100(b) EPC prejudiced the maintenance of the patent as granted. The board furthermore noted that none of the auxiliary requests appeared to overcome the objections set out for the main request in relation to sufficiency of disclosure.

IV. Oral proceedings by videoconference took place as scheduled on 17 July 2025 in the presence of both parties.

V. Requests

The appellant requested that the contested decision be set aside and that the patent be maintained as granted, or alternatively that the patent be maintained on the basis of one of the sets of claims of auxiliary requests 1 to 11 submitted with the statement of grounds of appeal.

The respondent (opponent) requested dismissal of the appeal, implying confirmation of the opposition division's decision to revoke the patent.

VI. For the relevant party submissions, reference is made to the reasons for the decision set out below.

Reasons for the Decision

Main request (patent as granted)

1. Sufficiency of disclosure - Article 100(b) EPC

1.1 Independent claim 1 of the main request reads as follows:

"A process for producing a finished acesulfame potassium composition, the process comprising the steps of:

(a) forming a cyclic sulfur trioxide adduct;

(b) hydrolyzing the cyclic sulfur trioxide adduct to form an acesulfame-H composition comprising acesulfame-H;

(c) neutralizing the acesulfame-H in the acesulfame-H composition to form a crude acesulfame potassium composition comprising acesulfame potassium and less than 2800 wppm acetoacetamide-N-sulfonic acid, wherein the neutralizing step is conducted at a pH ranging from 8 to 11.0; and

(d) treating the crude acesulfame potassium composition to form the finished acesulfame potassium composition comprising acesulfame

potassium and less than 37 wppm acetoacetamide-N-sulfonic acid,

wherein the treating step (d) comprises a concentrating operation and a separating operation, wherein the concentrating operation is conducted at a temperature below 90°C and the concentrating operation is conducted at or maintained at a residence time of less than 180 minutes"

1.2 According to the contested decision (point 4, pages 4-5), the subject-matter defined in claim 1 of the patent as granted was sufficiently disclosed. The respondent contested this conclusion on the basis that the patent did not specify how to carry out the treatment step d) of claim 1, necessary to arrive at the claimed finished acesulfame composition, namely "*a finished acesulfame potassium composition comprising acesulfame potassium and less than 37 wppm acetoacetamide-N-sulfonic acid*" (claim 1, step d)).

1.3 The board agrees with the respondent. Process claim 1 of the main request requires step (d) to arrive at the desired product, acesulfame potassium composition comprising acesulfame potassium and less than 37 wppm acetoacetamide-N-sulfonic acid (hereinafter AAA-NSA). Examples 1a-c and comparative example A provided in the patent (paragraphs [0101] to [0109]) disclose steps (a) to (c) of claim 1, the latter step resulting in a crude acesulfame potassium composition (patent, paragraph [0107]). However, step (d) according to claim 1, i.e. the final preparation of "finished" acesulfame having less than 37 wppm AAA-NSH starting from the crude product of step (c), as required by claim 1, is not performed.

1.4 Table 1 of the patent shows the effect on the amount of (undesired) AAA-NSH impurity obtained when neutralisation step (c) of claim 1 is carried out within (examples 1a, 1b and 1c), or outside (comparative example A) the claimed pH range of 8 to 11.0. The crude products of examples 1a, 1b and 1c respectively comprise 1538, 1954 and 2361 wppm AAA-NSH, which is less than the maximum of 2800 wppm allowed by step (c) of claim 1 for the crude acesulfame potassium composition, and less than the 3066 wppm obtained in comparative example A, for which the neutralisation step was carried out at pH 12, i.e. above the claimed range.

1.5 These examples therefore show that the claimed pH has a positive effect on the amount of AAA-NSH present in the crude product. However, the amount of AAA-NSH obtained in the crude product of step (c) is still vastly greater than "less than 37 wppm" required in the final product of step (d) of claim 1. Indeed, a greater than 40-fold reduction in the amount of AAA-NSH in the crude acesulfame composition of example 1a (which yielded the lowest amount of AAA-NSH in the neutralisation step (c), namely 1538 wppm) is required in step (d) to arrive at the finished acesulfame potassium product comprising less than 37 wppm AAA-NSH.

1.6 As stated above, the examples of the patent do not disclose a step (d), i.e. treating the crude acesulfame potassium composition resulting from step (c), wherein the treating step comprises a concentrating operation and separating operation. Consequently, the examples do not demonstrate that said operations would yield AAA-NSH levels as low as required by claim 1, namely less than 37 wppm.

1.7 Since the obtention of less than 37 wppm AAA-NSH in the final product is not disclosed in the examples of the patent, the question is whether it is disclosed elsewhere in the patent, or whether it would be part of the common general knowledge of the skilled person.

1.8 The appellant argued that the necessary information for the skilled person to carry out the concentrating and separating operations was disclosed in paragraphs [0037] to [0042] of the patent.

1.9 In relation to the concentrating operation, the relevant paragraphs are [0037], [0038], and [0040] to [0042]. These paragraphs address the temperature and the residence time of the concentration operation.

1.10 In relation to the temperature, paragraph [0037] states that preferably the concentrating operation is conducted at low temperature. Paragraph [0038] gives examples of low temperatures, ranging from "below 90°C" to "below 46°C", examples of temperatures above which the concentrating operation should be conducted ranging from "above 0°C" to "above 50°C", and examples of various temperature ranges within the limits of from 10°C to 88°C.

1.11 Paragraph [0040] states that, in some embodiments, the concentrating operation is conducted at a low residence time. Similarly to the concentration temperatures provided in paragraph [0038], paragraph [0041] provides a list of examples of residence times below which the concentrating operation is conducted, residence times above which it is conducted, and a list of residence time ranges.

1.12 However, neither of paragraphs [0038] or [0040] expresses a preference, nor is a specific example of a concentrating method or apparatus provided which may be used in step (d) of claim 1.

1.13 More importantly, as is apparent from the term "concentration", and as also stated in the patent (paragraph [0024]), a concentrating operation is not considered a separating operation. Hence, a *reduction* in the amount of undesired AAA-NSH resulting from step (c) does not take place in the concentration operation. Hence, these paragraphs do not indicate how the product of step (d) as claimed can be obtained.

1.14 It follows therefore that the reduction in the amount of AAA-NSH from the product of step (c) to the product of step (d) must take place in the separating operation. In relation to this operation, the appellant referred to paragraphs [0037] and [0039] of the patent. These paragraphs merely indicate that the separating operation is conducted at low temperatures, and provide temperature values for the separating operation in a similar manner as set out for the concentrating operation in paragraph [0038]. The actual steps of the separating operation appear to be addressed in the patent only generally in paragraphs [0021] and [0097].

1.15 In paragraph [0021] the "finished acesulfame potassium composition" mentioned in claim 1 is defined as

"*a composition (preferably directly) resulting from the separating, e.g. crystallizing and/or filtering, of the intermediate acesulfame potassium composition* [i.e. the crude composition resulting from claim 1, step c)].

1.16 Aside from the fact that this statement preferably excludes the concentrating operation required by claim 1, it provides no details regarding the nature of the crystallising or filtering steps, and whether one or both are sufficient to arrive at the claimed composition.

1.17 Paragraph [0097] refers to the acesulfame potassium process depicted in figure 1 and discloses that the crude acesulfame potassium product stream (i.e. resulting from claim 1, step (c)) may be directed to a treatment zone to recover finished acesulfame potassium (i.e. the product of claim 1, step (d)). It discloses that the "treatment zone" may comprise one or more treatment operations, e.g stripping, evaporation, crystallisation and filtration. However, again, these general teachings do not provide the skilled with any specific detail or instruction as to how to obtain an acesulfame potassium composition comprising less than 37 wppm AAA-NSH.

1.18 Consequently, there is no teaching in the patent on how to carry out the separation step in order to obtain the claimed purity of less than 37 wppm AAA-NSH in the finished acesulfame potassium composition.

1.19 The board acknowledges that a separation step such as a crystallisation would, in view of the common general knowledge, be expected to reduce the amount of AAA-NSH impurity. However, the extent of this reduction is unknown. There is no evidence in the patent that such a reduction would be sufficient to achieve the required 40-fold reduction in the amount of AAA-NSH compared to the lowest amount obtained in the neutralisation step (c) (patent, table 1, example 1a).

1.20 The appellant argued that due to the relative concentration and solubility of acesulfame potassium and AAA-NSH, the claimed AAA-NSH amount of 37 wppm could be achieved. However, while the board understands the concept of crystallisation, it is mere speculation to conclude that the relative solubility and concentration differences between acesulfame potassium and AAA-NSH, as well as how each compound behaves under crystallising conditions, would be such that the requires reduction in the level of AAA-NSH from step (c) to step (d) could be achieved.

1.21 Furthermore, and more importantly, the patent itself teaches that the separation step is at least non-routine: paragraph [0005] states that

"*Acesulfame potassium product and the intermediate compositions produced by conventional methods* ***contain undesirable impurities, such as acetoacetamide-N-sulfonic acid*** [i.e. AAA-NSH]*. Limits for the content of various impurities are often set by governmental regulations or customer guidelines. Separation of* ***many of these impurities*** *using standard purification procedures such as evaporation, crystallization, and/or filtration has proven difficult, resulting in consumer dissatisfaction and the failure to meet standards*". (emphasis added by the board)

1.22 The appellant argued that it was not stated in this paragraph that separation specifically of AAA-NSH using standard purification procedures had proven difficult, but merely that separation of "many of these impurities" seemed to be difficult. Second, this paragraph meant that separation to an extent that it meets the standards cannot be obtained with standard procedures.

1.23 These arguments are unconvincing. While paragraph [0005] by virtue of the reference to "many of these impurities" does not exclusively refer to AAA-NSH, it unambiguously refers to difficulties in the separation of this compound, since it is the only compound mentioned explicitly.

1.24 Since the separation operation is non-routine, it is not credible, without any evidence that the difficulties mentioned in paragraph [0005] of the patent were overcome, that an acesulfame potassium composition comprising less than 37 wppm AAA-NSH can be obtained.

1.25 The board acknowledges, in line with the appellant's arguments and decision T 63/06 (reasons for the decision, 3.2.1), that generally under sufficiency of disclosure the opponent, in the present case the respondent, bears the burden to present verifiable facts or evidence that the claimed subject-matter is not sufficiently disclosed. Thus, after the grant of a patent, there exists a legal presumption that the patent meets the requirements of the EPC.

1.26 As stated in T 63/06 however, this presumption can be rebutted on the basis of the grounds for opposition mentioned in Article 100 EPC. Critically, the weight of the submissions required to rebut this presumption depends on its strength. A strong presumption requires more substantial submissions than a weak one. In the context of the ground for opposition of sufficiency of disclosure, the strength of the presumption depends on the way the invention is disclosed in the patent (T 63/06, reasons for the decision, 3.3.1).

1.27 In T 63/06, two examples of ways in which an invention may be disclosed in a patent are described. In a first example, the patent contained detailed information (e.g. test results) on how to put the invention into practice. A rebuttal of this strong presumption required clear evidence on why the information was not sufficient for the skilled person to carry out the invention. If, for instance, the detailed information included test results to demonstrate a particular property or advantage, the opponent must prove e.g. by counter-tests that said property or advantage was not obtained.

On the other hand, in a second example, a patent did not contain detailed information on how to put the invention into practice. In this situation, less substantial submissions were required from the opponent to rebut the weak presumption. It was sufficient to raise serious doubts whether the skilled person can carry out the invention, e.g. by submitting arguments (T 63/06, reasons for the decision, 3.3.1).

1.28 The case in hand underlying T 63/06 (reasons for the decision, 3.3.2) rested on a weak presumption because the patent did not give any information how the claimed kernels size could be produced without a flame nozzle.

1.29 In the board's view, this corresponds to the situation in relation to the lack of evidence presented in the present patent. In fact, in the present case, there is not only evidence missing that the claimed purity of less than 37 wppm can be obtained. The patent itself states that obtaining high purity is not routine.

1.30 Hence, it was for the patent proprietor to demonstrate that the method of claim 1, in particular separation

step (d) resulting in an acesulfame potassium composition comprising less than 37 wppm AAA-NSH, could be achieved. Since this is not credible on the basis of the common general knowledge of the skilled person, the subject-matter defined in claim 1 is considered not to be sufficiently disclosed.

1.31 Consequently, the ground for opposition under Article 100(b) EPC prejudices the maintenance of the patent as granted.

Auxiliary Requests

2. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the lower limit of the pH range in step (c) was increased from 8 to 9.0.

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the temperature below which the concentrating operation is conducted was lowered from 90°C to 46°C.

Claim 1 of auxiliary request 3 is a combination of claim 1 of auxiliary requests 1 and 2.

Claim 1 of auxiliary request 4 differs from claim 1 of the main request in that the residence time was lowered from less than 180 minutes to less than 30 minutes.

Claim 1 of auxiliary request 5 is a combination of claim 1 of auxiliary requests 1 and 4.

Claim 1 of auxiliary request 6 is a combination of claim 1 of auxiliary requests 2 and 4.

Claim 1 of auxiliary request 7 is a combination of claim 1 of auxiliary requests 1, 2 and 4.

Claim 1 of auxiliary request 8 comprises the amendment to claim 1 of auxiliary request 1, and additionally:

- amendment of the amount of AAA-NSH in step (c) from "less than 2800 wppm" to "from 20 wppm to 2500 wppm",
- the addition of the feature that the composition of step (c) "further comprises acetoacetamide",
- amendment of the amount of AAA-NSH in the composition of step (d) from "less than 37 wppm" to "less than 25 wppm", and
- the addition of the feature that the composition of step (d) comprises "less than 15 wppm acetoacetamide".

Claim 1 of auxiliary request 9 is a combination of claim 1 of auxiliary requests 2 and 8.

Claim 1 of auxiliary request 10 is a combination of claim 1 of auxiliary requests 4 and 8.

Claim 1 of auxiliary request 11 is a combination of claim 1 of auxiliary requests 2, 4 and 8.

3. Sufficiency of disclosure - Article 83 EPC

3.1 As conceded by the appellant during oral proceedings, it remains the case that claim 1 of each of auxiliary requests 1 to 11 requires the preparation of a finished acesulfame potassium composition comprising less than 37 wppm AAA-NSH.

3.2 It follows therefore that for claim 1 of each request, the same applies in relation to sufficiency of disclosure as set out above for claim 1 of the main request.

3.3 Consequently, the invention defined in claim 1 of each of auxiliary requests 1 to 11 is not sufficiently disclosed as required by Article 83 EPC.

3.4 It follows that none of the appellant's claim requests are allowable, and the appeal is to be dismissed.

Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar: The Chairman:

U. Bultmann M. O. Müller

Decision electronically authenticated