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DECISION
of 19 February 2003

Case Number: T 0844/98 - 3.3.1

Application Number: 92902482.6

Publication Number: 0513396

IPC: C07C 229/06

Language of the proceedings: EN

Title of invention:
Process for producing amino carboxylic acid salt

Patentee:
NIPPON SHOKUBAI CO., LTD.

Opponent:
SKW Trostberg Aktiengesellschaft

Headword:
Aminocarboxylic acid salts/NIPPON SHOKUBAI

Relevant legal provisions:
EPC Art. 54, 114(2)

Keyword:
Main request and auxiliary request: "Novelty (no) - prior art example leads inevitably to a result falling under the scope of the claims"
Auxiliary request II: "Admissibility (no) - late filed amendments would cause undue procedural delay amounting to an abuse of procedure"

Decisions cited:
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Catchword:

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Case Number: T 0844/98 - 3.3.1

DECISION
of the Technical Board of Appeal 3.3.1
of 19 February 2003

Appellant:
(Opponent)

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 10 July 1998 rejecting the opposition filed against European patent No. 0 513 396 pursuant to Article 102(2) EPC.**

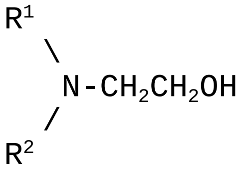
Composition of the Board:

Chairman: A. J. Nuss
Members: J. M. Jonk
R. T. Menapace

Summary of Facts and Submissions

I. The Appellant (Opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against the European patent No. 0 513 396 (European patent application No. 92 902 482.6), which was granted on the basis of 5 claims, the independent Claim 1 reading as follows:

"A process for producing an aminocarboxylic acid salt from an aminoalcohol represented by the general formula (1)



$$R^1R^2N\text{-}CH_2CH_2OH$$

(R^1 and R^2 are independently a hydrogen atom, a hydroxyethyl group, an alkyl group of 1-18 carbon atoms or an aminoalkyl group of 2-3 carbon atoms) by subjecting the aminoalcohol to an oxidative dehydrogenation reaction in the coexistence of an alkali metal hydroxide and/or an alkaline earth metal hydroxide, a copper-containing catalyst and water, which process is characterized by conducting the reaction while maintaining the nickel concentration in the reaction mixture at 40 ppm or less."

II. The opposition was filed against the patent as a whole, and based on the grounds of lack of novelty and lack of inventive step as indicated in Article 100(a) EPC. It was supported by document:

(1) US-A-4 782 183.

III. The Opposition Division held that the subject-matter of Claim 1 of the patent in suit was novel, since the experiments provided by the Opponent did not prove that by conducting the reaction as disclosed in document (1) the nickel concentration in the reaction mixture was inevitably maintained at 40 ppm or less.

Concerning inventive step it considered that in the light of the closest state of the art, i.e. document (1), the technical problem underlying the patent in suit was the provision of a process for the preparation of amino carboxylic acid salts in which fewer by-products were produced and that the solution to this problem in accordance with Claim 1, and in particular by using the specific low nickel content in the reaction mixture, was not obvious in view of the cited prior art.

IV. Oral proceedings before the Board were held on 19 February 2003. The Appellant, after having informed the Board accordingly in a letter dated 15 January 2003, did not attend the oral proceedings.

V. The Appellant submitted in writing that the subject-matter of Claim 1 was not novel in the light of document (1). In this context, he argued in particular that by conducting the process of said document the nickel concentration in the reaction mixture remained below 40 ppm, because nickel introduced into the reaction mixture containing an alkali metal or an alkaline earth metal hydroxide would be substantially precipitated in the form of nickel(II) hydroxide. In support he filed a test-report on 12 November 1998 repeating the Examples 7, 8, 10 and 11 of document (1) and demonstrating the effect of different catalysts, types of reactor, the use of different amino alcohols, and the addition of excess nickel in the form of nickel sulphate.

Moreover, he argued that the claimed process did not provide any advantage which could support the presence of inventive step.

VI. The Respondent (Patentee) defended the patentability of the subject-matter of the patent in suit on the basis of Claims 1 to 5 as granted as **main request** and two sets of claims submitted during the oral proceedings before the Board indicated as "auxiliary request" and "auxiliary request II", respectively.

The claims of the **"auxiliary request"** corresponded to those of the main request, except that Claim 1 of the main request was restricted to a process "conducting the reaction while maintaining the nickel concentration in the reaction mixture at **30 ppm** or less".

The claims of the **"auxiliary request II"** corresponded to those of the auxiliary request, except that Claim 1 of the "auxiliary request" was further restricted to a process carried out in the presence of a "**developed Raney copper catalyst"** instead of a copper-containing catalyst.

He defended the patentability of the claimed subject-matter essentially in line with the reasoning of the Opposition Division.

Concerning novelty he argued that the experiments provided by the Appellant did not prove that by conducting the reaction as disclosed in document (1) the nickel concentration in the reaction mixture was inevitably maintained at 40 ppm or less as claimed according to the main request or at 30 ppm or less according to Claim 1 of the "auxiliary request". In particular, he submitted that the major causes for nickel to come into the reaction mixture in amounts leading to larger amounts of by-products were presumed to be that nickel was contained in the aminoalcohol, the alkali metal or alkaline earth metal hydroxide, the catalyst, water and/or the reactor, and that also a too strong agitation and long reaction times would lead to higher nickel concentrations in the reaction mixture. In any case, document (1) neither provided any information about the nickel content in said materials, nor about the nickel concentration in the reaction mixtures as specified in the examples. By referring to Examples 6 and 11 of the patent in suit, he emphasised that the nickel concentrations of the reaction mixtures as obtained in accordance with the examples of document (1) could well be above 40 ppm and also above 30 ppm.

VIII. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained as granted (main request) or according to set of Claims 1 to 5 submitted during the oral proceedings (auxiliary request) or according to set of Claims 1 to 5 submitted during oral proceedings as "auxiliary request II".

IX. At the conclusion of the oral proceedings the Board's decision was pronounced.

Reasons for the decision

1. The appeal is admissible.

2. *Main request*

2.1 Novelty

2.1.1 In view of the fact that this request concerns the patentability of the Claims 1 to 5 as granted, and having regard to the submissions of the parties, the first issue to be dealt with is whether the process of Claim 1 is novel in the light of document (1).

2.2.2 Both parties agreed upon the fact that, in the light of document (1), the process of present Claim 1 is characterised by the feature that the reaction is conducted **while maintaining the nickel concentration in the reaction mixture at 40 ppm or less**, and that in this context the essential question to be answered is whether one of the examples of document (1) would inevitably lead to something falling within the scope of present Claim 1. The Board has no different view on this.

2.2.3 In his reasons supporting his grounds for opposition filed on 2 April 1997 (see page 2, second paragraph), as well as in his statement of the grounds of appeal submitted on 12 November 1998, the Appellant based his novelty objection (among others) on **Example 10 of document (1)**.

This example concerns the conversion of diethanolamine with sodium hydroxide in the presence of water and a copper-containing catalyst, in which the catalyst having a nickel content of 100 ppm was prepared in exactly the same way as the catalyst of **Example 12a of the patent in suit** (see page 6).

Moreover, the volume of the autoclave and the amounts of the applied reaction components diethanolamine, sodium hydroxide and water were also identical (see the conditions indicated in Example 1a and Table 1 of the patent in suit).

2.2.4 It is true, that the temperature, pressure and reaction time indicated in said Example 10 differ slightly from those used in Example 12a of the patent in suit, namely 160°C instead of 170°C, 9 kg/cm^2.G instead of 10 kg/cm^2.G, and 4.0 hours instead of 5 hours. However, the Board does not see any reason why these slightly different reaction conditions could have a relevant influence on the nickel concentration in the reaction mixture. Moreover, at the oral proceedings before the Board the Respondent could not indicate such reasons either.

2.2.5 Furthermore, it is true that said Example 10 is silent with respect to any stirring or agitation applied. However, the Board finds that this is of no relevance here since the process as claimed in the patent in suit may proceed **with or without agitation**, and because according to the description of the patent in suit only **too strong** an agitation might unduly influence the nickel concentration in the reaction mixture as a result of the wear of the **nickel** reactor wall by collision with the suspended catalyst material (see page 4, lines 26 to 34, of the patent in suit). In fact, Example 10 neither discloses the use of a nickel autoclave, nor the use of agitation, let alone the use of an unusual powerful agitation going far beyond providing the necessary contact between the reactants and the catalyst to assure "completion of the reaction" (see Example 10, last five lines).

2.2.6 In this context, the Respondent referred during the oral proceedings before the Board to the detailed experimental results obtained in the examples of the patent in suit on pages 5 to 7, and summarised in Table 1, as evidence in support of his submission that the prior art process as disclosed in Example 10 of document (1) could lead to nickel concentrations in the reaction mixture above the upper limit of **40 ppm** as claimed in accordance with the patent in suit.

2.2.7 However, the Board observes that in **Example 6** of the patent in suit the result is a nickel concentration of **36 ppm**, i.e. the maximum concentration shown by the examples of the patent in suit, when using in a **nickel-made** autoclave a copper-containing catalyst having **a much higher nickel content** than applied in Example 10 of document (10) (300 ppm instead of the 100 ppm, i.e. **3 times higher**) in a **much larger amount** (40 g instead of 8 g, i.e. **5 times larger**). Therefore, even these conditions, and, in addition, the application of a **very strong stirring power** (1.8 kW/m^3 instead of the normally applied 0.3 kW/m^3) only lead to a nickel concentration below the upper limit of 40 ppm as indicated in present Claim 1. Actually, this finding raises serious doubts whether said upper limit could be reached at all.

2.2.8 Thus, in view of the fact that the process of

Example 10 of document (1) was carried out with exactly the same catalyst and under substantially the same reaction conditions as applied in **Example 12a of the patent in suit,** the nickel concentrations in the reaction mixtures of these two examples must also be nearly identical, i.e. about **7.5 ppm** (see Table 1 on page 10 of the patent in suit concerning said Example 12a). This nickel concentration obtained in **Example 10 of document (1)** lies far below **the upper limit of 40 ppm as indicated in present Claim 1**.

2.2.9 In these circumstances, the Board can only conclude that the process of Example 10 of document (1) inevitably falls within the scope of present Claim 1, and therefore that the present Claim 1 lacks novelty.

3. *"Auxiliary request"*

3.1 Admissibility

3.1.1 This request introduces into Claim 1 as granted the restriction that the reaction is conducted while maintaining the nickel concentration in the reaction mixture **at 30 ppm or less**. Although this request was late filed, namely during the oral proceedings before the Board, and the restriction "to 30 ppm or less" was not based on the claims as granted or maintained by the Opposition Division, the Board nevertheless considers this request to be admissible under Article 114(2) EPC, since the restricted subject-matter represents the preferred embodiment of the essential feature of the claimed invention which, therefore, does not raise a surprising new legal or factual issue.

3.2 Article 123(2) and (3) EPC

3.2.1 Present Claim 1 of this request results from combining Claim 1 as granted with a preferred feature having support in the description of the patent application as filed (see page 5, lines 9 to 12).

Moreover, this introduced feature represents a restriction of the scope of Claim 1 as granted.

3.2.2 Consequently, the Board finds that the subject-matter of present Claim 1 meets the requirements of Article 123(2) and (3) EPC.

3.3 *Novelty*

3.3.1 Present Claim 1 differs from Claim 1 of the main request considered above only in that the **upper limit** of the nickel concentration in the reaction mixture is restricted of from 40 ppm to **30 ppm**.

3.3.2 Under these circumstances, the Board's considerations made above concerning the main request also apply to this request. Therefore, and in particular in view of the Board's finding that the process of Example 10 of document (1) inevitably leads to a nickel concentration of **about 7.5 ppm**, which value lies far below the upper limit of the nickel concentration of **30 ppm** as now claimed, the subject-matter of Claim 1 of this request lacks novelty too.

3.3.3 In this context, the Respondent submitted that Examples 6 and 11 of the patent in suit show that nickel concentrations in the reaction mixtures could be obtained of 36 ppm and 32 ppm, respectively, i.e. above the upper limit of 30 ppm as now claimed.

3.3.4 However, the question to be answered is not whether under certain reaction conditions a nickel concentration in the reaction mixture could be obtained above the upper limit of 30 ppm as claimed, but whether the process of Example 10 of the patent in suit inevitably leads to a nickel concentration in the reaction mixture below 30 ppm, and would therefore fall within the scope of present Claim 1.

3.3.5 Moreover, the Board observes that the reaction conditions applied in said Examples 6 and 11 are quite different from those of the process of Example 10 of document (1), so that the results of these examples are not comparable. In fact, when compared with this prior art Example 10 the reaction conditions indicated in said Examples 6 and 11 (see Table 1 of the patent in suit) involve the use of a copper-containing catalyst having a much higher nickel content (300 ppm and 5000 ppm, respectively, instead of 100 ppm, i.e. 3 times and 50 times as much) in a much higher amount (40 g and 16 g, respectively, instead of 8 g, i.e. 5 times and 2 times as much). Having regard to the considerations in points 2.2.5 to 2.2.8 above and the Respondent's submissions in point VII above, last paragraph, these stated different reaction conditions, and also the high stirring power applied in Example 6 (see point 2.2.7 above), would necessarily lead to higher nickel concentrations in the reaction mixtures than in Example 10 of document (1).

4. *"Auxiliary request II"*

4.1 Admissibility

4.1.1 The process of Claim 1 of this request is characterised by using a **developed Raney copper catalyst** and maintaining the nickel concentration of the reaction mixture at **30 ppm or less**.

4.1.2 According to the established jurisprudence of the Boards of Appeal, a Board has a discretion not to accept an auxiliary request, for instance, if such a request is submitted at a very late stage of the proceedings, and would render it necessary to carry out further investigations, which would lead to a procedural delay, and thus to an abuse of the procedural rights. In this context, the Board refers to the "Guidance for parties to appeal proceedings and their representatives", OJ EPO 1996, pages 342 to 356, in particular under point 3.3, indicating that a party wishing to submit amendments to the patent documents, or auxiliary requests, in appeal proceedings should do so as early as possible, and that the Board concerned may disregard amendments which are not submitted in good time prior to oral proceedings.

4.1.3 In the present case, the amended Claim 1 of this request was only filed during the oral proceedings before the Board after the discussion with respect to the "auxiliary request" was closed, and introduced at that late moment an unforeseeable restriction by combining features derived from the description (see page 3, line 32 and lines 47 to 49).

4.1.4 Moreover, the Appellant's novelty objection was not only based on Example 10 of document (1), but also on **Example 7** of this document making use of a **developed Raney copper catalyst**.

Supported by experimental evidence, he submitted that by repeating the process of said Example 7 using different developed Raney nickel catalyst, which were already available at the filing date of document (1), in any case nickel concentrations in the reaction mixtures of **at most 10.2 ppm** were obtained (see Table 2 of the Experimental report filed on 12 November 1998), i.e. concentrations far below the **30 ppm upper limit** as claimed in accordance with this request.

In this respect, **he also provided evidence** together with his statement of grounds of appeal that **developed Raney nickel catalysts available at the filing date of document (1) normally contained a much lower nickel content** than the several thousand ppm as indicated in the patent in suit (page 3, lines 52 and 53), and used in accordance with Example 11 (see point 3.3.5 *supra*).

In addition, he provided experimental evidence showing that even the **addition of nickel sulphate** in amounts corresponding to nickel contents in the copper containing catalyst of 1205 ppm, 4003 ppm and 40997 ppm, respectively, a nickel concentration of **at most 6.3 ppm** was obtained.

4.1.5 In his written reply the Respondent emphasised that the results of said Experimental report of the Appellant not only were in contradiction with those provided in the patent in suit, in particular Example 11 giving rise to a nickel concentration in the reaction mixture of 32 ppm, but also in itself, since the amount of 6.3 ppm obtained by adding the high amount of nickel sulphate was lower than the value of 10.2 ppm achieved by repeating Example 7.

4.1.6 In this context, the Board found it questionable whether Example 11 of the patent in suit referred to by the Respondent would be comparable with Example 7 of document (1) referred to by the Appellant, since the applied amounts of the Raney copper catalysts were different and because the applied Raney copper catalysts, as submitted by the Appellant, might have a quite different nickel content (see point 4.1.4 above, third paragraph).

4.1.7 In view of this, and the conflicting submissions of the parties, the assessment of the patentability of the late filed claims would not be possible without further investigations, possibly even requiring the performance of additional comparison tests.

4.1.8 Therefore, the Board finds that admitting this very late and unexpectedly filed request into the proceedings would cause an undue procedural delay, and thus amount to an abuse of procedure.

4.1.9 Consequently, and in the exercise of its discretion under Article 114(2) EPC, the Board did not admit the "auxiliary request II" into the proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

N. Maslin A. Nuss