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**Datasheet for the decision  
of 24 April 2012**

**Case Number:** T 0953/09 - 3.3.10  
**Application Number:** 04741030.3  
**Publication Number:** 1648857  
**IPC:** C07C 229/26, B01D 61/44  
**Language of the proceedings:** EN

**Title of invention:**

Anaqueous solution of a sodium salt of HEDTA

**Patentee:**

Akzo Nobel N.V.

**Opponent:**

BASF SE

**Headword:**

Aqueous solution of Na salt of HEDTA/AKZO NOBEL

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 111(1)  
RPBA Art. 13(1)

**Relevant legal provisions (EPC 1973):**

-

**Keyword:**

"Admissibility of late-filed documents (yes)"  
"Admissibility of late-filed novelty objection based on  
document not previously cited against novelty (no)"  
"Remittal (no) - no absolute right to two instances"  
"Novelty (yes)"  
"Inventive step (yes) - improvements shown, non obvious  
solution"  
"Sufficiency of disclosure (yes) - process can be carried out  
within whole area claimed"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0953/09 - 3.3.10

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.10  
of 24 April 2012

**Appellant:** BASF SE  
(Opponent) Patentabteilung - C6  
Carl-Bosch-Strasse 38  
D-67056 Ludwigshafen (DE)

**Respondent:** Akzo Nobel N.y.  
(Patent Proprietor) Velperweg 76  
NL-6824 BM Arnhem (NL)

**Representative:** Schalkwijk, Pieter Cornelis  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 19 February 2009  
rejecting the opposition filed against European  
patent No. 1648857 pursuant to Article 101(2)  
EPC.

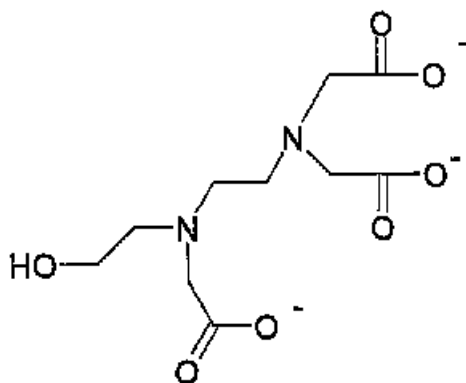
**Composition of the Board:**

**Chairman:** P. Gryczka  
**Members:** J. Mercey  
F. Blumer

## Summary of Facts and Submissions

I. The Appellant (Opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against European patent No. 1 648 857 which was granted on the basis of six claims, claims 1 and 5 of which read as follows:

"1. An aqueous solution comprising a sodium salt  $x\text{Na}^+y\text{H}^+$  of the chelating compound of formula I:



wherein  $x = 2.1-2.7$ ,  $y = 0.9-0.3$ , and  $x + y = 3$ ."

"5. A method of preparing an aqueous solution comprising at least 45wt% of the sodium salt  $x\text{Na}^+y\text{H}^+$  of the chelating compound of formula I wherein  $x = 2.1-2.7$ ,  $y = 0.9-0.3$ , and  $x + y = 3$  from the trisodium salt of N-(2-hydroxyethyl)ethylenediamine-N,N',N'-triacetic acid ( $\text{Na}_3\text{-HEDTA}$ ), comprising the step of electrolysing at  $20^\circ\text{C}$  an aqueous solution containing less than 42 wt% of  $\text{Na}_3\text{-HEDTA}$ , or at a different temperature at maximally the concentration whereby the viscosity is the same or lower than the viscosity of the 42wt%  $\text{Na}_3\text{-HEDTA}$  solution at  $20^\circ\text{C}$ , using a bipolar and a cation membrane, thereby converting the  $\text{Na}_3\text{-HEDTA}$  solution to the solution of the sodium salt  $x\text{Na}^+y\text{H}^+$  of

formula I wherein  $x = 2.1-2.7$ ,  $y = 0.9-0.3$ , and  $x + y = 3$ ."

II. Notice of Opposition had been filed by the Appellant requesting revocation of the patent as granted in its entirety on the grounds of insufficient disclosure, lack of novelty and lack of inventive step. *Inter alia* the following documents were submitted in the opposition proceedings:

- (1) US-A-5 472 633,
- (2) US-A-5 491 259 and
- (3) K. Nakamoto *et al.*, J. Am. Chem. Soc., 1963, 85, 311 to 312.

III. The Opposition Division held that the subject-matter of granted claim 1 was novel over document (3), since there was no disclosure that the cation for the compounds VII, VIII and IX on page 311 thereof was sodium. It also held that the invention was sufficiently disclosed, and involved an inventive step, since starting from document (2) as the closest prior art, which disclosed  $\text{Na}_x\text{-HEDTA}$ , wherein HEDTA was [N-(2-hydroxyethyl)ethylenediamine-N,N',N'-triacetic acid] and  $x$  was 3, no document suggested that the solubility of HEDTA in water could be increased by decreasing the value of  $x$ .

IV. The Appellant submitted that the subject-matter of claim 1 of the granted patent was not novel over the disclosure of document (3'):

- (3') K. Nakamoto *et al.*, J. Am. Chem. Soc., 1963, 85, 309 to 312.

More particularly, the spectrum at pH 9.1 in Figure 4 on page 311 of document (3') corresponded to the mixture of salts according to the patent in suit. The cation of the salts of HEDTA disclosed in document (3') was sodium, as also acknowledged by the Respondent in its summary of the disclosure of document (3) on page 2, lines 14 to 15 of the specification of the patent in suit, since the cation of the EDTA salts disclosed on page 310 of document (3') was sodium. With its letter dated 20 March 2012, the Appellant referred to the "standard buffer solutions" disclosed on page 309 of document (3'), and argued that it was illogical to assume that these contained in the one case sodium and a different cation in the other. Together with its statement of grounds of appeal, the Appellant filed document (5):

(5) S. Chaberek *et al.*, J. Am. Chem. Soc., 1955, 1477 to 1479

which was cited as footnote 9 in document (3'), document (5) confirming that the cation of the salts of HEDTA disclosed in document (3') was indeed sodium. During oral proceedings held before the Board on 24 April 2012, the Appellant further argued that the subject-matter of claim 1 was not novel over the preparation of the monosodium salt of HEDTA from the trisodium salt thereof by ion-exchange using a Dowex-50 resin disclosed in the Experimental (Materials) section of document (5). With letter dated 20 March 2012, the Appellant argued for the first time that the subject-matter of claim 1 was also not novel over the disclosure of document (1), more particularly over

Example 1 and the disclosure at column 3, lines 13 to 21 thereof.

The Appellant submitted that the subject-matter of the present invention was not inventive starting from document (1) as closest prior art. Document (1) was closer than document (2), since the former disclosed trisodium HEDTA at a pH of from 7 to 10, namely the partially protonated trisodium salt, which was structurally closer than trisodium HEDTA *per se*. Starting however from document (2), the Appellant submitted that the improvements alleged by the Respondent (Patent Proprietor) of reduced viscosity and corrosiveness of the claimed solution were not achieved over the whole scope of the claim. More particularly, the experimental data filed with the letter dated 11 December 2008 before the Opposition Division showed that at a concentration of 10 wt%, the purported decrease in viscosity of the solutions was merely within experimental error. With regard to corrosiveness, Example 3 of the patent in suit merely showed an improvement for a 40 wt% solution. The Appellant conceded that the claimed salts were more soluble than trisodium HEDTA over the entire claimed range. The Appellant also conceded that there was no prior art dealing with the problems of viscosity and/or corrosiveness, but argued that it was obvious to acidify solutions of the trisodium salt of HEDTA to improve its solubility, since document (2) itself disclosed the solubility of HEDTA and referred to the normal solubility curves thereof.

The Appellant argued that the process according to independent claim 5 was insufficiently disclosed,

because the skilled person had to conduct a research programme in order to figure out which reaction conditions to use, particularly with regard to the thickness of the membrane and to the relationship between the temperature, concentration and viscosity of the solution of trisodium HEDTA.

- V. The Respondent submitted that only pages 311 and 312 of document (3) were in the proceedings, since only these two pages had been cited by the Opposition Division in its decision. It requested that the remaining pages of said document, resulting in document (3'), should not be admitted into the proceedings. Document (5) was late filed, and not being *prima facie* highly relevant, should also not be admitted into the proceedings. With regard to the novelty objection based on document (1), the Respondent argued that in view of the lateness of this objection and the complexity of its subject-matter, it should not be admitted into the proceedings. The Respondent also requested that should document (5), pages 309 and 310 of document (3'), and/or the novelty objection based on document (1), be admitted into the proceedings, that the case be remitted to the first instance in order for it to be examined by two instances.

With regard to novelty, the Respondent submitted that document (3') did not clearly and unambiguously disclose the cation of the salts of HEDTA described therein to be sodium. In any case, document (5) provided evidence that the cation of the salts disclosed in document (3') was in fact potassium. Document (5) itself was not novelty destroying, since only aqueous solutions of the mono- and trisodium salts



of HEDTA were directly and unambiguously disclosed therein.

The subject-matter of claim 1 was inventive starting from document (2) as closest prior art. Document (2) was closer than document (1), since the former specifically referred to solubility problems of HEDTA. Starting from the trisodium salt of HEDTA disclosed in document (2), the problem to be solved by the patent in suit was the provision of an aqueous solution of the sodium salt of the chelating compound HEDTA that had better handling properties, i.e. was less viscous, more soluble and less corrosive. Examples 1 to 3 of the patent in suit and the experimental data filed with the letter dated 11 December 2008 before the Opposition Division showed that said problem had indeed been solved. No motivation was provided in document (2) alone, or in combination with either of documents (1) or (3), to solve said problem by providing a solution comprising a sodium salt  $x\text{Na}^+y\text{H}^+$  of HEDTA, wherein  $x$  is from 2.1 to 2.7,  $y$  is from 0.9 to 0.3 and  $x + y$  is 3.

The Respondent argued that the process of claim 5 was sufficiently disclosed, since Example 1 and paragraphs [0011] to [0015] of the patent specification provided the person skilled in the art with enough information to rework said process.

VI. In a communication of the Board dated 2 February 2012, it was indicated that document (3') (page 310, Fig. 1 and right hand column, first line) specifically referred to the disodium salt of EDTA.

VII. At the oral proceedings before the Board, the Respondent filed a first, second and third auxiliary request, replacing all previous auxiliary requests on file.

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

The Respondent requested that the appeal be dismissed, or subsidiarily, that the patent be maintained on the basis of any of the first, second or third auxiliary requests, all as filed during the oral proceedings before the Board.

IX. At the end of the oral proceedings, the decision of the Board was announced.

### **Reasons for the Decision**

1. The appeal is admissible.

2. *Admissibility of late-filed documents*

2.1 *Pages 309 and 310 of K. Nakamoto et al., J. Am. Chem. Soc., 1963, 85*

2.1.1 *K. Nakamoto et al., J. Am. Chem. Soc., 1963, 85* is a five page article from the Journal of the American Chemical Society (J.A.C.S.). Two of these five pages, namely pages 311 and 312, were cited by the Opposition Division in its decision as document (3) and discussed therein with regard to their relevance for the novelty and inventiveness of the claimed invention. These two

pages were also cited by the Respondent on page 2, lines 14 to 15 of the patent in suit. Page 310 was cited by the Board in its communication dated 2 February 2012 and page 309 by the Appellant in its letter dated 20 March 2012. The whole article, namely pages 309 to 313, was cited in the European Search Report issued on the application leading to the patent in suit.

2.1.2 Page 310 of this J.A.C.S. article was introduced into the proceedings with the communication of the Board in order to try and shed light upon the nature of the citation in the equation on page 311. Page 309 was cited by the Appellant in direct response to said communication, in a further attempt to clarify this issue.

2.1.3 The Respondent had had nearly three months, and one month, respectively, to analyse the content of these two pages, and must in fact have been aware of the full content of the J.A.C.S. article since the issuance of the European Search Report in 2004. The cited content thereof, namely a single compound and a statement referring to standard buffer solutions, was not complex in nature, such that the Board holds that the Respondent had had ample time to take a position on these additional pages without its right to be heard being jeopardised (Article 113(1) EPC). Under these circumstances the Board decides to admit pages 309 and 310 of the J.A.C.S. article into the proceedings, pages 309 to 312 of this article being referred to as document (3') (see point IV above).

2.2 *Document (5)*

2.2.1 Document (5) was introduced by the Appellant with its statement of grounds of appeal, in order to shed light upon the nature of the cation of the salts of HEDTA disclosed in document (3'), which the Appellant considered to destroy the novelty of the claimed subject-matter. Document (5) was cited as footnote 9 in document (3'). The Opposition Division had decided that document (3) did not disclose that the cation of the salts of HEDTA disclosed therein was sodium and gave no information regarding the nature of the base used to titrate the acid.

2.2.2 Document (5) would appear to be a *a priori* relevant for determining whether or not document (3') is novelty destroying or not, since it discloses the base used in the potentiometric titrations referred to in document (3'). In view of its *a priori* relevance, the Board decides to admit document (5) into the proceedings.

3. *Admissibility of novelty objection based on document (1)*

3.1.1 Approximately one month before the oral proceedings before the Board, the Appellant argued for the first time that the subject-matter of claim 1 was not novel over the disclosure of document (1), more particularly over Example 1 and the disclosure at column 3, paragraph 3 thereof. Previously, document (1) had never been cited against the novelty of the claimed subject-matter.

3.1.2 The solutions disclosed in these respective parts of document (1) are a mixture of several ingredients,

namely trisodium HEDTA, EDTA, a base and iron. In view of *inter alia* the chelating properties of the iron, in the absence of experimental evidence, it cannot be determined whether any protonated  $\text{Na}_x\text{-HEDTA}$  salts were present in the solutions according to document (1), let alone such a solution wherein  $x$  is from 2.1 to 2.7.

3.1.3 In view of the complexity of the novelty issue raised at this very late stage of the proceedings, the Board exercises its discretion according to Article 13(1) RPBA to not admit the novelty objection based on document (1) into the proceedings.

#### 4. *Remittal*

4.1 The Respondent requested that the case be remitted to the first instance for further prosecution should *inter alia* document (5) and pages 309 and 310 of document (3') be admitted into the proceedings, in order for the case to be examined at two levels of jurisdiction.

4.2 According to Article 111(1) EPC, the Board of Appeal may either exercise any power within the competence of the department which was responsible for the appealed decision, i.e. to decide on all issues, or remit the case to the first instance for further prosecution. Thus, the EPC does not guarantee the parties an absolute right to have all the issues of a case considered by two instances.

4.3 In the present case, the novelty objection based on document (3') remains essentially the same as before the first instance, the additional pages of this document being cited merely to reinforce arguments

already on file. With regard to document (5), although a new novelty objection based thereon was raised for the first time at the oral proceedings, the document itself was filed at the earliest possible stage of the appeal proceedings, i.e. with the statement of grounds of appeal, and the objection was based on one specific experimental part thereof, which was easy to comprehend in a short time. With regard to inventive step, the factual framework of the case remains substantially the same as before the first instance.

- 4.4 Accordingly, the Board judges that it is not appropriate to remit the present case to the Opposition Division.

*Main request*

5. *Novelty*

- 5.1 The Appellant challenged the novelty of the claimed invention with regard to documents (3') and (5).

- 5.2 Document (3') discloses in Figure 4 on page 311 infrared spectra of HEDTA in D<sub>2</sub>O solutions at different pH values, the Appellant submitting that the solution corresponding to the spectrum at pH 9.1 was an aqueous mixture of salts according to the patent in suit.

- 5.2.1 However, regardless of whether or not at a pH of 9.1, x in a solution of the xNa<sup>+</sup>yH<sup>+</sup> salt of HEDTA would inevitably have a value between 2.1 and 2.7, the cation of the HEDTA salts in the solutions thereof is not disclosed in document (3'). More particularly, there is no mention whatsoever in the section beginning N-

Hydroxyethylenediaminetriacetic acid (HEDTA) in the left hand column on page 311 and finishing at line 4 in the right hand column on page 312 of the nature of the base used in the titrations which resulted in the spectra in Figure 4.

5.2.2 The Appellant argued that the cation of the salts of HEDTA disclosed in document (3') was sodium, since the cation of the EDTA salts disclosed on page 310 of document (3') was sodium, it being illogical to assume that the standard buffer solutions referred to on page 309 contained in the one case sodium and a different cation in the other. Furthermore, document (5), which was cited as footnote 9 in document (3'), also confirmed that the cation of the salts of HEDTA disclosed in document (3') was sodium. In addition, in the summary of the disclosure of document (3) on page 2, lines 14 to 15 of the specification of the patent in suit, the Respondent itself acknowledged that the cation was sodium.

5.2.3 However, the fact that sodium salts of EDTA are disclosed in document (3') does not lead to a direct and unambiguous disclosure that the salts of HEDTA disclosed therein are also sodium salts, since there is no disclosure in said document that the same base was used for both potentiometric titrations. The nature of the cation in the standard buffer solutions referred to by the Appellant is not disclosed, and in any case, said standard buffer solutions are used for calibration, and not necessarily for the potentiometric titrations. Document (5), which is referred to in document (3') as the source of the ionization constants for HEDTA reported from potentiometric studies, in fact uses

**potassium** hydroxide for the titrations (see Apparatus and Procedure in the right hand column on page 1477 of document (5)) and the titration curves shown in Figure 2 on page 1478 are for pH values vs. moles of potassium hydroxide. Finally, although in the introductory section of the specification of the patent in suit, it is indeed stated that document (3) discloses the mono-, di- and trisodium salts of HEDTA, the Board has made its own assessment of the disclosure of said document (see point 5.2.1 above), and found no evidence to support said statement.

5.2.4 Thus, since no sodium salts of HEDTA are directly and unambiguously disclosed in document (3'), the subject-matter of claim 1 is novel over the disclosure of this document.

5.3 Document (5) (under "Experimental, Materials" in the left hand column on page 1477) discloses the preparation of the monosodium salt of HEDTA from an aqueous solution of the trisodium salt thereof by ion-exchange using a Dowex-50 resin.

5.3.1 The Appellant argued that whilst said solution of trisodium HEDTA passed through said ion-exchange column,  $\text{Na}_x\text{-HEDTA}$ , wherein x was 3 was converted to  $\text{Na}_x\text{-HEDTA}$ , wherein x was 1, such that at some point in the column, x must have been between 2.1 and 2.7.

5.3.2 However, the Board holds that this ion-exchange procedure discloses nothing more than aqueous solutions of the tri- and monosodium salts of HEDTA, together with a solution of the  $x\text{Na}^+\text{yH}^+$  salt of HEDTA in the ion-exchange column, wherein x is between 3 and 1. No



discrete solution of the  $x\text{Na}^+\text{yH}^+$  salt of HEDTA wherein  $x$  is specifically between 2.1 to 2.7 is disclosed in said document.

5.3.3 Thus, the subject-matter of claim 1 is also novel over the disclosure of document (5).

5.4 The Board therefore concludes that the subject-matter of claim 1 of the main request is novel within the meaning of Article 54 EPC.

## 6. *Inventive step*

6.1 The patent in suit is directed to an aqueous solution comprising a sodium salt of the chelating compound HEDTA. Document (2) (see column 2, lines 18 to 21 and column 5, lines 14 to 17) discloses an aqueous solution of the trisodium salt of HEDTA and describes water solubility problems associated with certain aminocarboxylic acids (see column 1, lines 18 to 20).

6.1.1 The Appellant argued for the first time at the oral proceedings before the Board that not document (2), but rather document (1), was the closest state of the art, since document (1) (see Example 1 and column 3, paragraph 3) disclosed aqueous solutions of protonated  $\text{Na}_x\text{-HEDTA}$  salts, i.e. wherein  $x$  was less than 3, which were structurally closer to the claimed solutions than a solution of  $\text{Na}_x\text{-HEDTA}$ , wherein  $x$  was 3.

However, as indicated above (see point 3.1.2), it cannot be determined with certainty whether any protonated  $\text{Na}_x\text{-HEDTA}$  salts were present in the complex solutions disclosed therein, document (1) also not

referring to any solubility problems associated with the salts disclosed therein.

- 6.1.2 Thus, the Board considers, in agreement with the Opposition Division and the Respondent, that the aqueous solution of the trisodium salt of HEDTA of document (2) represents the closest state of the art and, hence, takes it as the starting point when assessing inventive step.
- 6.2 In view of this state of the art, the problem underlying the patent in suit, as formulated by the Respondent and indicated in paragraph [0005] of the specification of the patent in suit, consists in providing an aqueous solution of the sodium salt of the chelating compound HEDTA that has better handling properties, more particularly is less viscous, more soluble and less corrosive.
- 6.3 As the solution to this problem, claim 1 of the patent in suit proposes an aqueous solution comprising the sodium salt  $x\text{Na}^+\text{yH}^+$  of HEDTA, wherein  $x$  is 2.1 to 2.7 and  $y$  is 0.9 to 0.3, and  $x + y$  is 3.
- 6.4 To demonstrate that the claimed solution achieves the alleged improvements with regard to viscosity, solubility and corrosiveness, the Respondent relied upon Examples 1 to 3 of the specification of the patent in suit and the experimental data filed with the letter dated 11 December 2008 before the Opposition Division. Example 1 of the patent in suit shows that for aqueous solutions of sodium salts wherein  $x$  is 2.7, and Example 2 for when  $x$  is 2.4 and 2.1 and for solution concentrations of 30, 40 and 50 wt%, a decrease in

viscosity *vis-à-vis* a solution of trisodium HEDTA is achieved. The experimental data filed with letter dated 11 December 2008 show that at a concentration of 10 wt%, when x is 2.4, a decrease in viscosity *vis-à-vis* a solution of trisodium HEDTA is also observed. Example 2 additionally shows that at a concentration of 50 wt%, trisodium HEDTA solidifies and cannot be used anymore, whereas aqueous solutions of sodium salts wherein x is 2.4 and 2.1 can still easily be handled, i.e. that the sodium salts according to the invention are more soluble than trisodium HEDTA. Example 3 shows that a 40 wt% aqueous solution of sodium salts wherein x is 2.3 is significantly less corrosive to aluminium than trisodium HEDTA, thus allowing the product to be handled in aluminium containers and production equipment. In view of said data, the Board is satisfied that the problem underlying the patent in suit has been successfully solved.

6.5 The Appellant conceded that the problem had been solved with respect to solubility, but argued that with respect to viscosity and corrosiveness, it had not been convincingly shown that the problem had been successfully solved over the entire ambit of the claimed subject matter.

6.5.1 Thus, the experimental data filed with the letter dated 11 December 2008 showed that at a concentration of 10 wt%, the purported decrease in viscosity of the solutions was merely within experimental error, namely within the error margin of 0.05 cP given by the Respondent itself. However, the Board holds that the decrease in viscosity has been clearly shown for solution concentrations of  $\geq 30$  wt%. Since the viscosity

of a compound in a particular solvent is an inherent property, analogous to the solubility as conceded by the Appellant, the Board holds that if lower viscosity has been shown for particular concentrations of one compound against another in the same solvent, then this effect would also occur at lower concentrations, however minimal and difficult to measure, such there is no reason for the Board to hold that the effect of decreased viscosity would not occur at all concentrations. In any case, the data filed with the letter dated 11 December 2008 show an effect at a concentration of 10 wt% for sodium salts wherein  $x$  is 2.4 which is clearly outside experimental error.

6.5.2 With regard to corrosiveness, the Appellant submitted that Example 3 of the patent in suit showed an improvement only for a specific solution having a concentration of 40 wt%. However, the Board has no reason to doubt that said effect cannot be extrapolated to other solution concentrations, since as argued above for viscosity, it is plausible that the effect would also occur, albeit less pronounced, at lower concentrations. Hence this submission of the Appellant is mere speculation which has not been supported by evidence or arguments.

6.5.3 The Board thus holds that these submissions of the Appellant do not throw doubt on the success of the claimed solution to the problem underlying the patent in suit.

6.6 Finally, it remains to be decided whether or not the proposed solution to the problem underlying the

disputed patent is obvious in view of the cited prior art.

6.6.1 Document (2) itself does not refer to the problems of viscosity and/or corrosiveness of the trisodium salt of HEDTA, nor did the Appellant cite any other prior art document which dealt with these problems. The Board thus holds that it was not obvious for the skilled person to acidify such a solution, let alone to achieve a solution of a sodium salt  $x\text{Na}^+y\text{H}^+$  of HEDTA, wherein  $x$  is from 2.1 to 2.7, in order to decrease the viscosity and corrosiveness of aqueous solutions of trisodium HEDTA.

6.6.2 The Appellant argued that since document (2) itself disclosed the solubility of HEDTA and referred to the normal solubility curves thereof, it was merely within the standard practice of the skilled person to acidify solutions of the trisodium salt of HEDTA in order to improve its solubility.

However, document (2), although indeed referring to the problem of solubility (see point 6.1 above) and stating that HEDTA acid has a 6% solubility at 20°C, no link has been established between the solubility of the HEDTA free acid and that of the partially acidified trisodium salt thereof. In any case, it would appear that the solubility of the free acid is lower than that of the trisodium salt, Example 2 of the patent in suit teaching a 40 wt% solution of trisodium HEDTA at 20°C, such that even if a link existed, the skilled person would have expected the salt to become less soluble upon acidification. Thus, document (2) also does not

teach acidifying a solution of trisodium HEDTA in order to increase its solubility.

6.7 Accordingly, there is no suggestion in document (2) to acidify a solution of trisodium HEDTA, let alone to achieve a solution of a sodium salt  $x\text{Na}^+y\text{H}^+$  of HEDTA, wherein  $x$  is from 2.1 to 2.7, in order to improve its handling properties, neither with respect to viscosity, nor solubility, nor to corrosiveness.

6.8 For these reasons, the Board concludes that the aqueous solution of claim 1, and by the same token a container comprising said solution according to independent claim 3, the use of said solution of independent claim 4, and a method of preparing such a solution of independent claim 5, together with the subject-matter of dependent claims 2 and 6, involves an inventive step within the meaning of Articles 52(1) and 56 EPC.

## 7. *Sufficiency of disclosure*

7.1 The Appellant argued that the process of independent claim 5 was insufficiently disclosed, because Example 1 gave no details regarding the thickness of the membrane, nor the relationship between the temperature, concentration and viscosity for the electrodialysis of the solution of trisodium HEDTA, such that the skilled person had to conduct a research programme in order to figure out which reaction conditions to use. In addition, only one (dipolar) membrane was used in Example 1, such that it did not even fall under the process of claim 5, which required both a bipolar and a cation membrane.

7.2 The Board, however, holds that the process of claim 5 is sufficiently disclosed, since paragraph [0011] of the patent specification gives specific examples of the particular bipolar and cation exchange membranes to employ in the electro dialysis cell. Paragraph [0012] teaches the maximum viscosity of the solution of trisodium HEDTA to be electro dialysed, this being a function of the concentration and temperature of the solution, such that the skilled person has no problem adjusting these values in order to ensure that the membranes operate properly. Paragraphs [0013] to [0015] provide further experimental details such that the person skilled in the art has enough information to rework the process of claim 5, regardless of whether or not Example 1 falls under the ambit of claim 5. Nor has the Appellant provided any evidence that the process cannot be carried out.

7.3 Therefore, the Board holds that the invention as defined in claim 5 can be performed by a person skilled in the art within the whole area claimed without undue burden, using common general knowledge and having regard to further information given in the patent in suit, such that the opposition ground pursuant to Article 100(b) EPC is not justified.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:

C. Rodríguez Rodríguez

P. Gryczka