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**D E C I S I O N**  
**of 6 December 2004**

**Case Number:** T 1140/01 - 3.3.6

**Application Number:** 94926856.9

**Publication Number:** 0716681

**IPC:** C11D 3/06

**Language of the proceedings:** EN

**Title of invention:**

Automatic dishwashing detergent composition based on sodium potassium tripolyphosphate

**Patentee:**

UNILEVER N.V., et al

**Opponent:**

The Procter & Gamble Company

**Headword:**

Dishwashing composition/UNILEVER

**Relevant legal provisions:**

EPC Art. 84, 54, 56

**Keyword:**

Dishwashing composition/UNILEVER

**Decisions cited:**

"Amendment- no: unclear (main request and amended version of the patent as found to comply with the requirements of the EPC by the Opposition Division)"

"Novelty - no (first and second auxiliary requests)"

"Inventive step - no (third auxiliary request)"

**Catchword:**

-



Case Number: T 1140/01 - 3.3.6

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.6  
of 6 December 2004

**Appellant I:**  
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patent)

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**Appellant II:**  
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**Decision under appeal:**

**Interlocutory decision of the Opposition  
Division of the European Patent Office posted  
24 August 2001 concerning maintenance of  
European patent No. 0716681 in amended form.**

**Composition of the Board:**

**Chairman:** P. Krasa  
**Members:** P. Ammendola  
R. Moufang

## Summary of Facts and Submissions

I. This appeal is from the interlocutory decision of the Opposition Division concerning the maintenance in amended form of the European patent No. 0 716 681 entitled "*Automatic dishwashing detergent composition based on sodium potassium tripolyphosphate*" (hereinafter the sodium potassium tripolyphosphate will be indicated as "NaKTP").

II. The European patent had been opposed on the grounds of Article 100(a) EPC for lack of novelty and of inventive step (Articles 52(1), 54 and 56 EPC) as well as on the grounds of Article 100(c) EPC for added subject-matter.

III. The Opponent had cited in the grounds of opposition *inter alia*:

Document (4) = US-A-5 053 158

and

Document (5) = GB-A-1 577 140,

and filed under cover of a letter dated 25 April 2001 some calculations (hereinafter indicated as "Attachment I") on the chemical composition of the detergent formulations described *inter alia* in example 10 of Document (5).

The Patent Proprietors had requested maintenance of the patent in amended form on the basis of a first set of amended claims labelled as main request or on the basis

of a second set of amended claims and of a description adapted thereto labelled as auxiliary request.

IV. In its decision, the Opposition Division found that the subject-matter of the amended claims of the main request was not novel. The claims and the amended description according to the auxiliary request were instead found to comply with the requirements of the EPC.

V. The Patent Proprietors (hereinafter Appellants I) and the Opponent (hereinafter Appellant II) appealed against this decision.

VI. The Appellants I filed with the statement setting out the grounds of appeal two sets of amended claims respectively labelled main and auxiliary request.

They then filed by fax on 25 November 2004 (i.e. less than two weeks before the oral proceedings scheduled for 6 December 2004) four sets of amended claims as their main and first to third auxiliary requests.

This main request was identical to the main request filed with the grounds of appeal, as well as to the main request found not novel by the Opposition Division.

The second auxiliary request was identical to the (only) auxiliary request filed with the grounds of appeal.

The sets of claims of the first and third auxiliary request were instead filed for the first time by the above indicated fax.

VII. On 6 December 2004, oral proceedings were held before the Board as scheduled, in the presence of both parties.

VIII. Relevant for the present decision are only the respective claims 1 of the main and the first to third auxiliary requests and claim 11 of the first auxiliary request, as well as claim 1 of the patent in the amended form that has been found to comply with the requirements of the EPC by the Opposition Division.

Claim 1 of the **main request** reads:

*"1. A homogeneous liquid automatic dishwashing detergent composition comprising:*

*(a) about 5 to about 40% by weight of a soluble sodium potassium tripolyphosphate;*

*(b) 0 to about 3% by weight of a thickening polymer;*

*(c) water;*

*and*

*(d) about 1 to about 10% by weight of an orthophosphate, pyrophosphate, corresponding salts of the ortho- and pyrophosphate, or mixtures thereof,*

*wherein the composition contains both sodium and potassium ions in a  $K^+/Na^+$  weight ratio of about 0.5 to less than about 1.5 and is substantially free of alkali silicate."*

It differs substantially from claim 1 of the patent as granted only in the initial part, due to the additional presence of the wordings "automatic dishwashing".

Claim 1 of the **first auxiliary request** reads:

*"1. A homogeneous liquid detergent composition comprising:*

*(a) about 8 to about 37% by weight of a soluble sodium potassium tripolyphosphate;*

*(b) about 1 to about 10% by weight of an orthophosphate, pyrophosphate, corresponding salts of the ortho- and pyrophosphate, or mixtures thereof;*

*(c) 0 to about 3.0% by weight of a thickening polymer;*

*and*

*(d) water,*

*characterised in that the composition contains both sodium and potassium ions in a  $K^+/Na^+$  weight ratio of about 0.5 to less than about 1.5 and is substantially free of alkali silicate and in that the sodium potassium tripolyphosphate has been formed in situ by hydrolysing about 5% to about 28% by weight of sodium trimetaphosphate with about 3% to about 12% by weight of a potassium hydroxide base, the indicated concentrations being based on the composition."*

Claim 11 of this request describes (similarly to claim 1 of the third auxiliary request quoted herein

below) the use of the composition of the invention in automatic dishwashing.

Claim 1 of the **second auxiliary** is identical to that of the first auxiliary request cited above.

Claim 1 of the **third auxiliary request** reads:

*"1. Use of a homogeneous liquid detergent composition comprising:*

*(a) about 5 to about 40% by weight of a soluble sodium potassium tripolyphosphate;*

*(b) 0 to about 3% by weight of a thickening polymer;*

*(c) water, and*

*(d) about 1 to about 10% by weight of an orthophosphate, pyrophosphate, corresponding salts of the ortho- and pyrophosphate, or mixtures thereof*

*wherein the composition contains both sodium and potassium ions in a  $K^+/Na^+$  weight ratio of about 0.5 to less than about 1.5 and is substantially free of alkali silicate,  
in automatic dishwashing."*

Similarly to claim 1 of the main request, also claim 1 of **the amended form of the patent that the Opposition Division has found to comply with the EPC** starts with the wording *"A homogeneous liquid automatic dishwashing detergent composition"*.

IX. The Appellants I argued in writing and orally substantially as follows.

The **late filing** of the first and third auxiliary requests would be due to the difficulties encountered by the representative of Appellants I in contacting their American business unit which was undergoing restructuring.

The introduction of "*automatic dishwashing*" in claim 1 of the **main request** provided a restriction of the claimed subject-matter that would be clear to the person skilled in the art. In particular, automatic dishwashing detergent compositions would comprise only low-foaming surfactants, rather than those known to produce high-foaming e.g. in detergent compositions for fabrics. The Appellants I also referred to the use of a similar wording in Document (4) and to the alleged fact that the leading industries in the field of detergents would have a research unit specialized for automatic dishwashing detergent compositions, which would be distinct from that in charge of e.g. detergents for fabrics.

In respect of the novelty of claim 1 of the **first and second auxiliary requests** they conceded:

(a) that the vague definition of component "(b)" in these claims could only be understood as indicating the sodium (hereinafter "Na") or potassium (hereinafter "K") salts of orthophosphate (hereinafter "OP") and/or pyrophosphate (hereinafter "PP"), and



(b) that these salts, as well as the NaKTP used for preparing the claimed composition are dissolved therein, i.e. dissociated in  $K^+$  and  $Na^+$  cations and tripolyphosphate (hereinafter "TP"), OP and PP anions.

The Appellants I argued, however, that the claimed composition prepared by forming *in situ* the NaKTP would be different from that obtained from NaTP and KOP as disclosed in Document (5) because the real ion concentrations would be different from those which could be calculated in theory and/or because of the intrinsic differences between the detergent compositions for automatic dishwashing and those for washing fabrics.

With regard to the presence of an inventive step for the subject-matter of claim 1 of the **third auxiliary request** the Appellants I initially stated at the oral proceedings that the allegedly PP-free sample 4A of the patent in suit was not a composition of the invention, thereby contradicting their own statement given in the opposition proceedings. However, they finally conceded not to be able to provide precise information as to chemical composition of such sample and of the ingredients used for preparing it and admitted that their contradictory submissions were based only on the content of the disclosure in the patent in suit.

Moreover, they stated that the "*plate and machine appearance*" measured in the patent examples was simply the corollary of the advantageous property of the composition of the invention, i.e. the absence of phosphate precipitation.

The Appellants I conceded that the most relevant prior art was that disclosed in Document (4), but argued that it would lead away from the claimed invention, because in the composition of this prior art the alkali silicates would be mandatory. They also maintained the existence of a prejudice against the use of NaKTP for its allegedly notorious tendency to produce phosphate precipitation.

- X. Appellant II refuted the above arguments and argued substantially as follows.

It maintained that the appeal of Appellants I would be at least partially **inadmissible**, because their statement setting out the grounds of appeal provided no real reasoning as to why they considered that the subject-matter of the claims of their main request was novel. In particular, this statement contained no comment to the reasons given in the decision under appeal. Appellant II conceded, however, that the same statement provided at least reasons as to the patentability of the claims of the (then pending) auxiliary request.

The representative of Appellant II conceded at the oral proceedings that she had not been taken by surprise by the fact that the Appellants I had filed requests containing novel claims directed to the use in automatic dishwashing of the composition of the invention. She argued, however, that the first and third auxiliary requests containing these use claims had been **filed very late** and, thus, she could obtain before the hearing no input from her client as to the technological implications of the claimed uses.

Therefore, Appellant II concluded that these requests of Appellants I should not be admitted into the proceedings.

It observed, in respect of the clarity of the expression "*automatic dishwashing detergent composition*" introduced in claim 1 of the **main request**, that this expression had been used over the years to label very different detergent compositions and, therefore, that it amounted to an unclear definition. Appellant II considered that also "low-foaming" or "high-foaming" would be vague terms, lacking of any generally accepted definition and alleged that certain detergent formulations could be indifferently used e.g. for dishwashing or for washing fabrics. It provided, however, no evidence supporting such allegation.

With regard to the novelty of claim 1 of the **first and second auxiliary requests**, the Appellant II argued that the subject-matter of the claims directed to detergent compositions in these requests was anticipated *inter alia* by example 10 of Document (5). In this respect it referred to the undisputed calculations given in Attachment I.

With regard to the presence of an inventive step for the subject-matter of claim 1 of the **third auxiliary request** the Appellant II maintained that the skilled person would consider the PP impurities contained in the used NaKTP as the only possible source of the PP content in the (allegedly PP-free) sample 4A of the patent in suit. It stressed that the Appellants I had explicitly recognised (*inter alia* in a written submission during the opposition proceedings) that this

sample was a composition of the invention and concluded that the experimental data referring to this example demonstrated that the composition of the invention would not display the alleged improved cleaning effect.

However, at the oral proceedings the Appellant II admitted that NaKTP of high purity was also known and conceded not to have evidence that the specific NaKTP used for making sample 4A would contain technically relevant amounts of PP.

Appellant II argued that if the Board would be inclined to disregard the data in the patent referring to sample 4A in view of the contradictory description of this sample, then also all the remaining data in the patent examples should be disregarded, because they also would be contradictory and ambiguous.

It concluded that the patent in suit contained no credible evidence of the alleged superior properties of the composition of the invention and that these represented only an alternative to the compositions of the prior art disclosed in Document (4) that was obvious in view already of the whole disclosure in this citation, or in view of the combination of the latter with the disclosure in Document (5).

- XI. Appellants I requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of the claims submitted as main request or, alternatively, as first to third auxiliary requests, all requests submitted by fax of 25 November 2004.

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

## **Reasons for the Decision**

### *Appeal of Appellants I*

1. Admissibility of the appeal of Appellants I
  - 1.1 Appellant II has argued that Appellants I have provided in the statement setting out their grounds of appeal no real reasoning in respect of the patentability of the claims according to their main request, i.e. the same claims that the Opposition Division found lacking novelty for all the reasons discussed in details in the decision under appeal. It has conceded, however, that this statement contained at least reasons as to the patentability of the claims according to the (initial only) auxiliary request. Therefore, Appellant II has maintained that the appeal of Appellants I should be considered not admissible at least in respect of the main request already refuted by the Opposition Division.
  - 1.2 The statement setting out the Appellants' I grounds of appeal undisputedly contains reasoned arguments dealing with the grounds of the appealed decision in view of the (then pending) auxiliary request. Therefore, the Board finds admissible this appeal. On the other hand, the EPC does not provide for a partial admissibility of the appeal. Therefore, the request of Appellant II not to admit the appeal of the other party only in as far as the main request is concerned must be refused.

2. Admissibility of the requests of Appellants I in view of their date of filing

2.1 The present main and second auxiliary requests (filed by fax of 25 November 2004) are clearly identical to the requests already filed by Appellants I together with their grounds of appeal and, therefore, have not been filed late. This is also undisputed by the Appellant II.

2.2 Contrary, the present first and third auxiliary requests of Appellants I have been filed for the first time by fax of 25 November 2004, i.e. less than two weeks before the oral proceedings and more than two years after the last reply of the other party, dated 3 July 2002. In particular, they differ from any previously filed set of amended claims in that they comprise for the first time claims directed to the use for automatic dishwashing of the detergent composition of the invention (see above item VIII, claim 11 of the first auxiliary request and claim 1 of the third auxiliary request).

2.3 The reasons adduced by the Appellants I to justify the late filing of these requests, in particular a restructuring of the American business, are found not convincing by the Board.  
Accordingly, the Board finds the first and third auxiliary requests clearly belated.

2.4 However, the Boards considers also

- that the representative of Appellant II has conceded at the oral proceedings that she was not taken by

surprise by the Appellants' I filing novel claims directed to the use in automatic dishwashing of the composition of the invention, and

- that the procedure before the Opposition Division (see, for instance, item 7 at page 20 of the decision under appeal) clearly required Appellant II to consider the technical implications of the explicit disclosure in the patent in suit of the composition of the invention being suitable for automatic dishwashing.

Therefore, the Board decides - under the prevailing circumstances of this case - to admit into the proceedings all the Appellants' I requests submitted by fax on 25 November 2004.

3. Admissibility of claim 1 of the main request in view of Article 84 EPC

3.1 Claim 1 of this request (see above item VIII) differs from the granted one *inter alia* because it specifies that the claimed detergent composition is an "*automatic dishwashing*" detergent composition.

3.2 The wording "*automatic dishwashing detergent composition*" was not present in any of the granted claims. Thus, its introduction in claim1 amounts to an amendment open to objection under Article 84 EPC.

The Board notes that this expression is not further defined in the patent in suit and that, as correctly observed by Appellant II, over the years very different

detergent compositions have been found suitable for that use. Therefore, it is considered *prima facie* vague.

- 3.2.1 The Appellants I have maintained instead that the added wording would exclude the possible presence of ingredients which are not normally present in detergent formulations suitable for automatic dishwashing. They have alleged that the knowledge as to which of the conventional detergent ingredients could be suitable for automatic dishwashing would be part of the common general knowledge of the person skilled in the art. For instance, automatic dishwashing detergent compositions would be known to be low-foaming and, therefore, they would comprise only low-foaming surfactants, rather than those known to produce high-foaming e.g. in detergent compositions for fabrics. The Appellants I also referred to the use of the wording "*automatic dishwasher detergent composition*" in Document (4) (see e.g. claim 1 in this citation) and to the fact that the leading industries have a research unit specialized for automatic dishwashing detergents which is distinct from that in charge of e.g. detergents for fabrics.
- 3.2.2 Appellant II has contested the existence of any clear definition of the ingredients suitable for automatic dishwashing detergent composition as opposed to those used in laundry detergents. On the contrary, it maintained that certain detergent formulations could be used for both dishwashing and for washing fabrics and contested the existence of any clear distinction also between high-foaming and low-foaming surfactants.
- 3.2.3 Since they have maintained that the term "*automatic dishwashing detergent composition*" clearly defines the



respective composition of matter and relied on the disputed existence of pertinent common general knowledge, the burden of demonstrating such existence remains with the Appellants I.

However, they have provided no credible evidence in this respect. In particular, the Board stresses that common general knowledge is normally represented by basic handbooks and textbooks on the subject in question, rather than by only one or few patent documents (such as Document (4) on which the Appellants I have relied).

Further, the fact that leading industries in this technical field normally have R&D units specialised for automatic dishwashing compositions, different from those e.g. for laundry formulations, is found irrelevant, because this does not necessarily imply that the detergent formulators of all different R&D units specialised in automatic dishwashing would agree on which compounds are possible ingredients of automatic dishwashing compositions and which not.

3.3 For these reasons, the Board concludes that the introduction of the wording "*automatic dishwashing*" renders unclear the subject-matter of claim 1 under consideration.

Therefore, the Board finds that this claim violates Article 84 EPC and, hence, that the main request of Appellants I is not admissible.

4. Admissibility of the first, second and third auxiliary requests in view of Articles 84 and 123(2) and (3) EPC and of Rule 57a EPC.

The Board is satisfied that the amendments to the granted claims resulting in those of the three auxiliary requests of Appellants I provide restrictions of the claimed subject-matter, are based on the disclosure in the original patent application, do not introduce unclarities and are occasioned by grounds of opposition. Therefore, these requests are considered formally admissible.

In view of the negative conclusions in respect of the allowability of these requests for novelty or inventive step no detailed reasons need to be given.

5. Novelty of the subject-matter of claim 1 of the first and second auxiliary requests
  - 5.1 Claim 1 of the first auxiliary request and that of the second auxiliary request are identical (see above item VIII). It is undisputed that these claims define an aqueous liquid detergent composition that is free from alkali silicates and obtained from a soluble NaKTP formed *in situ*, as well from salts of PP and/or OP. It is apparent to the skilled person and undisputed by the parties that also in the PP and/or OP salts the cations can only reasonably be Na<sup>+</sup> and/or K<sup>+</sup>.

Since the formulation defined in these claims comprise water and is explicitly required to be liquid, it is also immediately evident to the skilled person that the soluble NaKTP formed *in situ* as well as the Na and/or K

salts of PP and/or OP must necessarily be dissolved therein, i.e. dissociated in  $\text{Na}^+$  and  $\text{K}^+$  cations and in TP and PP and/or OP anions. Also this conclusion has not been contested by the Appellants I.

- 5.2 The Board observes that the prior art formulations for washing fabrics described in Document (5) are liquid, homogeneous, stable and based on mixtures of phosphate builders (see Document (5), page 4, lines 115 to 117 and the table at page 5). In particular, the Board considers relevant example 10 of this citation.

The overall  $\text{K}^+/\text{Na}^+$  ratio in this example is 0.86 (i.e. clearly within the range given in present claim 1) and the 15g = 0.041 mol NaTP and 7,5g = 0.035 mol KOP used for preparing 100g of the composition described in this example dissolve to form 0.041 mol of TP anions, 0.205 mol  $\text{Na}^+$  cations, 0.035 mol OP anions and 0.105 mol  $\text{K}^+$  cations (see Attachment 1 filed by the Appellant II already during the opposition proceedings, the contents of which were not contested by Appellants I). The same amounts of TP, OP,  $\text{Na}^+$  and  $\text{K}^+$  ions are present in 100g of a composition falling under present claim 1, formed from e.g. 16.4g = 0.041 mol of NaKTP with formula  $\text{Na}_3\text{K}_2\text{TP}$  (thus, this salt carries 0.123 mol  $\text{Na}^+$  and 0.082 mol  $\text{K}^+$ ), 4.4g = 0.027 mol NaOP (that carries 0.082 mol  $\text{Na}^+$ ) and 1.7g = 0.008 mol KOP (that carries 0.023 mol  $\text{K}^+$ ).

Accordingly, the Board concludes that the composition described in example 10 is the same as a composition of the invention prepared from 16.4% by weight of NaKTP formed *in situ* and from 4.4% by weight of NaOP and 1.7%

by weight of KOP, all the other ingredients being as those of the prior art example 10.

- 5.3 The Appellants I have not contested the correctness of these calculations, but have nevertheless maintained that the claimed composition prepared forming *in situ* the NaKTP would be different from those obtained from NaTP and KOP as disclosed in Document (5) because the real ion concentrations would be different from those predictable in theory and/or because of the well known differences between the detergent compositions for automatic dishwashing and those for washing fabrics. They provided no evidence supporting such differences, but simply alleged at the oral proceedings a not further specified complexity of the partially reversible reactions taking place when forming the claimed formulations.

These arguments are not convincing because of the already established irrelevance (see above item 3.2) of the **unproven** allegedly notorious differences between the detergent compositions for automatic dishwashing and those for washing fabrics and because also the alleged differences deriving from the complexity of the partially reversible reactions taking place during the formation of the formulations under considerations are **unproven** and, additionally, unclear in their technical implications.

Therefore, the Board comes to the conclusion that none of the differences alleged by the Appellants I between the claimed subject-matter and the homogeneous, stable and liquid aqueous detergent composition of example 10

of Document (5) was properly established as distinguishing feature.

5.4 Hence, the Board finds, in view of the conclusions given above at item 5.2, that the subject-matter of claim 1 of the first and of the second auxiliary requests is not novel (Article 54 EPC) and, thus, that these requests are not allowable.

6. Novelty of the subject-matter of claim 1 of the third auxiliary request

The Board is satisfied that the use defined in this claim is not anticipated in the prior art. Since the Appellant II has raised no objection in this respect no detailed reasons need to be given.

7. Inventive step for the subject-matter of claim 1 of the third auxiliary request

7.1 This claim describes the use of the detergent composition of the invention in automatic dishwashing (see above item VIII).

7.2 It is evident from the description of the granted patent (see page 2, lines 27 to 34) and undisputed by the parties that the stated advantage of the composition of the invention lays in its stability combined with (or caused by) the absence of phosphate precipitation, in particular in the wash. As explicitly conceded by the Appellants I at the oral proceedings and undisputed by Appellant II, the skilled reader of the patent in suit realizes immediately that these properties necessarily result in improved cleaning, as

determinable by comparisons of the produced "*plate and machine interior appearance*" (this evaluation parameter is mentioned at Table 3 and in the table of example 5).

Therefore, the technical problem that the person skilled in the art considers addressed in the patent in suit is that of **providing a detergent composition for automatic dishwashing resulting in improved cleaning.**

7.3 Appellant II has argued instead that already the examples of the patent in suit would demonstrate that the composition of the invention cannot credibly solve this technical problem. In particular it has maintained:

(a) that, despite the manifest contradictions in the description of sample 4A (because, on one side, the table at page 10 and the explicit wording at page 11, lines 31 to 33, indicated that this sample contained no PP, while, on the other side, Table 4 at page 11 disclosed for it a 0.6% content of sequestering PP anions) it would be possible to establish that this sample actually contained 0,6% by weight PP anions introduced as impurity of the preformed NaKTP used for preparing it,

(b) that this interpretation has been explicitly confirmed by statement of Appellants I during the opposition proceedings that this sample was a composition of the invention, and

(c) that the plate and machine appearance achieved by sample 4A (see the table in example 5) was clearly unsatisfactory, thereby demonstrating that at least some of the compositions of the invention did not have

the alleged absence of phosphate precipitation in the wash and the consequent improved cleaning.

Appellant II has added that if, however, the Board would be inclined to disregard the data in the patent in suit referring to sample 4A in view of the contradictory description of this sample, then also all the remaining data in the patent examples should be disregarded because also their description was contradictory and ambiguous.

It has therefore concluded that the examples in the patent in suit either cannot possibly demonstrate that the technical problem of obtaining improved cleaning was solved, or should be disregarded for lack of reliability.

- 7.3.1 The Board observes, on one side, that the interpretation of Appellant II of the contradictory description given for sample 4A necessarily implies some arbitrary hypotheses (e.g. as to the fact that among the above-identified contradictory statements it is the amount of PP given in Table 4 to be correct, and as to the fact that the commercially available NaKTP used for making this sample may comprise large amounts of PP impurities). The Appellant II has conceded, however, not to have any evidence in support of these hypotheses other than the previous statement of the Appellants I that this sample was a composition of the invention.

On the other hand, the Board notes that the Appellants I at the oral proceedings, after having initially maintained that sample 4A is a comparative

example and that their previous statement to the contrary during the opposition proceedings resulted from an error of interpretation of the patent, have explicitly admitted that they possessed no further reliable information on the chemical composition of this sample and to have relied in their contradictory submissions only on the content of the disclosure in the patent.

Therefore, all the parties' hypotheses as to the real chemical compositions of sample 4A are found arbitrary. Hence, also the argument of Appellant II as to the presence in the patent in suit of data demonstrating that the technical problem addressed therein had not been credibly solved, is found not convincing because it is merely based on an arbitrary interpretation of this sample 4A.

- 7.3.2 It remains the objection of Appellant II that also all other patent examples should be disregarded in view of their contradictory or at least ambiguous description.

The Board notes however that in the patent in suit the experimental data not referring to sample 4A undisputedly may at most **confirm**, i.e. never contradict, the statements at page 2, lines 27 to 34, of the patent specifications, that the composition of the invention is stable and produces no precipitates.

Since, on the other hand, the Appellant's II allegation that these statements are false is not supported by experimental evidence but only based on the above discussed interpretation of sample 4A found arbitrary, the Board has no reason to doubt the correctness of



these statements. Therefore, it is not necessary to further investigate whether or not the other experimental data in the patent could provide credible support to these statements.

- 7.4 Since the patent in suit, contrary to the allegations of Appellant II resumed above at item 7.3, does **not** contain clear contradictions as to the properties of the composition of the invention, the Board has no reason to disregard in the assessment of inventive step the technical problem addressed therein (see above item 7.2).

Document (4) discloses automatic dishwashing detergent compositions displaying substantially the same advantageous property mentioned in the patent in suit (see Document (4) column 2, lines 18 to 26, "*The advantageous characteristics of the compositions of this invention, including **physical stability**, low bottle residue, **high cleaning performance**, e.g. **low spotting and filming**, dirt residue removal, and so on ...*"; emphasis added by the Board). Therefore, the Board concurs with the parties that the state of the art disclosed in this citation represents the appropriate starting point for the assessment of inventive step.

- 7.5 The preferred detergent formulation for automatic dishwashing of Document (4) are defined generically at column 12, lines 26 to 61 (see in particular "*In accordance with an especially preferred embodiment, the thickened ... aqueous automatic dishwasher detergent composition of this invention includes, on a weight basis: (a) 10 to 35%, preferably 15 to 30%, alkali*

*metal polyphosphate detergent builder ... (b) 0 to 15, preferably 8 to 12%, alkali metal silicate; ... (g) high molecular weight hydrophilic cross-linked polyacrylic acid thickening agent in an amount ... preferably from about 0.4 to 1.5% ..... and (i) balance water, ....").*

The  $K^+/Na^+$  ratio and a more detailed definition of the phosphate builders useful for these compositions are disclosed at column 6, lines 3 to 46 (see in particular "*The compositions of this invention may also include sufficient amount of potassium ions and sodium ions to provide a weight ratio of  $K^+/Na^+$  of at least 1:1 ... more preferably from 1.05:1 to 3:1, such as 1.5:1, or 2:1.*" and "*Specific examples of detergent builder salts include the polyphosphates, such as alkali metal pyrophosphate, alkali metal tripolyphosphate, alkali metal metaphosphate, and the like ... The phosphate builders, where not precluded due to local regulations, are preferred and mixtures of tetrapotassium pyrophosphate ... and sodium tripolyphosphate ... (especially the hexahydrate) are especially preferred.*" as well as the immediately following sentence stating that the typical ratios of NaTP to KPP "*...are from about 2:1 to 1:8, especially from about 1:1.1 to 1:6 ...*"). Finally it is to be noted that also most the compositions of the examples of this citation are obtained from KPP and NaTP (see e.g. Table 1).

It is therefore evident to the skilled person (see also the reasoning given above at item 5) that, although the compositions for the use described in present claim 1 are obtained from NaKTP and (Na or K) salts of OP and/or PP, the same amounts of the corresponding

dissolved anions and cations may as well be obtained starting from the appropriate amounts of, for instance, the other phosphates mentioned as preferred builders in the above cited passage at column 6, lines 39 to 41 of Document (4) and in the examples of this citation, such as KPP and NaTP.

It is also evident that the overall  $K^+/Na^+$  ratio range defined for the composition described in the present use claim overlaps with that described in the just-quoted passages of Document (4).

Finally, the above-cited generic definition of the alkali silicate in this citation explicitly allows for the absence of these ingredients. Thus, also in this respect the definition of the composition to be used according to present claim 1 overlaps with the generic definition of the formulation for automatic dishwashing given in this citation.

Accordingly, at least part of the presently claimed subject-matter differs from the use for automatic dishwashing already disclosed in Document (4) only in that it amounts to a combination of features not anticipated in this citation, but embraced by the generic disclosure in this citation. Thus, the compositions of the present invention represent nothing more than further embodiments of the compositions generically defined in this citation.

7.6 In the undisputed absence of any direct comparison between the levels of residual spots achieved in the claimed use and those obtained when using the detergent compositions of this prior art, the Board can only

conclude that **both** the detergent composition of Document (4) and that of the present invention have improved cleaning properties. Therefore, the only technical problem credibly solved by the claimed use is that of **providing an alternative to the automatic dishwashing of the prior art.**

7.7 The Appellants I have argued instead that the problem credibly solved by the claimed use was that of achieving a low level of phosphate precipitation in the wash during automatic dishwashing **when starting from NaKTP**, i.e. an ingredient that despite its several recognised excellent properties never found application because of its notorious tendency to produce precipitates.

7.7.1 The Board finds this argument not convincing for the following reasons. The present claim refers to the use in automatic dishwashing of a composition of matter obtained from phosphate mixtures comprising NaKTP. The claimed use is independent on how the composition of matter is actually obtained because, as discussed already above at item 5.3, the same composition prepared from phosphate mixtures comprising NaKTP (as indicated in the present claim) may as well be manufactured by using other phosphates. Therefore, the technical problem suggested by the Appellants I cannot possibly be relevant for the whole claimed subject-matter.

7.8 It remains to be decided whether or not the claimed solution for the existing technical problem as defined hereinabove involves an inventive step. The Board observes that it is within the ordinary skill of a

practitioner to select further embodiments encompassed by a previously disclosed generic definition of detergent compositions suitable for the same use.

- 7.8.1 The Appellants I have further maintained that Document (4) would suggest to the skilled person only detergent compositions containing alkali silicates and, therefore, would lead away from the composition used according to the present invention. This would be apparent not only from the fact that all examples in Document (4) contain silicates, but also that the definition of the invention given in claim 1 describes these ingredients as mandatory ("*... (b) 5 to 15% alkali metal silicate ...*"). The further preferred range "*8 to 12%*" is also explicitly disclosed for the amount of alkali metal silicates at column 12, line 34, of this citation.

Therefore, so they argued, it would not have been obvious for the skilled person to omit the mandatory alkali silicate ingredient from the compositions disclosed in Document (4).

- 7.8.2 The Board cannot accept this argument for the following reasons. As already cited above at item 7.2, Document (4) explicitly describes (at column 12, line 34) "0" as a possible amount for the alkali metal silicates in the "*especially preferred embodiment of the invention*". Moreover, these silicates are no mandatory but optional ingredients to be used in particular situations (see at column 10, lines 28 to 34 "*Alkali metal (e.g. potassium or sodium) silicate, which provides alkalinity and protection of hard surfaces, such as fine china glaze and pattern, can be optionally employed in an amount ranging from about 0 to 20 weight percent, ...*").

7.8.3 For the absence of silicates, no effects are mentioned detrimental to the advantageous characteristics common to all the compositions of this prior art, such as the high cleaning performance due to low spotting and filming and dirt residue removal (see the description at column 6 of Document (4) cited above at item 7.1). Accordingly, the skilled reader would derive from the whole disclosure of Document (4) that the silicate-containing compositions disclosed therein are as good as those free from silicates.

7.8.4 Since the use of the silicate-free detergent composition according to claim 1 of the third auxiliary request of the Appellants I is not limited to the washing of sensitive surfaces (see above item 7.8.2), the disclosure in Document (4) cannot possibly lead away from the presently claimed subject-matter.

7.9 The Board concludes therefore that the subject-matter of this claim is obvious in view of the technical teaching of Document (4) (Article 56 EPC).

Hence, also the third auxiliary request of the Appellants I is found not allowable.

Since none of the requests of the Appellants I have been found allowable, their appeal must be dismissed.

#### *Appeal of Appellant II*

8. With its appeal the Appellant II has contested the patentability of the amended form of the patent found

to comply with the requirements of the EPC by the Opposition Division.

8.1 Claim 1 of this amended form of the patent (see above item VIII) differs from the granted one *inter alia* in that it specifies that the claimed detergent composition is an "automatic dishwashing" detergent composition.

8.2 Exactly the same amendment is present in claim 1 of the main request of Appellants I.

Item 3 above in this decision, dealing with claim 1 of the Appellants' I main request, already indicates the arguments submitted by the parties in respect of the admissibility under Article 84 EPC of this amendment and the reasons of the Board for concluding that it infringes this requirement of the EPC.

Of course, the same arguments of the parties and reasons of the Board apply as well to the admissibility under Article 84 EPC of the same amendment in claim 1 under consideration.

Thus, the Board finds that also present claim 1 infringes the requirements of Article 84 EPC and, hence, that the amended form of the patent found to comply with the requirements of EPC by the Opposition division is instead not allowable.

**Order**

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

1. The decision under appeal is set aside.
2. The appeal of Appellants I is dismissed.
3. The patent is revoked.

The Registrar:

The Chairman:

G. Rauh

P. Krasa