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Datasheet for the decision of 25 January 2018

Case Number: T 0908/15 - 3.3.06

Application Number: 09152404.1

Publication Number: 2123743

IPC: C11D3/08, C11D17/06, C11D3/06, C11D3/12, C11D3/10, C11D3/04

Language of the proceedings: EN

Title of invention:
A solid laundry detergent composition comprising light density silicate salt

Patent Proprietor:
The Procter & Gamble Company

Opponent:
Henkel AG & Co. KGaA

Headword:
Light density silicate / PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 52(1), 54, 56, 83, 114(2)
RPBA Art. 12(4)

Keyword:
Admissibility of new evidence filed upon appeal (no): documents constituting a fresh case
Sufficiency of disclosure (yes)
Novelty (yes): not direct and unambiguous disclosure of all features of claim 1 in combination
Inventive step (yes)

Decisions cited:
T 0210/11

Catchword:

Europäisches Patentamt
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Beschwerdekammern

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Case Number: T 0908/15 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 25 January 2018

Appellant: (Opponent)	Henkel AG & Co. KGaA Henkelstrasse 67 40589 Düsseldorf (DE)
Representative:	Henkel AG & Co. KGaA CLI Patents Z01 40191 Düsseldorf (DE)
Respondent: (Patent Proprietor)	The Procter & Gamble Company Patent Department One Procter & Gamble Plaza Cincinnati, OH 45202 (US)
Representative:	Gill Jennings & Every LLP The Broadgate Tower 20 Primrose Street London EC2A 2ES (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 13 March 2015 rejecting the opposition filed against European patent No. 2123743 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	B. Czech
Members:	L. Li Voti
	C. Heath

Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to reject the opposition against European patent No. 2 123 743 concerning solid laundry detergent compositions and their preparation.

II. The Opponent had requested revocation of the patent in its entirety on the grounds of Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (insufficiency of the disclosure).

The documents relied upon by the parties in this respect include *inter alia* the following:

Dex: "Datasheet" dated 21 April 2011, two pages, comparative experimental data filed by the Applicant during substantive examination;

D1: DE 195 29 298 A1;

D3: Leaflet "NTD - Non Tower Detergent powder production plant" by BALLESTRA S.p.A., pages 1-12, 2000;

D4: Leaflet "New technology for detergent powder. NTD - Non Tower Detergent powder production technology." by Desmet Ballestra S.p.A., pages 1-12, 2006;

D6: EP 0 337 219 A2; and

D8: WO 98/20105 A1.

III. The Opposition Division in its decision found that the invention was sufficiently disclosed and that the claimed subject-matter was novel and inventive over the cited prior art.

IV. The Appellant (Opponent) with its statement of grounds filed new documents D11 to D20 and maintained in particular that

- the invention (claims 1, 2 and 5 as granted) was insufficiently disclosed;
- the subject-matters of granted claims 1, 2 and 4 to 9 lacked novelty over D1; and
- the claimed subject-matter lacked inventive step in the light of the combinations of either of documents D6, D8, D14 or D17 with D3 and/or D4.

V. In its reply to the statement of grounds the Respondent (Patent Proprietor) defended the patent in its granted version (main request), rebutting all the Appellant's arguments based on the documents cited during the opposition proceedings. Moreover, it submitted that documents D11 to D20 should not be admitted into the proceedings considering their late filing and/or lack of relevance.

As First to Fourth auxiliary requests, the Respondent re-filed the auxiliary claim requests that had already been pending before the Opposition Division, but also new sets of amended claims as Fifth to Ninth auxiliary requests.

VI. The parties were summoned to oral proceedings. In a communication issued in preparation therefor, the Board expressed *inter alia* (points 5 and 7 to 9) the following, reasoned provisional opinions:

- All the auxiliary requests filed by the Respondent appeared to be admissible.
- The admissibility of documents D14 to D20 into the proceedings was, however, highly questionable.
- The invention as claimed appeared to be sufficiently disclosed.
- The claimed subject-matter appeared to be novel over D1.
- D8 appeared to represent the closest prior art for

the purpose of assessing inventive step according to the problem-solution approach.

VII. By a letter dated 24 November 2017, the Appellant informed the Board that it would not attend the scheduled oral proceedings. No comments regarding the substance of the case, let alone regarding the Board's preliminary opinions were submitted.

VIII. During the oral proceedings on 25 January 2018, the Respondent turned its pending Fifth auxiliary request into its new Main request and (re-)filed a correspondingly (re-)labelled set of claims.

IX. Claims 1 to 8 according to the Respondent's new Main Request reads as follows (amendments to the granted set of claims made apparent by the Board):

"*1. A solid laundry detergent composition comprising:*

(a) from 1wt% to 40 wt% light density silicate salt having a bulk density of less than 400g/l and a weight average particle size of less than 300 micrometers;
(b) from 5wt% to 60wt% detersive surfactant;
(c) from 0wt% to 50wt % carbonate salt;
(d) from 0wt% to 40wt% sulphate salt;
(e) from 0wt% to 10wt% phosphate builder;
(f) from 0wt% to 5wt%% zeolite builder; and
(g) from 0wt% to 15wt% water;
wherein the composition has a bulk density of 600g/l or less.

~~*2. A detergent composition according to claim 1, wherein the detergent composition has a cake strength of from 5N to 20N.*~~

2~~3~~. A detergent composition according to any preceding claim, wherein the composition comprises from 3wt% to 10wt% water.

3~~4~~. A detergent composition according to any preceding claim, wherein the light density silicate salt has a bulk density of less than 100g/l.

4~~5~~. A batch process for the preparation of a detergent composition according to any of claims 1-3~~4~~, the process comprises the steps of:

(i) introducing starting materials in a mixer and mixing so as to form a first composition of matter;
(ii) introducing solid particulate and mixing so as to form a solid detergent composition.

5~~6~~. A process according to claim 4~~5~~, wherein a liquid material is introduced into the mixer along with the solid particulate material in step (ii).

6~~7~~. A process according to claim 5~~6~~, wherein the liquid material comprise an acidic anionic detersive surfactant precursor.

7~~8~~. A process according to any of claims 4~~5~~ to 6~~7~~, wherein the solid particulate material of step (ii) is a light density silicate salt.

8~~9~~. A process according to claim7~~8~~, wherein, a first portion of light density silicate salt is dosed into the mixer in step (i), and wherein a second portion of the light density silicate salt is subsequently dosed into the mixer in step (ii)."

X. Requests

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

The Respondent requested that the decision under appeal be set aside and the patent be maintained based on the claims according to the Main Request as filed during oral proceedings.

XI. The parties' arguments submitted in writing and/or orally being of relevance here can be summarised as follows:

Admissibility of D11 to D20

- The Appellant argued that the documents D11 to D20, filed for the first time with the statement of grounds in support of its objections regarding novelty (D11 and D12) and inventive step (D13 to D20), had to be admitted into the proceedings since they were *prima facie* of relevance and were filed in response to the non-acceptance of the Opponent's arguments, expressed for the first time by the Opposition Division during oral proceedings.

- The Respondent pointed out that the Opposition Division in its preliminary opinion had already indicated that it was not convinced by the Appellant's arguments as regards novelty. Moreover, documents D13 to D20 were actually used to support inventive step attacks never raised before. Hence, their filing could not be considered as a reaction to the reasoning given in the appealed decision. The documents filed by the Appellant for the first time with its statement of

grounds should thus not be admitted.

Sufficiency of the disclosure

- The Appellant argued that the invention of claim 1 was not sufficiently disclosed since the method for measuring the "*weight average particle size*" of the light density silicate salt component of claim 1 was not specified in the patent in suit. Different existing and known methods for measuring this parameter would lead to different results in terms of the average particle size. Depending on the method used, a given composition could thus be found to fall within or outside the ambit of claim 1. In this respect, the patent did not teach the person skilled in the art how to reproduce the invention, in particular how to arrive with a reasonable expectation of success at a particle size which was such that the composition did not only fall within the ambit of claim 1, but also solved the technical problem to be solved according to the patent. The skilled person was thus compelled to carry out further experiments in order to arrive at a suitable particle size.

Moreover, the patent did not teach how to arrive at a product according to claim 1 having a bulk density as claimed.

In particular, the process of granted claim 5 did not specify which components had to be used as starting materials in the first step of the process and which components had to be added in the second step. The part of the description relating to such process features, contained in paragraphs [0033] and [0034], was moreover not completely in agreement with the process used in example 1 since it taught to add solid particulate

material having low bulk density and particle size in the second step of the process, whilst in the example it was added in both the first and second step. Therefore, it was not clear which components had to be selected as starting materials and at which stage of the process a silicate had to be added, let alone which type of silicate. Therefore, the person skilled in the art could only reproduce the process of granted claim 5 by trial and error.

- The Respondent argued that methods for measuring the weight average particle size were well known to the skilled person and that he would thus be able to reproduce the invention. Uncertainty about the average particle size measured was, moreover, a question of clarity and not of sufficiency (reference was made to decision T 210/11). Moreover, the person skilled in the art also knew how to adjust the bulk density of a detergent composition by selecting appropriate amounts and particle sizes of the components to be incorporated, as well as the process conditions for its preparation.
Moreover, the whole disclosure in the description of the patent and in example 1 was in accordance with the generic wording of process claim 5 as granted (claim 4 according to the main request at issue), which could thus be carried out by a skilled person in a way leading to the composition with the specific compositional and physical features according to claim 1.

The invention as claimed was thus sufficiently disclosed.

Novelty

- The Appellant maintained that the subject-matter of claim 1 (and also of claims 2 and 4 to 9) was not novel in the light of the combination of claims 1, 8, 9 and 18 of D1, with reference to the description or to other cited documents including D11/D12 if necessary, and in the light of the disclosure of Example 4 of the same document.

- In the Respondent's view, there was no clear and unambiguous disclosure in D1 of the claimed combination of features since various selections had to be carried out in order to arrive at the claimed subject-matter. Moreover, example 4 did not disclose inter alia the bulk density of the formed intermediate product which was considered by the Appellant to destroy the novelty of claim 1.
The claims were thus novel over D1.

Inventive step

- The Appellant argued that D8 was a suitable starting point for the evaluation of inventive step. Starting from this document (page 3, line 3-8 or claim 1) as closest prior art, the problem to be solved consisted in the provision of an alternative detergent composition comprising no, or only relatively low amounts of zeolite and phosphates, and having good flowing properties (and thus little caking tendency;see page 16/25 of the statement of grounds). In the light of the teaching of D3/D4 it would have been obvious for the skilled person to use a light density silicate of the type required in claim 1 at issue in the compositions of D8 in order to arrive at a detergent composition having good flowing properties and a bulk density of 600 g/l or less.

The claimed subject-matter thus lacked an inventive step. Moreover, the claimed subject-matter was also obvious starting from document D6 as closest prior art.

- The Respondent argued that D8 and, in particular, one of the examples of D8 represented the closest prior art. The technical problem underlying the invention had thus to be formulated as the provision of a further low zeolite/low phosphate detergent composition having at least comparable flow properties (and thus low caking tendency). Such a composition, because of its low caking tendency, could be easily prepared by a batch process like a batch single mixer process.

The teaching of document D8 would have led the skilled person, trying to solve the technical problem posed, to keep an amount of more than 40%wt sulfate, i.e. an amount outside the ambit of claim 1 at issue. Moreover, D8 did not suggest to use a light density silicate of the type required in claim 1 in order to obtain the desired characteristics of flowability and cake strength. The comparative tests of Dex in fact had shown the criticality of the particle size and bulk density of the used light density silicate in order to obtain a reduced cake strength and consequently good flowability.

Documents D3/D4 concerned a non-tower process applied to compositions containing substantial amounts of zeolite and phosphate falling outside the ambit of claim 1 at issue. Therefore, the skilled person, trying to solve the technical problem posed starting from the zeolite/phosphate free compositions of D8, would not have considered the teaching of these documents.

D6 did not concern the technical problem underlying the invention and was a document less suitable than D8 as starting point for the evaluation of inventive step.

The claimed subject-matter thus involved an inventive step.

Reasons for the Decision

Respondent's main request - admittance into the proceedings

1. The set of claims according to the pending Main Request, filed during oral proceedings, is identical to the Fifth auxiliary request filed with the reply to the statement of grounds (see V, VIII and IX, *supra*), except for the deletion of claim 2 as granted and the corresponding adaptation of the back-references in the remaining dependent claims.

1.1 The deletion of said dependent claim 2 as granted renders moot the objection under Article 83 EPC that the Appellant specifically raised against this claim in its statement of grounds. One of the controversial issues is thus eliminated, reducing the complexity of the case.

1.2 The Respondent did not object to the admittance of this request.

1.3 The Board thus sees no reason for not admitting and considering this request.

(Non-)admittance of items of evidence filed on appeal and the objections based thereon

2. Documents D11 to D13

2.1 D11 and D12 were cited by the Appellant (point 3.1, paragraph bridging pages 7 and 8 of the statement of grounds and page 9, last full paragraph) in order to further corroborate its view that D1 disclosed a silicate salt having a particle size and a bulk density as required according to claim 1 at issue.

However, since this is an issue having no bearing on the Board's decision on novelty over D1 (5.1.3, *infra*), there is no need to address the issue of their (contested) admissibility into the proceedings.

2.2 D13 is a document referred to in the detailed description of the preferred embodiments of D8 (page 6, lines 4-5). It was cited in the Appellant's statement of grounds in order to supplement its inventive step objection based on D8 (point 4.2 of the statement of grounds, passage bridging pages 15 and 16). In particular, it was intended to show that D8 envisaged the use of layered silicates having a particle size within the range of that of the light density silicate salt of claim 1 at issue.

However, since this is not a decisive point in the assessment of inventive step (11.4.2, *infra*), it is not addressed in more detail hereinafter. Consequently, there is also no need to address the (contested) admissibility of D13.

3. Documents D14 to D20

3.1 In its communication issued in preparation for the oral proceedings (VI, *supra*) the Board had indicated the following reasons speaking against the admittance of these documents referred to for the first time in the statement of grounds of appeal:

- D14 was apparently cited (last five lines on page 16 of the statement of grounds) in addition to D3 and D4 (already considered in the decision under appeal) in order to illustrate common general knowledge with respect to the disclosure of D8. It had, however, not been explained in this respect which additional information not contained in D3/D4 could be derived from this document.
- Moreover, documents D14 (together with D15 and D16) and D17 (together with D18) were cited as closest prior art in support of two new lines of attack regarding inventive step (points 4.3 and 4.4 of the statement of grounds).
- Documents D19 and D20 were cited (page 24 of Appellant's statement of grounds) in support of inventive step objections directed against the granted process claims 5 to 9, presented for the first time upon appeal, but without following the problem-solution approach.
- The filing of D14 to D20 thus appeared to amount to presenting a fresh case as regards inventive step.
- Moreover, it was not clear why these documents had not been filed during the opposition proceedings (neither within the nine month period, nor together with D8, only filed about two months before the oral proceedings before the Opposition Division).
- Moreover, at first sight documents D14 to D20 did not appear to be more relevant than the documents already on file.

3.2 Since the Respondent did not respond to the concerns expressed in the written phase of the proceedings by

the Respondent and the Board, the Board has no reason to diverge from its preliminary opinion.

3.3 The Board in the exercise of its discretion under Article 114(2) EPC and Article 12(4) RPBA thus decided not to admit documents D14 to D20 and the objections based thereon into the proceedings..

Respondent's main request - Sufficiency of the disclosure

4. Claim 1 (IX, *supra*) concerns a "*solid laundry detergent composition*" which "*has a bulk density of 600g/l or less*" and comprises *inter alia* "*light density silicate salt ... having ... and a weight average particle size of less than 300 micrometers*".

The insufficiency objections raised concerned the features of claim 1 relating to the bulk density of the claimed composition and to the weight average particle size (in the following "the particle size") of the light density silicate salt component.

4.1 The objection regarding the feature "*the composition has a bulk density of 600g/l or less*" of claim 1

4.1.1 In this respect, the Board remarks that the description of the patent in suit (paragraphs [0033] to [0035] and example 1, paragraphs [0041] to [0044]) discloses various methods for the preparation of a detergent composition in accordance with claim 1, i.e. having a bulk density of 600 g/l or less. Moreover, measuring the bulk density of a composition of the type claimed was something well known to the person skilled in the art and the patent in suit even indicates in much detail (paragraphs [0036] to [0039]) a measuring method suitable for determining the value of this parameter.

4.1.2 Furthermore, the Board has no reason to doubt the veracity of the Respondent's statement in reply to the statement of grounds (page 5, fifth full paragraph) according to which "*[t]he skilled person would know how to adapt a composition according to claim 1 to have a bulk density of less than 600 g/l, by adjusting the amounts and particle sizes of the various components, and by altering the processing conditions accordingly.*" This statement was not contested by the Appellant. Moreover, the Board notes that in its statement of grounds (page 16/25, third paragraph, line 10), the Appellant itself argues (in connection with the bulk densities of silica salts) that the person skilled in the art would "know how to vary the bulk density of a product".

4.2 The objection regarding the feature "*light density silicate salt ... having ... and a weight average particle size of less than 300 micrometers*"

4.2.1 To start with, the Board remarks that expressing a numerical upper limit for the "*weight average particle size*" is a well known, conventional way of characterising a particulate material, and that at the priority date of the patent in suit, the person skilled in the art had, at its disposal, several standard methods for determining this particular parameter value.

This was not disputed by the Appellant.

4.2.2 Different methods of measurement may of course lead to results differing to some degree. Hence, a given light density silicate salt having a weight average particle size around the upper limit of claim 1 at issue might

turn out to be encompassed by claim 1 when measured by one method, but to fall outside the claim when measured by another method. However, this lack of precise boundaries is a matter of clarity of the granted claim, which cannot be contested in opposition/appeal proceedings, and does not amount to an insufficiency of the disclosure (see e.g. T 210/11 of 17 July 2014 (Reasons, 5.2), cited by both parties, where an analogous conclusion was drawn as regards the parameter "effective average particle size").

4.2.3 For the Board, there is thus no doubt that the skilled person would be able to provide (identify) a light silicate salt having the features of claim 1 at issue and using it as a component of a composition according to claim 1, i.e. to carry out the claimed invention.

4.3 The objection against process claim 4

4.3.1 The preparation process of claim 4 is characterised by the generic features "*batch*" processing, two sequential "*mixing*" steps "*(i)*" and "*(ii)*" with distinct addition of "*starting materials*" in step "*(i)*" and of "*solid particulate*" in step "*(ii)*".

4.3.2 As pointed out by the Appellant, the "*starting materials*" are not further specified in this claim, and it is also not indicated in which step of the process the silicate salt is to be added.

However, the description provides clear guidance regarding various methods for carrying out the claimed process, all of them being in accordance with the generic wording of claim 4 (see point 5.3 of the decision under appeal as well as the patent in suit: paragraphs [0033] to [0035]; and example 1 in

paragraphs [0041] to [0044]).

Moreover, as already noted under 4.1.2, *supra*, the Board has no reason to doubt that the person skilled in the art would know how to adjust the amounts and particle sizes of the various components, and the processing conditions such that a composition according to claim 1 is obtained.

4.4 In summary, the Board has no reason to diverge from its preliminary opinion that the invention as claimed (compositions and methods for their preparation) is disclosed in the patent in suit in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).

Respondent's main request - Novelty

5. The Appellant's novelty attacks based on D1 were twofold. First, the Appellant invoked the combination of claims 1, 8, 9 and 18 of D1, and, second, example 4 of D1, complemented by the description part of D1 as well as additional documents such as D11 and D12.

5.1 The attack based on claims 1, 8, 9 and 18 of D1

5.1.1 The Board notes that whilst claims 8, 9 and 18 are all dependent on claim 1, claim 18 does not refer back to claims 8 and 9. Therefore, there is no direct and unambiguous disclosure of a process with all the features of these four claims in combination. In particular, claims 8 and 9 refer to particular embodiments of the alkaline, porous, oil absorbing carrier which may be used in one of the alternatives encompassed by claim 1, whilst claim 18 specifies in more detail the relative amounts in which the various

starting materials of the process of claim 1 may be used.

5.1.2 Even considering (*arguendo*) in the Appellant's favour a combination of all the cited claims, in order to arrive at a composition falling within the ambit of claim 1 at issue, it would still be necessary to make and combine, in each case, more than one choice within the disclosure(s) of the cited claims of D1 as follows: :

- A bulk density of 600 g/l has to be selected for the final product of the claimed process, i.e. the **lower limit** of the bulk density range disclosed in claim 1, which has to be combined with

- the choice of an alkaline, porous oil-absorbing carrier as component (iii) of claim 1 instead of/or together with an alkaline builder, which may be a carbonate, a silicate, a phosphate, a crystalline aluminosilicate, i.e. a zeolite, etc. (see page 7, lines 43 to 48 of D1), and

- as such silicate carrier, the choice of a compound (aluminosilicate or calcium silicate) according to claim 9, having the characteristics listed in claim 8, as the alkaline porous oil-absorbing carrier.

Moreover, an alkaline, porous oil-absorbing carrier instead of/or in combination with an alkaline builder in the compositions (a) or (b) defined in claim 18 has to be additionally combined with
- specific amounts of alkaline builder and alkaline, porous oil-absorbing carrier (e.g. calcium silicate) selected from the broader ranges indicated for the sum of these two components in the compositions (a) and (b) of claim 18 such that the amount of silicate salt is

comprised in the range of 1 to 40wt% of the total composition and the amounts of phosphate builder, carbonate salt and zeolite builder do not exceed those required in claim 1 at issue, i.e. 50wt%, 10wt% and 5wt%, respectively.

5.1.3 The Board thus holds that in order to arrive at the subject-matter according to claim 1 at issue, it is in both cases necessary to select and combine individual features chosen from broader ranges of possible embodiments encompassed by the cited claims. Even more selections/combinations would have to be made by taking into considerations further features of the description or further documents (D11/D12) in combination with these claims, as argued by the Appellant (XI, *supra*).

5.1.4 The claimed subject-matter is thus not directly and unambiguously disclosed in said claims.

5.2 The attack based on example 4 of D1

5.2.1 The Board remarks that the Appellant's objection concerns the intermediate product obtained in carrying out this example, before the step of applying a surface coating of zeolite 4A (page 16, lines 66 to 68). In fact, the final granulate of example 4 (after surface coating) does not fall within the ambit of claim 1 at issue since it has a bulk density of 830 g/l and a zeolite content of 8wt% (see table 3 on page 22).

5.2.2 However, as already remarked in the decision under appeal (page 10, last three lines - page 11, first three lines), example 4 does not disclose the bulk density of the intermediate product before surface coating with additional zeolite. The Appellant did not, however, provide any further argument making plausible

that this essential feature (bulk density of the composition) of claim 1 at issue would be implicitly disclosed as a feature of said intermediate product.

Already for this reason alone, the Board concludes that example 4 does not disclose a composition according to claim 1 at issue.

5.3 The Board thus concludes that, as foreshadowed in its preliminary opinion, D1 does not directly and unambiguously disclose a product with all the features of claim 1 in combination.

5.4 Hence, in the Board's judgement, the subject-matter of claim 1 is novel over D1 (Articles 52(1) and 54 EPC). Consequently, the subject-matters of dependent product claims 2 and 3 and of the claims 4 to 8, directed to processes for the preparation of such products, are novel, too.

Respondent's main request - Inventive step

6. The invention

6.1 The invention relates to a low zeolite/low phosphate solid laundry detergent composition comprising light density silicate salt and a batch process for its preparation (paragraph [0001]; claims 1 and 4 at issue of the patent in suit).

6.2 As regards the "*background of the invention*", the following is stated in the patent in suit:

"*[0002] There is a recent trend in the solid laundry detergent business to chemically compact the formulation by removing at least most, and preferably*

all, of the zeolite. However, it has proved difficult to make these chemically compacted solid laundry detergent compositions.
[0003] The Inventors have found that the incorporation of low density silicate salt into these chemically compacted formulations enables them to be produced using traditional batch processes, and even a batch single mixer processes. Whilst it is known to incorporate silicate salt into laundry detergent compositions, it was not known, prior to the present invention, to incorporate a silicate salt that has a low bulk density and a very small weight average particle size into a formulation that has been chemically compacted by removing at least most, and preferably all, of the zeolite with the expectation that such chemically compacted detergent compositions can be produced using traditional batch processes, and even batch single mixer processes."

6.3 The person skilled in the art reading the patent thus understands that it aims to provide solid laundry detergent compositions which are essentially free of zeolite (and phosphate) and can be prepared by a batch process in a single mixer process.

More particularly, it was convincingly argued by the Respondent and not disputed by the Appellant (XI, *supra*) that the fact that the compositions claimed may be prepared by a relatively simple batch method according to claim 4 implies that they do not clump during mixing and must thus have good flowing properties and low cake strength, i.e. no tendency to cake.

7. The closest prior art

7.1 The Appellant cited both D8 and D6 as possible starting points for the evaluation of inventive step.

7.2 D8 - closest prior art

7.2.1 As already indicated in its written preliminary opinion (see VI, *supra*), the Board holds that D8 represents the closest prior art, considering the similarity between the patent in suit and D8 in terms of both the technical issues addressed and the compositions disclosed.

This was not disputed by the Appellant after receipt of the Board's communication.

7.2.2 Indeed, document D8 concerns (page 1, lines 8 to 14 and 28 to 35; page 2, lines 8 to 14; page 20, last paragraph) the provision of granular laundry detergent compositions which do not contain zeolite or phosphate but nevertheless exhibit "excellent cleaning profiles as well as good physical properties", including good flow characteristics and no tendency to cake.

D8 thus deals with a technical problem which is similar to that of the patent in suit.

7.2.3 Whilst the Appellant referred to the compositions disclosed in relatively generic terms on page 3, lines 6 to 9, of D8, the Respondent, questioned by the Board in this respect during oral proceedings, argued that one of the specific example compositions disclosed on page 20 of D8 was the most appropriate starting point.

The invoked disclosure on page 3, lines 6 to 9, is part of the generic disclosure of compositions (lines 5 to 11) also repeated in claim 1 of D8, representing the

broadest definition of the compositions according to D8.

However, D8 also discloses two more specific compositions according to examples II and III reported in table I (D8, page 20), differing from each other only in the slight diverging amounts of sodium sulfate (57.6 and 55.8wt%) and sodium silicate (1.8 and 3.6wt %), which amounts are encompassed by the ranges of claims 1 at issue, said compositions being explicitly stated to exhibit improved flow properties (page 20, lines 20 and 21).

Therefore, the Board holds that these two examples represent the closest prior art. In the following the Board will refer in particular to the composition of example II. Similar analogous arguments apply, however, taking the composition of example III as the starting point in the assessment of inventive step.

7.3 Document D6 - not closest prior art

7.3.1 For the sake of completeness, the Board notes that D6 concerns (page 2, lines 22 to 23) the provision of a laundry detergent composition which has improved stability (especially of the bleaching agent) upon storage, thus enhanced bleaching performance, and is able to maintain a soft touch of the washed laundry.

7.3.2 Hence, D6 does not address the same technical issues as the patent in suit. Therefore, even though some of the compositions exemplified in D6 (laundry detergent compositions 3 and 4 of table 1) comprise neither zeolite nor phosphate, this document does not represent the most appropriate starting point for the evaluation

of inventive step according to the problem-solution approach.

8. The technical problem

The Respondent argued that in the light of the closest prior art (D8/example II) the technical problem consisted in providing a further laundry low phosphate/ low zeolite detergent composition having at least comparable flow properties (and thus low caking tendency).

In the Appellant's statement of grounds (page 16/25), the technical problem solved in the light of D8 is also formulated in a similar manner.

9. The solution

As the solution to this technical problem, the patent in suit proposes the "*solid laundry detergent composition*" according to claim 1, which is characterised in particular in that it "*has a bulk density of 600g/l or less*" and comprises "*light density silicate salt having a bulk density of less than 400g/l and a weight average particle size of less than 300 micrometers*" but only "*from 0wt% to 10wt% phosphate builder*" and "*from 0wt% to 5wt%% zeolite builder*".

10. Success of the solution

10.1 Document Dex (page 1, second table) refers to three zeolite/phosphate/water free compositions according to claim 1 at issue, comprising 29wt% alkyl benzene sulphonate detergent surfactant, 41.6wt% sodium carbonate, 19.6wt% sodium sulphate and 9.8wt% of one of three different sodium silicates, that were prepared

and tested. The three sodium silicates (described in Table 1 of Dex) are
- sodium silicate 1 (in accordance with claim 1 at issue), bulk density 201 g/l and weight average particle size of 140 µm;
- **sodium silicate 2** (comparative): bulk density of 309 g/l (below the upper limit of claim 1), weight average particle size of 789 µm (above the upper limit of claim 1); and
- sodium silicate 3 (comparative): bulk density of 836 g/l (above the upper limit of claim 1), weight average particle size 133 micrometers (below the upper limit of claim 1).

The results of the comparative tests (page 2, table) show that a composition according to claim 1 at issue, comprising **sodium silicate 1**, has a reduced cake strength (17N) and thus good flowability whilst both comparative compositions comprising **sodium silicate 2** or **sodium silicate 3**, show high cake strength (> 70N (cake could not be broken)) and thus poor flowability (see text below the table on page 2).

10.2 Therefore, the Board accepts that the technical problem identified above is successfully solved by the product of claim 1 at issue.

11. Non-obviousness of the solution

11.1 The composition of example II of D8, representing the closest prior art, is free of zeolite and phosphate builders and comprises *inter alia*, by weight of the composition, 12.9% of detersive surfactants (*in toto*), 18.2% sodium carbonate, 57.6% sodium sulfate, 1.8% sodium silicate (1.6r) and less than 15% water.

11.2 This composition thus contains relative amounts of zeolite and phosphate builders, carbonate salt and water in accordance with claim 1 at issue, but it contains more than 40 wt% sulphate salt. Moreover, the bulk density and particles size of the silicate salt and the bulk density of the overall composition are not indicated.

11.3 It thus remains to be evaluated whether having regard to the state of the art and common general knowledge it would have been obvious to the person skilled in the art, starting from a composition as described in D8/ example II and seeking to solve the technical problem posed, to modify said composition such as to arrive at a composition with all the features of claim 1 at issue.

11.4 Documents D8 taken alone

11.4.1 The Board notes that even though D8 discloses more generically, and as a preferred embodiment, compositions comprising, in combination, 15 to 25wt% carbonate and **45** to 75wt% sulfate (page 3, line 34 to page 4, line 2), i.e. amounts of sulfate exceeding 40%, as also present in the composition of example II, it also indicates, as equally preferred embodiments, mixtures of carbonate and sulfate at a ratio of from 1:1 to 1:3 (page 4, lines 18 to 20). Therefore, it would, at least arguably, have been obvious to the skilled person to consider modifying the composition of example II (comprising in total 75.8 wt% of carbonate and sulfate salts), by setting the carbonate-to-sulphate ratio at 1:1 , i.e. including about 38 wt% of each salt, i.e. relative amounts of each in accordance with claim 1 at issue.

11.4.2 However, D8 does not suggest to use, as the sodium silicate component of the composition, a light density silicate as defined in claim 1 at issue. D8 (page 6, lines 4-5) merely suggests the use of "alkali metal silicates" in general and "layered sodium silicates", such as the ones described in D13 (expressly referred to in D8). Even accepting (*arguendo)* the Appellant's argument that such layered sodium silicates may have a particle size as required according to claim 1 at issue, it was not even submitted, let alone proven, that layered sodium silicates are necessarily light density silicate salts displaying all the features of the "*silicate salt*" required according to claim 1 at issue (including weight average particle size). Hence the disclosure of D13 cannot be decisive regarding this issue.

11.4.3 In fact, even the Appellant argued in its statement of grounds (page 16/25, lines 5 and 6) that the bulk density of the silicate salt (and the bulk density of the overall composition) are features distinguishing the subject-matter of claim 1 from the disclosure of D8.

11.4.4 According to the broadest teaching of D8 (claim 1 and page 3, lines 3-12) solid compositions containing 60 to 90 wt% of a mixture of carbonate and sulfate at a ratio of from 1:4 to 4:1 as well as 0.1 to 15 wt% of a silicate and 0.1 to 15 wt% of a polycarboxylate and 0.1 to 2.5% of a polyethylene glycol, display the aimed-for good physical properties (page 2, lines 30-34).

The Board holds that the person skilled in the art seeking to solve the technical problem posed, was perfectly able to conceive, within the framework of this broad disclosure, and without particular

ingenuity, a very broad range of different (and novel) compositions.

Therefore, the Board holds that excluding hindsight considerations, a person skilled in the art seeking to solve the technical problem posed would not have had any particular reason to focus on specific aspects not addressed in D8, i.e. the bulk density (and particle size) of the silica salt used and the bulk density of the overall composition. These properties were, however, found to contribute to the ease with which the claimed compositions can be prepared in a single mixer batch process, as opposed to the spray-drying process used in preparing the compositions exemplified in D8 (page 21, second paragraph).

11.5 Combination of D8 with D3 / D4

11.5.1 As regards D3 and D4, the Board remarks that D3 (page 1) and D4 (page 1) both concern non-tower detergent powder production plants. These documents suggest (D3, page 11; D4, page 9) to add a light density silicate (the particle size of which is not specified) for reducing the bulk density of the compositions obtained by the non-tower process and for further improving their flow properties.

11.5.2 However, these documents only concern the preparation of compositions containing substantial amounts of phosphate or zeolite builders (15-30 or 20-35% according to the tables on page 10 of D3 and on page 9 of D4), i.e. compositions which are less prone to caking, and not being directly comparable with the zeolite/phosphate-free compositions of example II of D8 which **unexpectedly** do not suffer from poor flow

properties (despite the absence of zeolite/phosphate builders: see D8, page 1, lines 12 to 14).

11.5.3 Therefore, the Board concludes that the person skilled in the art starting from D8 would not even have considered the teachings of D3 and D4, but in any case would not have been induced by them to apply the use of light density silicates disclosed therein in the context of zeolite/phosphate-based compositions to zeolite/phosphate free compositions as disclosed in the examples of D8, which composition are, moreover, prepared by a different process (spray-drying).

11.5.4 Furthermore, it is shown in Dex (see 10.1, *supra*) that good flowability is only obtained using light density silicate displaying **both** a relatively small particle size and a bulk density within the respective limits according to claim 1.

Even considering (*arguendo*) in the Appellant's favour that the skilled person would take into account the contents of D3/D4, these documents do not provide information suggesting that in a single mixer process **both** the bulk density and the particle size of the silica salt had to be below the limits according to claim 1 at issue in order to obtain a further composition having flow properties at least comparable to those of the composition of example II of D8.

11.6 The Board thus concludes that the subject-matter of claim 1 involves an inventive step (Articles 52(1) and 56 EPC). The same is, consequently, true as regards the subject-matter of independent claim 4, directed to a process for preparing the compositions according to claim 1, and as regards the subject-matter of the dependent claims.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent on the basis of the claims according to the Main Request as filed during oral proceedings, and the description as granted.

The Registrar: The Chairman:

D. Magliano B. Czech

Decision electronically authenticated