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**Datasheet for the decision  
of 13 March 2018**

**Case Number:** T 1705/14 - 3.3.06

**Application Number:** 06021613.2

**Publication Number:** 1914297

**IPC:** C11D11/00, C11D11/02,  
C11D17/06, C11D1/02, C11D3/02,  
C11D3/10

**Language of the proceedings:** EN

**Title of invention:**

A spray-drying process for preparing a low density, low builder, highly water-soluble spray-dried detergent powder

**Patent Proprietor:**

THE PROCTER & GAMBLE COMPANY

**Opponents:**

- 1) UNILEVER N.V. / UNILEVER PLC
- 2) Dalli-Werke GmbH & Co. KG
- 3) Henkel AG & Co. KGaA

**Headword:**

Spray-drying process for low density, low builder, highly water-soluble detergent powder / The Procter & Gamble Company

**Relevant legal provisions:**

EPC Art. 52(1), 56

RPBA Art. 12(4), 13

**Keyword:**

Late-filed request - admitted (yes) - Main Request and First  
Auxiliary Request

Inventive step - obvious solution - Main Request and First  
Auxiliary Request

**Decisions cited:**

T 1188/00

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 1705/14 - 3.3.06

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.06**  
**of 13 March 2018**

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**Decision under appeal:**      **Decision of the Opposition Division of the  
European Patent Office posted on 5 June 2014  
revoking European patent No. 1914297 pursuant to  
Article 101(3)(b) EPC.**

**Composition of the Board:**

**Chairman**            L. Li Voti  
**Members:**            G. Santavicca  
                          C. Heath

## Summary of Facts and Submissions

- I. The appeal lies from the decision of the Opposition Division of the European Patent Office, posted on 5 June 2014, revoking European patent No. 1 914 297 pursuant to Article 101(3) (b) EPC.
- II. Three oppositions had been filed against the patent in suit as a whole, on the grounds of lack of novelty and inventive step (Article 100(a) EPC) (all opponents) and insufficiency of the disclosure (Article 100(b) EPC) (Opponent 2).

The following items of evidence were *inter alia* relied upon:

D5: WO 01/30953 A1;

D9: A. Davidsohn, *Spray Drying and Dry Neutralization of Powdered Detergents*, J. A. Oil Chemists' Soc., January 1978 (Vol.55);

D10: WO 2006/087659 A1;

D12: Dr. O. Pfrengle, *Die Beeinflussung des Schüttgewichts bei der Sprühtrocknung unter besonderer Berücksichtigung der Waschmittel in der Großkugelform*, Fette·Seifen·Anstrichmittel, 60. Jahrgang, Nr.9, 1958, Seiten 843 bis 849;

D14: DE 3 542 080 A1;

D15: US 4,261,793 A;

D24: W.Herman de Groot et al, *The Manufacture of Modern Detergent Powders*, Herman de Groot Academic Publisher, 1995, pages 60 to 71.

- III. In the decision under appeal, the Opposition Division *inter alia* found:
- that the invention was sufficiently disclosed,
  - that the claimed subject-matters were novel over the cited prior art, but

- that the claimed subject-matters according to all pending claim requests were obvious over D10, taken as the closest prior art, in combination with *inter alia* D12;
- moreover Claims 1 to 3 according to the Third Auxiliary Request filed with letter of 10 March 2014 was clear (Article 84 EPC) and fulfilled the requirements of Articles 123(2) (3) EPC.

- IV. With its statement setting out the grounds of appeal (dated 15 October 2014), the Appellant (Patent Proprietor) defended the patent as granted as its Main Request and filed four sets of amended claims as its First to Fourth Auxiliary Requests, the Third and Fourth Auxiliary Requests being allegedly identical to the Third and Fourth Auxiliary Requests dealt with in the decision under appeal.
- V. The Respondents (Opponents 1 to 3), in their replies to the statement setting out the grounds of appeal, respectively raised objections of insufficient disclosure as well as of lack of novelty and inventive step. Moreover, they also contested the admissibility of the auxiliary requests and their compliance with the requirements of Article 123(2) EPC. Respondent III (Opponent 3) also submitted a new item of evidence.
- VI. In a communication (dated 29 November 2017) issued in preparation for oral proceedings, the Board expressed its provisional opinion on salient issues of the case, *inter alia* :
- that the Third Auxiliary Request was admissible,
  - that the amended claims of the auxiliary requests were based on the original application as filed,

- that document D10 (in particular its example on pages 13-14) disclosed the closest prior art for assessing inventive step of the subject-matter of Claim 1 at issue, and
- that the ground of opposition under Article 100(b) EPC prejudiced the maintenance of the patent comprising the invention defined in Claim 6 (Main Request, First and Second Auxiliary Requests) and in Claim 4 (Third and Fourth Auxiliary Request).

VII. In its letter dated 3 January 2018, Respondent I *inter alia* maintained that the method of Claim 3 according to the Third Auxiliary Request was obvious in view of D10 in the light of the cited common general knowledge. This conclusion applied likewise to the claimed subject-matter of the Fourth Auxiliary Request.

VIII. With its letter of 13 February 2018, the Appellant withdrew the Main Request and the First and Second Auxiliary Requests on file and submitted two sets of amended claims as its Main Request and First Auxiliary Request, allegedly corresponding, respectively, to the former Third and Fourth Auxiliary Requests with the exception of the deletion of Claim 4 in both requests.

It submitted that this amendment, occasioned by an objection under the ground of opposition of Article 100(b) EPC, complied with Rule 80 EPC. Moreover, it argued that the claimed subject-matter was not obvious over D10.

IX. Independent Claim 3 according to the new Main Request reads as follows:

"3. A spray-drying process for the preparation of a spray-dried detergent powder having a bulk density of

325 g/l or less, wherein the spray-dried detergent powder comprises an anionic detergent surfactant and from 0 wt% to 10 wt% zeolite builder and from 0 wt% to 10 wt% phosphate builder, and wherein the process comprises the step of:

(a) preparing an aqueous slurry suitable for spray-drying comprising from 40 wt% to 50 wt% water and from 50 wt% to 60 wt% non-aqueous material, wherein the non-aqueous material comprises an inorganic component and an organic component, wherein the weight ratio of the inorganic component to organic component is in the range of from 0.3:1 to 5:1 wherein the non-aqueous material comprises anionic detergent surfactant, polymeric carboxylate and carbonate salt, and from 0 wt% to 4 wt% silicate salt; and

(b) spraying the slurry into a spray-drying tower, wherein the temperature of the slurry as it enters the spray-drying tower is in the range of from 65°C to 140°C, and wherein the outlet air temperature of the spray-drying tower is in the range of from 70°C to 120°C,

wherein the slurry is sprayed into the spray-drying tower through a nozzle having an aperture having a diameter in the range of from 3mm to 4mm at a pressure in the range of from  $5.0 \times 10^6 \text{ Nm}^{-2}$  to  $7.0 \times 10^6 \text{ Nm}^{-2}$ ."

Independent Claim 3 according to the First Auxiliary Request, compared to Claim 3 according to the Main Request, differs (amendment made apparent by the Board) therefrom in that

"the temperature of the slurry as it enters the spray-drying tower is in the range of from ~~65~~70°C to 140°C".

X. Oral proceedings were held on 13 March 2018.



The admissibility of the Main request and First Auxiliary Request filed with letter dated 13 February 2018 was no longer contested.

Inventive step of the claimed subject-matter of the Main Request, in particular of Claim 3, was controversially discussed taking D10 (more particularly its Example on pages 13/14) as the closest prior art. The claimed subject-matter was acknowledged to be distinguished therefrom by the bulk density and the water content only. It was not in dispute that the nozzle aperture diameter defined in Claim 3 was standard size.

As to obviousness, the combination of D10 with the following items of common general knowledge was discussed: D12 (e.g. for the relationship between bulk density and water content of the slurry), D14 (example 1 and pages 27-28), D15 (column 6, slurry C and Test no. 13 in the following table), D24 (e.g. in relation to common general knowledge regarding puffing and bulk density), D9 and D5 (showing the incorporation of low-density spray-dried granules into detergent composition comprising other components of higher density).

The Appellant did not submit additional arguments in support of the First Auxiliary Request and confirmed that the outcome of the case for the Main Request would also be determinative for the First Auxiliary Request. After deliberation, the Board came to the conclusion that the subject-matter of Claim 3 of the Main Request, and that of Claim 3 according to the First Auxiliary Request too, was obvious over the prior art cited.

- XI. The Appellant (Patent Proprietor) requested that the decision under appeal be set aside and that the patent be maintained based on the Main Request, or on the First Auxiliary Request, both filed with letter dated 13 February 2018.

The Respondents (Opponents) requested that the appeal be dismissed.

XII. The arguments of the Appellant of relevance for the present decision can be summarised as follows:

The Main Request and the First Auxiliary Request at issue were clearly admissible.

Claims 1-3 of the Main Request and of the First Auxiliary Request at issue complied with the requirements of Article 123(2) EPC.

D10, albeit not addressing exactly the same problem as the patent in suit, nevertheless was the closest prior art for assessing inventive step, as it addressed specific aspects of the problems arising when preparing low zeolite, low phosphate detergent compositions.

The claimed process was in fact distinguished from the process exemplified in D10 by the features

- bulk density of 325 g/l or less; and
- water content of 40 to 50 wt.% in the slurry.

The technical problem was the provision of a spray-drying process for the preparation of low builder, highly water-soluble spray-dried detergent compositions, which enabled the consumer to dose an amount equivalent to the amount used with known, higher bulk density, high builder detergent compositions. Hence, the technical problem concerned an improved ease of dosing.

Alternatively, the technical problem could be formulated as the provision of a process for preparing

a low bulk density, highly soluble detergent composition which approximate the volume and cleaning performance of known higher bulk density detergent compositions.

This technical problem had been effectively solved by the claimed spray-drying process using a higher water content for producing a detergent composition of such a reduced bulk density that improved the ease of dosing.

As to the alleged obviousness, the skilled person would not have found any solution thereto in the prior art. D10 (representing the closest prior art, in particular its page 11, penultimate paragraph) disclosed detergent compositions of high bulk density, even higher than that illustrated in the invoked example. D10 provided no teaching whatsoever as regards low bulk density and water content of the slurry, the only disclosed value being the one used in its invoked example. Hence, D10 alone did not provide any indication to the skilled person to lower the bulk density of the detergent composition, let alone by increasing the water content of the slurry. The claimed process was thus not obvious over D10 taken alone.

As regards the invoked items of common general knowledge, D12 mentioned (in its introduction on page 843, paragraph bridging left and right columns, and page 844, left column, first full paragraph) the unpredictability of the spray-drying process applied to slurries, hinted at bulk densities higher than 400 g/l (page 846, right column, first paragraph) and addressed (page 847, left column, point b) only the influence of the solid content of the slurry on the bulk density, but not that of its solvent, let alone water, if any, content. Hence, D12 did not hint at the importance of

the water content of the slurry in the context of controlling the bulk density obtained by spray-drying. Therefore, in the absence of hindsight, the skilled person would not come to consider increasing the water content of the slurry.

The further items invoked were even less relevant, in fact D9 (page 138) hinted at using solid contents of 60 wt% or higher, thus at using lower water contents and D24 (page 69) taught that bulk density depended on several factors, which should not be viewed in isolation, not only on the water content.

Summing up, the skilled person would have found no motivation for increasing the water content of the slurry disclosed by D10 for obtaining lower bulk density spray-dried powder. Thus, the subject-matter of Claim 3 at issue was not obvious over the prior art, even if the technical problem were seen in providing a further spray-drying process.

- As the claimed subject-matter of the First Auxiliary Request had been further restricted, compared to that of the Main Request, its claimed subject-matter was a *fortiori* not obvious over the cited prior art.

XIII. The arguments of the Respondents of relevance for the present decision can be summarised as follows:

The objection that the Main Request and First Auxiliary Request were not admissible was not maintained.

The process defined in Claim 1 according to, respectively, the Main Request and the First Auxiliary Request contravened the requirements of Article 123(2) EPC.

The claimed process according to Claim 3 of all claim requests lacked an inventive step over D10, which addressed the same purpose of the claimed process at issue, namely spray-drying of low phosphate, low zeolite, high water soluble detergent compositions, and represented the closest prior art.

D10 directly or implicitly disclosed all the features as claimed but the nozzle size, the bulk density and the water content of the slurry.

The technical problem over D10 invoked by the Appellant (ease of dosing) was not acceptable, as no technical effect over D10, which disclosed a low bulk density spray-dried powder, had been proven, which was linked to these distinguishing features. It should also be considered that factors influencing the bulk density of spray-dried detergent compositions were generally known since 1958 (D12). As also acknowledged in the patent in suit in its paragraph [0001], it was known that the conditions of the spray-drying promoted the steam puffing as also disclosed in D24. In fact, in Claim 3, the low bulk density feature was defined in its preamble.

The technical problem could thus only be seen in the provision of an alternative spray-drying process for the preparation of a laundry detergent powder.

As to obviousness, D10, which disclosed that its final detergent composition, comprising the spray-dried first particulate composition of the invoked example and heavier, non-spray-dried further particulate components, should have a bulk density of at least 450 g/l, did not teach away from the claimed process. As a nozzle was necessary for spray-drying the composition

of the example of D10, and as the claimed nozzle size was fully within the generally known (D9, D24) ranges thereof, and as no particular effect whatsoever was linked to the claimed size, its choice, if not implicit from D10, was obvious for the skilled person. Also, in spray-drying, the presence of water could not be a surprise, as alleged by the Appellant. In fact, the use of water in the example of D10 was not accidental.

Hence, the question which arose was whether the skilled person, against the background of the spray-drying technology, would have wanted to lower the bulk density of the detergent composition by increasing the water content of the slurry. The answer was yes.

D12 (page 844 "Einfluß von Art und Zustand des Sprühansatzes", first sentence) disclosed that in slurries with high solids contents the bulk density of the detergent particles became higher with higher solids contents of the slurries. Also, D12 (page 847, b) "Konzentration des Slurry") showed that the effect "the higher the solids content, the higher the bulk density" was generally known, and implied also that the opposite effect too, "the higher the water content, the lower the bulk density", was generally known. In fact, D12 disclosed solids content of e.g. 50.5 wt%, which implied a water (water was used in the examples of D12) content of 49.5 wt%, falling under Claim 3 at issue. D12 also showed the typicality of bulk density of about 300 g/l or less. More particularly, also the puffing factor and its effect on bulk density.

This common general knowledge disclosed by D12 was also acknowledged in D9 and D24. In particular, D9 and D24 showed the factors impacting on bulk density, such as the puffing factor (i.e. the increase in size of the

spray dried particle, which was linked to the water content of the slurry).

Therefore, the skilled person starting from D10, facing the problem posed, would obviously have arrived at a process as claimed by taking into account the common general knowledge (the relationship between water content in the slurry and bulk density) disclosed in D12.

The claimed process was thus obvious.

## **Reasons for the Decision**

### *Procedural aspects*

1. Admissibility of the Main Request and of the First Auxiliary Request
  - 1.1 At the oral proceedings before the Board, the admissibility of the Main Request and of the First Auxiliary Request, both filed with letter dated 13 February 2018, i.e. one month before the set oral proceedings, was no longer in dispute.
  - 1.2 Therefore, the Board decided to admit the Main Request and the First Auxiliary Request into the proceedings (Article 13(1)(3) RPBA).

### *Amendments - formal allowability - all claim requests*

2. The Respondents, in their written submissions, raised objections under Article 123(2) EPC *inter alia* against Claims 1-3 according to the Third and Fourth Auxiliary

Requests then pending (now, respectively, Main and First Auxiliary Request at issue), allegedly because the subject-matter claimed therein resulted from multiple, originally undisclosed selections and combinations thereof.

- 2.1 For the benefit of the Appellant, the Board assumes that all claim requests comply with Art. 123(2) EPC.

*Novelty - all claim requests*

3. For the benefit of the Appellant, the Board assumes that all claim requests are novel over the prior art cited.

*Inventive step*

*Claims 1-3 according to the Main Request*

4. The Main Request contains three independent claims (Claims 1-3) of different scope.
- 4.1 As already explained in its communication issued in preparation for oral proceedings, for the Board, Claim 3 is the independent claim with the broadest scope, in so far its composition may contain:
- "0 wt% silicate salt" (i.e. the composition can be free from silicate salts);
  - any "anionic surfactant" (i.e. not mandatorily restricted to "alkyl benzene sulphonate anionic surfactant" as in Claim 2 at issue), and whereby
  - the "anionic detergent surfactant, polymeric carboxylate and carbonate salt" (the constituents comprised in the non-aqueous material of the slurry) need not fulfil specific requirements for their weight



ratios (as in features (b) (a), (b) (b) and (b) (c) of Claim 1 at issue).

*The invention defined in Claim 3 of the Main Request*

5. The invention concerns a spray-drying process for the preparation of a low density, low builder, highly water-soluble spray-dried powder, which is suitable for use as a solid laundry detergent composition, or for incorporation into a solid laundry detergent composition (underlining by the Board). The spray-drying process is carried out with an aqueous slurry comprising a large amount of water, whereby the conditions of the process promote puffing, which in turn leads to the formation of spray-dried detergent powder having a very low bulk density. This detergent powder exhibits excellent solubility upon contact with even cold water (paragraph [0001], patent in suit).

*The closest prior art*

6. In line with the decision under appeal, at the oral proceedings before the Board it was not in dispute among the parties that D10 discloses the closest prior art for assessing inventive step according to the problem-solution approach.

- 6.1 The Board has no reason to take a different stance on this issue.

In particular, the Board considers the example on page 13-14 of D10 to be the closest process, too.

*The technical problem invoked by the Appellant*

7. Especially on the basis of the passage in page 2, lines 1-7, of the application as filed, mentioning *inter alia* that "... there remains a need to significantly reduce the bulk density of these low builder laundry detergent compositions. This in turn enables the consumer to dose the same volume of these low builder laundry detergents they have used in the past for the more conventional high builder laundry detergents, during their laundering process ...", the Appellant, in its Statement (Page 2, last two paragraphs; page 3, first two paragraphs; page 4, second paragraph) as well as at the oral proceedings before the Board, has invoked that the technical problem solved by the spray-drying process of Claim 3 at issue be seen in providing a spray-drying process for the production of a low builder, highly water-soluble detergent powder which enables the consumer to use/dose the same amount as used for known, higher bulk density, detergent powders. Alternatively, that the problem be formulated as the provision of a spray-drying process for preparing a low bulk density, highly water-soluble detergent powder which approximates the volume and cleaning performance of known, higher bulk density, detergent powder compositions.

*The solution*

8. The patent in the amended form of the Main Request *inter alia* provides as a solution thereto the process of Claim 3 at issue, which is characterised by the following features in bold character:

"A spray-drying process for the preparation of a spray-dried detergent powder having a **bulk density of 325 g/l or less**, ... wherein the process comprises the step of

(a) preparing an aqueous slurry suitable for spray-drying comprising **from 40 to 50 wt% water and from 50 wt% to 60 wt% non-aqueous material ...**; and  
(b) spraying the slurry into a spray-drying tower, ..., and wherein **the outlet air temperature of the spray-drying tower is in the range of from 70°C to 120°C**, wherein the slurry is sprayed into the spray-drying tower through a **nozzle having an aperture having a diameter in the range of from 3 mm to 4 mm ...** .".

*The success of the solution*

9. For the Appellant the technical problem relates to an improvement (ease of dosing) over the prior art, including D10. However, for the following reasons, the Board cannot share this view:
  - 9.1 D10, albeit concerning a process for spray-drying of low-builder, highly water soluble detergent powders, comprising no phosphate, no zeolite and no silicates, was not acknowledged in the application as filed, hence was not considered when formulating the originally mentioned technical problem(s).
  - 9.2 The application as filed (page 2, lines 1-7) generally addresses the need to enable the consumer to dose the same quantity dosed with conventional (high builder, high bulk density) compositions for laundering. In other words, the application as filed appears to mention an improvement over conventional (high builder, high bulk density) laundry compositions, not over a specific composition like that of the example of D10.
  - 9.3 However, apart that it is not clear to the Board whether the alleged "improved ease of dosing" effect had, at the priority or filing date of the application

as originally filed, a well-defined, unambiguous definition in the art (which ease?), it is totally unclear what is the meaning of an "improved ease of dosing" when the spray-dried laundry composition is incorporated into a solid laundry detergent composition of any higher bulk density (option mentioned in paragraph [0001] - second sentence - of the patent in suit). Hence, it is not apparent that the alleged improvement can be used to formulate the problem (to be) solved.

9.4 Moreover, it is established case law, at least since T 1188/00 of 30 April 2003 (catchword), that a formulation of a more ambitious technical problem first alleged in opposition/appeal proceedings cannot be used to substantiate inventive step unless it is plausibly demonstrated that the alleged improved effect could be achieved across the whole scope of the claim. In this respect, the burden of proof lies with the Patent Proprietor.

9.4.1 Further, no example in the patent in suit, nor any further experimental report, is available, which might prove that the more ambitious technical problem formulated by the Appellant in its statement has effectively been solved across the whole breadth of Claim 3 at issue, over D10.

9.4.2 Therefore, the Board does not consider the more ambitious formulation of the technical problem invoked by the Appellant as a valid starting point.

*Reformulation of the technical problem*

10. In view of the disclosure of D10, in line with the objectives mentioned in the patent in suit, and

considering also the features of the process of Claim 3 at issue, for the Board, the technical problem should be reformulated as the provision of a further spray-drying process for preparing low bulk density, highly water soluble powder detergent compositions with no or low levels of zeolite/phosphate builders, which are free-flowing, easily dispensable and which provide good cleaning performance.

- 10.1 The success of the claimed solution to solve this less ambitious problem formulation provided by the patent in suit is not in dispute, and, for the Board, is apparent from Example 2 of the patent in suit.

*Obviousness*

11. It remains to be decided whether the process of Claim 3 at issue was obvious over that of D10, if considered in combination with the invoked items of common general knowledge and/or prior art. More particularly,
- whether the skilled person starting from D10 and faced with the technical problem would obviously envisage to increase the water content of the slurry of D10 in order to attain much lower bulk densities; and,
  - whether bulk densities lower than 325 g/l, e.g. 250 g/l as exemplified in the patent in suit, were typical low bulk densities for spray-dried powders which could and would be used in the laundry detergent compositions disclosed by D10.
- 11.1 The Example (pages 13 and 14) of D10 discloses explicitly a process for preparing a spray-dried powder, starting from an aqueous slurry
- having a water content of 26.13 wt%;
  - heated to 72°C; and

- pumped under high-pressure (from  $5.5 \times 10^6$  Nm<sup>-2</sup> to  $6.0 \times 10^6$  Nm<sup>-2</sup>) into a counter current spray-drying tower.

The air inlet temperature ranges from 270°C to 300°C. The spray-dried powder has a bulk density of 420 g/l, and comprises:

- anionic surfactants (linear alkyl benzene sulphonate and soap),
- an acrylate/maleate copolymer;
- sodium carbonate;
- no zeolite, no phosphate and no silicate.

The ratio inorganic/organic components is 2.45:1.

11.1.1 Moreover, it is not in dispute that the outlet air temperature of the spray-drying tower in the example of D10 has to be necessarily in the range between 70°C to 120°C.

11.1.2 This implicit disclosure of D10 is acknowledged in the decision under appeal (reasons, page 14, second to fourth paragraphs) and (as apparent from its statement setting out the grounds of appeal and as argued at the oral proceedings) is also not contested by the Appellant.

11.2 The spray-drying process of Claim 3 at issue thus is distinguished therefrom by the following features:  
(1) a bulk density of **325** g/l or less,  
(2) an aqueous slurry comprising from **40** to 50 wt% water and from 50 wt% to 60 wt% non-aqueous material, and  
(3) a nozzle having an aperture having a diameter in the range of from 3 mm to 4 mm.

11.3 Distinguishing feature (3), albeit not mentioned in D10, was acknowledged, in the decision under appeal

(reasons, 2.3.1, second sentence) and at the oral proceedings before the Board, to be indeed a standard size of the nozzle, which is thus either implicitly used in the Example of D10 or belongs to the common general knowledge of the skilled person (as generally apparent for instance from D9 (page 136, Spray Tower, second sentence) or D24 (Table 24, page 68)).

- 11.4 As regards the obviousness of a process comprising distinguishing features (1) and (2), the position of the Board is as follows:
- 11.4.1 The question which arises is whether the skilled person would have found any motivation within the teaching of D10 to increase the illustrated level of water from 26.13 wt% to e.g. 40 wt% or more so as to obtain a bulk density of 325 g/l or less as claimed.
- 11.4.2 D10 does not specifically disclose any (preferred) range for the bulk density of the spray dried powder composition, nor for the water content of the slurry to be sprayed.
- 11.4.3 As regards the bulk density, D10 (page 11, line 25) only discloses the bulk density of the final laundry detergent composition to lie in the range between 450 g/l and 1000 g/l. According to page 3, lines 14-15, and page 16, line 25, this final composition, which is *inter alia* free-flowing, comprises the low density spray-dried (first) particulate component obtained by the process as illustrated in the Example of D10.

It is immediately apparent therefrom that the bulk density of the spray-dried composition (first particulate) illustrated in the Example of D10 has a bulk density which is less than the minimum bulk

density of its final detergent composition (which is shown in the table on page 17 and contains additional components which raise the bulk density up to the final value thereof). Thus, D10 does not deter the skilled person from envisaging as first particulate component thereof a typical spray-dried detergent composition having a typical bulk density lower than 450 g/l.

11.4.4 D12 (page 847, point b), concentration of slurry, Figure 10) evidences that it was common general knowledge:

- that bulk densities of spray-dried detergent compositions lower than 300 g/l were typical,
- that these typical bulk densities also depended on the solid slurry concentration and thus, contrary to the Appellant's view, on the solvent content of the slurry, which in the cited reference of D12 - as disclosed on page 845, right column, last paragraph, 6th and final sentences - is indeed water), hence on the water content of the slurry used, and
- that water contents of 40 wt% or more were generally known, thus typical.

The same is taught on page 844, left column, first full paragraph of "*Einfluß von Art und Zustand des Sprühansatzes*", indicating that the bulk densities of spray-dried slurries increase with the increase of the solids content.

The addressed unpredictability of the spray-dried process applied to slurry, invoked by the Appellant and mentioned in D12 (pages 843-844) concerns only the starting point of the study. Indeed, for the Board, the results of the experiments carried out in D12 are of general applicability, hence not simply restricted to



the specific type of composition used for the tests (i.e. that of page 845, right column, last four lines).

- 11.4.5 Consequently, the skilled person faced with the least ambitious problem to be solved (Point 11, *supra*),
- considering that the spray-dried powder of D10 may have typical bulk densities below 450 g/l (D10, page 11, line 25), and that typical bulk densities of spray-dried powders could be about or less than 300 g/l, and
  - knowing that the typical bulk densities also depend on the water content of the slurry (D12, page 847, Point 2.(b) - concentration of the slurry),
  - would obviously *inter alia* envisage to increase the water content of the slurry used in the example of D10 as necessary up to 40 wt% or more, in order to produce typical further spray-dried powders having a bulk density of typically about or lower than 300 g/l, for use in laundry detergent compositions disclosed by D10.
- 11.4.6 Therefore, the process of Claim 3 as granted is obvious over the process of D10, having regard to common general knowledge (D12) and additionally any of D9 or D24, if distinguishing feature (3) were not implicitly disclosed as being used in the spray-drying process of the example of D10.
- 11.5 Consequently, the Main Request is not allowable.

*First Auxiliary Request*

12. The Board notes that the only further additional feature of Claim 3 according to the First Auxiliary Request when compared to Claim 3 according to the Main Request, is the temperature of the slurry as it enters the spray-drying tower, i.e. from 70°C to 140°C instead of from 65°C to 140°C.

- 12.1 This further limitation of Claim 3 is not a further limitation over D10 (Example), which already discloses a temperature of 72°C.
- 12.2 Hence, for the reasons given in respect of lack of an inventive step of the process claimed in the Main Request, the process of Claim 3 according to the First Auxiliary Request is also obvious.
- 12.3 Consequently, also the First Auxiliary Request is not allowable.

## Order

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

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

L. Li Voti

Decision electronically authenticated