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**Datasheet for the decision
of 29 January 2024**

Case Number: T 1339/21 - 3.3.06

Application Number: 10707188.8

Publication Number: 2406363

IPC: C11D1/02

Language of the proceedings: EN

Title of invention:
A SPRAY-DRYING PROCESS

Patent Proprietor:
The Procter & Gamble Company

Opponents:
Henkel AG & Co. KGaA
UNILEVER N.V. / UNILEVER PLC

Headword:
Spray-Drying/P & G

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no) - technical prejudice in the art (no)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 1339/21 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 29 January 2024

Appellant: UNILEVER N.V. / UNILEVER PLC
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Respondent: The Procter & Gamble Company
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Party as of right: Henkel AG & Co. KGaA
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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 17 June 2021
rejecting the opposition filed against European
patent No. 2406363 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman J.-M. Schwaller

Members: S. Arrojo

J. Hoppe

Summary of Facts and Submissions

I. The appeal from opponent 2 is directed against the decision of the opposition division to reject the opposition against European patent No. 2 406 363, claim 1 thereof reading as follows:

"1. A spray-drying process to prepare a spray-dried powder comprising:

(a) anionic deterative surfactant;

(b) 0wt% zeolite builder;

(c) 0wt% phosphate builder;

(d) 0wt% silicate salt;

(e) optionally carbonate salt;

(f) optionally polymeric material; and

(g) optionally from 0wt% to 10wt% water,

wherein, the process comprises the steps of:

(i) spraying an aqueous slurry comprising from

(a) anionic deterative surfactant;

(b) 0wt% zeolite builder;

(c) 0wt% phosphate builder;

(d) 0wt% silicate salt;

(e) optionally carbonate salt;

(f) optionally polymeric material; and

(g) water,

into a spray-drying zone, wherein the spray-drying zone is under negative pressure and wherein the air inlet air temperature into the spray-drying zone is greater than 150°C; and

(ii) drying the aqueous slurry to form a spray-dried powder,

wherein the spray-drying zone is under a pressure of at least -50N m^{-2} ."

II. In the statement of grounds of appeal, the appellant argued that the claims as granted were not inventive in view of D8 (EP 1 914 297 A1) as closest prior art combined with the teachings of D3 (The Manufacture of Modern Detergent Powders, De Groot et al, 1995, pages 60-71), D4 (Manufacture of Consumer Products, Adler et al, 1987, pages 399-439), D5 (US 3,849,327), D6 (US 5,615,492) or D7 (GB 1,118,908). It also submitted documents D10 to D14, and subsequently D10a by letter of 29 October 2021.

III. With its reply dated 11 March 2022, the proprietor defended the patent as granted (main request) and filed seven sets of amended claims as auxiliary requests 1 to 7 (corresponding to the requests filed during first instance proceedings). It also requested not to admit documents D10 to D14 into the appeal proceedings.

IV. In its preliminary opinion, the board held claim 1 as granted as not meeting the requirements of inventive step in view of D8 combined with D3, and the amendments in auxiliary requests 1 to 2 and 5 to 7 as not overcoming the inventive step objections. The Board also observed that it was unclear whether the parties had presented their entire case pursuant to Article 12(3) RPBA with respect to the auxiliary requests.

V. At the oral proceedings, which took place by videoconference on 29 January 2024, the respondent withdrew all the auxiliary requests. At the end of the hearing, the parties confirmed that the present decision should be based on the following requests:

The appellant requested that the decision be set aside and the patent be revoked.

The respondent requested that the appeal be dismissed.

Opponent 1 and party as of right did not present any request.

Reasons for the Decision

1. Claims as granted (Main request) - Inventive step

The Board concluded that the opposition ground under Article 100(a) EPC in combination with Article 56 EPC prejudices the maintenance of the patent as granted for the following reasons:

1.1 According to the opposed patent (see par. [0005]), the alleged invention relates to a spray-drying process intended to prevent overheating of spray-dried detergent powders. This problem is said to be specifically related to low-built highly soluble detergents, i.e. compositions including no phosphates, zeolites and silicates.

1.2 Closest prior art

Document D8 (see abstract and example in par. [0039]) discloses a process for spray-drying a detergent with a composition identical to that described in the example of the patent. The subject-matter of claim 1 differs therefrom in that the spray-drying zone is under a negative pressure of at least -50 N/m^2 .

The parties agreed that document D8 represented the closest prior art. The inventive step argumentation will therefore be formulated starting from this document.

1.3 Problem solved by the invention

1.3.1 According to the patent (see pars. [0005]-[0006]), the object of the invention is to prevent overheating of a low-built detergent composition, a concept which is associated with detergents including no zeolite builders, phosphate builders or silicate salts. This problem is said to be specific to this type of detergents and is solved by operating the spray-drying tower under a vacuum.

1.3.2 The patent includes one example (see paras. [0032]-[0035]) of such a detergent composition which is spray-dried under vacuum. The temperature of the detergent at the outlet is below 150°C, which indicates that overheating of the detergent is prevented by operating the tower under negative pressure.

1.3.3 In view of the above and in the absence of evidence to the contrary, the board agrees with the respondent that the problem solved by the invention is to propose a process that prevents overheating in a spray-drying process for low-built detergent compositions.

1.4 Obviousness of the solution

1.4.1 Document D3 - a handbook for the production of detergent powders - teaches (see page 66) that the design and operation of spray-drying towers must take into account the thermal efficiency and the heat sensitivity of the product. This document states (see page 70) that the spray-drying towers should be operated at a slight negative pressure, such as 10 mm water column (equivalent to approximately -98 N/m^2), to draw air into the base of the tower and cool the detergent powder to about 80°C.

Document D6 similarly discloses (see col. 2, lines 29-47) that the spray-drying of detergents should be carried out under vacuum conditions to draw cold air and prevent thermal damage of the detergent powder. These documents therefore teach the same solution as claim 1 at issue for solving the technical problem of the invention.

- 1.4.2 The respondent argued that the problem of overheating was specific to low-built detergents (i.e. containing no phosphates, zeolites or silicates). Since none of the above cited documents concerned such detergents, there was no reason to consult their teachings to solve the underlying technical problem.

Further it argued that, since D8 did not identify the problem of overheating of low-built detergents, a skilled person starting from this document would not even recognise temperature control as a problem and would therefore have no motivation to change the operation of the spray-drying process.

- 1.4.3 The board notes that, as indicated in the preliminary opinion, it follows from the problem solved by the invention (i.e. to prevent overheating in a spray-drying process for low-built detergent compositions) and from the standard application of the problem-solution approach, that a skilled person starting from D8, a document disclosing the spray-drying of a low-built detergent composition, would look for solutions to prevent overheating of the detergent in the spray-drying process. In this respect, once the technical problem has been formulated, it is assumed that a person skilled in the art would seek solutions to that problem regardless of whether this is suggested in the closest prior art, unless the closest prior art somehow

teaches against doing so (in which case the closest prior art may not be an appropriate starting point).

As also concluded in the preliminary opinion, documents D3 and D6 contradict the information in par. [0005] that the problem of powder overheating or temperature control only affects low-built detergents. In particular, D3 and D6 address the problem of heat sensitivity or thermal damage of the product and propose operating the spray-drying tower under negative pressure to draw air and cool the falling powder, which clearly implies that the problem of overheating in spray-drying processes affects detergent products in general and not only low-built detergents.

- 1.4.4 At the oral proceedings, the respondent argued that there was a fundamental difference between detergents with no zeolites, phosphates and silicates as defined in claim 1 and other detergent compositions. Zeolites, phosphates and silicates had relatively high surface areas, which played a key role in dispersing and drying the liquid components. Without zeolite, phosphate and silicate, liquid surfactants were not well dispersed and, due to their water affinity, formed sticky agglomerates that were difficult to dry.

Notably, in 2004, there was a significant change in regulations where phosphates were first limited and then banned, resulting in consequences for the handling of compositions. Documents D3 and D6 were published before those regulatory changes, so their teachings likely related to detergents containing phosphates and/or silicates. Such detergents could be easily dried, so working under negative pressure to cool down the air inlet of the spray-drying tower did not represent a problem.

The situation was however different for detergent compositions with no zeolites, phosphates or silicates, as in D8. In such cases, the skilled person would have a prejudice to implement a solution involving the cooling of the air in the spray-drying tower, because this would be expected to further hinder the drying of a detergent composition which was known to form sticky agglomerates which were difficult to dry. These issues were furthermore implicitly addressed in document D3, which indicated (see page 64) that the formulation of the composition greatly influenced the structure of the particles and the speed of drying. A skilled person starting from the process in D8 would therefore have a disincentive to implement the solution proposed in D3 or D6.

- 1.4.5 The Board disagrees with the above argumentation for the following reasons:

As argued by the appellant, low phosphate detergents were not only known but relatively common by the end of the 80s, i.e. several years before D3 was published, so it is not apparent why the teachings in this document should be considered to be limited to detergent compositions including phosphates.

Furthermore, no evidence has been presented that the above discussed problems would indeed occur when drying the detergent composition of D8. These problems are not even disclosed or hinted in the patent. In fact, in the example of the contested patent (which concerns a composition identical to that of D8), the detergent is effectively spray-dried using a tower operating under negative pressure and no particular problem is reported, a result which seems to contradict the respondent's argument.

The respondent argued that the finding that the composition in the patent could be effectively dried with a tower operating under negative pressure was as such unexpected.

However, again, there is no suggestion of this in the patent in question, so that it must be concluded that either the drying of such compositions is in fact not so challenging, or that it is effectively achieved by other means, which in any case are not defined in the claims. Either way, even if it was assumed that the drying of a composition with no zeolite, silicate or phosphate is somehow problematic, this would not prevent the skilled person from contemplating the solution proposed in D3. Instead, the skilled person would seek to find the appropriate balance of operating and/or design parameters to ensure that the cooling effect prevents overheating of the composition without significantly reducing the effectiveness of the drying process (e.g. adjusting the inlet temperature, air flow, tower dimensions, etc.). After all, any solution to reduce overheating is likely to involve reducing or limiting the operating temperature and hence the drying efficiency in some way. It is therefore apparent that the skilled person would choose to find the appropriate balance between the opposing effects of cooling and heating/drying rather than give up on finding an effective solution altogether.

- 1.4.6 All in all, the Board concludes that a skilled person starting from D8 and seeking a solution to prevent overheating of the detergent composition would contemplate the one proposed in D3 or D6, and in doing so would arrive at the subject-matter of claim 1 in an obvious manner.

1.5 The subject-matter of claim 1 at issue is therefore not inventive in view of the combination of D8 with the teachings of D3 or D6.

2. Since the only request presented by the respondent is not allowable, the patent must be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



A. Pinna

J.-M. Schwaller

Decision electronically authenticated