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Datasheet for the decision of 2 August 2017

Case Number: T 0076/16 - 3.2.05

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Language of the proceedings: EN

Title of invention:
Continuous manufacturing method for hygroscopic resin powder and powder level detector used therefor

Patent Proprietor:
Nippon Shokubai Co., Ltd.

Opponent:
Evonik Degussa GmbH

Headword:

Relevant legal provisions:
EPC 1973 Art. 100(c), 111(1)

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It can be changed at any time and without notice.

Keyword:
Amendments - unallowable deletion of features - main request (yes)
Amendments - added subject-matter - auxiliary request 1 (no)
Remittal to the department of first instance (yes)

Decisions cited:

Catchword:

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Case Number: T 0076/16 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 2 August 2017

Appellant: (Patent Proprietor)	Nippon Shokubai Co., Ltd. 1-1, Koraibashi 4-chome Chuo-ku Osaka-shi, Osaka 541-0043 (JP)
Representative:	Enno Töpken Glawe, Delfs, Moll Partnerschaft mbB von Patent- und Rechtsanwälten Postfach 13 03 91 20103 Hamburg (DE)
Respondent: (Opponent)	Evonik Degussa GmbH 45116 Essen (DE)
Representative:	Torben Wins Evonik Industries AG Intellectual Property Management Bau 1042A / PB 15 Paul-Baumann-Straße 1 45764 Marl (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 13 November 2015 revoking European patent No. 1426157 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	M. Poock
Members:	P. Lanz
	B. Müller

Summary of Facts and Submissions

I. The appeal by the patent proprietor is against the decision of the opposition division to revoke European patent EP-B-1 426 157 since the subject-matter of the claims as granted extended beyond the content of the application as filed.

II. During the opposition proceedings, the opponent had raised the grounds for opposition specified in Articles 100(a), (b) and (c) EPC 1973.

III. Oral proceedings were held before the board of appeal on 2 August 2017.

IV. The appellant (patent proprietor) requested that the decision under appeal be set aside and that the patent be maintained as granted or on the basis of the claims filed on 8 January 2014 as Auxiliary Request 1 or on the basis of the claims filed on 13 July 2017 as Auxiliary Request 2, or, in the alternative, that the case be remitted to the opposition division for deciding on the grounds for opposition under Article 100(a) and (b) EPC if the ground for opposition under Article 100(c) EPC is overcome.

V. The respondent (opponent) requested that the appeal be dismissed.

VI. Independent claim 1 as granted (Main Request) has the following wording:

"A process for continuously producing a surface-modified water-absorbent resin powder, comprising a polymerizing step (1), a drying step (2), a pulverizing step (3), a classifying step (4) and a surface-

modifying step (5) in order, and conveying steps (6a to 6d) for connecting these steps, said process being characterized in that at least two hoppers (7c, 7b) comprising a buffering hopper (7c) for storing and discharging a water-absorbent resin powder and a constant-quantity-supplying hopper (7b) which is placed downstream of the buffering hopper (7c) and serves for quantifying and discharging the water absorbent resin powder are provided in the conveying step (6d) between the classifying step (4) and the surface-modifying step (5); and that at least one of the hoppers (7c, 7b) comprises a tank (101, 111) for storing the water-absorbent resin powder, a supplying part (102, 112) which is placed in an upper portion of the tank (101, 111) and serves for supplying the water-absorbent resin powder into the tank (101, 111), a discharging part (103, 113) which is placed in a lower portion of the tank (101, 111) and serves for discharging the water-absorbent resin powder from the tank (101, 111), and a detector (104, 114) for detecting the quantity of the powder in the tank (101, 111)."

VII. Compared with the version as granted, the independent claim of Auxiliary Request 1 contains the following additional features (which are underlined):

"1. A process for continuously producing a surface-modified water-absorbent resin powder, comprising a polymerizing step (1) <u>of polymerizing an unsaturated monomer</u>, a drying step (2), a pulverizing step (3), a classifying step (4) and a surface-modifying step (5) in order, and conveying steps (6a to 6d) for connecting these steps, <u>wherein the water-absorbent resin powder has a crosslinked structure, and has a mass-average particle diameter of 300 to 600 μm, and includes particles having particle diameters of 850 to 150 μm in</u>

a ratio of not less than 90 mass % in particle diameter distribution, and has a property of displaying an absorption capacity of not less than 25 g/g without load, and has a water-extractable content of not more than 25 mass %; said process being characterized in that [...]".

VIII. The appellant's submissions may be summarised as follows:

The process of the invention was described in great detail on pages 14 to 52 of the application as originally filed. This detailed description of the process of the invention did not disclose that the features deleted from claim 1 as granted, which related to product properties and not to the process itself, were essential to the invention. Moreover, it had to be noted that the deleted features did not define a narrow particle diameter distribution, but only stated that the water-absorbent resin powder should include particles having particle diameters of 850 to 150 µm in a ratio of not less than 90 mass percent in particle diameter distribution. Such a distribution would usually not be regarded as "narrow" since a distribution from 850 to 150 µm was conventional in the field of superabsorbent polymers, in particular when used for absorbent articles such as diapers (see e.g. D1 (EP 0885917 A2), page 6, lines 44 to 46). The features relating to the properties of the water-absorbent resin powder could thus be left out without going beyond the application as originally filed.

Regarding the introduction of the wording *"in order"*, reference was made to the sequence of steps as presented in original claim 1, to Figure 1 and to page 14, line 26 to page 15, line 18 of the application as

filed for a basis for the claimed order of steps. In that respect, it was not relevant that the original application also disclosed further possibilities in other parts of the description, which were now excluded.

Moreover, the feature *"at least one of the hoppers includes a tank"* was already present in claim 1 as originally filed. A clear statement linking Figures 1 and 2 could be found on page 6, line 22 et seq. of the application as filed.

IX. The respondent's submissions were essentially as follows:

The features deleted from the Main Request and relating to the product properties of the powder were originally disclosed on page 7, line 22 et seq. and page 9, line 3 et seq. as being essential. Hence, the subject-matter of granted claim 1 without the omitted features was not originally disclosed.

Regarding the introduction of the wording *"in order"*, the opposition division correctly decided that the order of the classifying and pulverizing process steps was not unambiguously disclosed in the original application. In particular, the passage on page 6, last line to page 7, line 6 did not provide a basis for the amendment. This part of the text referred to Figure 1, and it was not permitted to isolate elements from this embodiment to modify the claim (cf. T 191/93). Moreover, the application as originally filed contained examples, e.g. on pages 53 to 55, with a different sequence of steps. Therefore, the skilled person would not be able to clearly deduce from the application as

filed that the order of process steps was of particular importance.

Furthermore, it was not originally disclosed that at least one of the *"buffering hopper"* and the *"constant-quantity-supplying hopper"* of original claim 2 included a tank, and not both as depicted in Figure 2. Additionally, there was no indication in the application as filed that the method steps in the sequence of Figure 1 could be combined with the hopper design of Figure 2. In view of that, the present claim wording constituted an unallowable intermediate generalisation of the application as filed.

Finally, there were no objections to the appellant's request for a remittal of the case to the opposition division.

Reasons for the Decision

1. Main Request - added subject-matter

1.1 During the examination proceedings independent claim 1 was amended by deleting the following features:

"the water-absorbent resin powder is obtained by a process including the step of polymerizing an unsaturated monomer and has a crosslinked structure, and has a mass-average particle diameter of 300 to 600 µm, and includes particles having particle diameters of 850 to 150 µm in a ratio of not less than 90 mass % in particle diameter distribution, and has a property of displaying an absorption capacity of not less than 25 g/g without load, and has a water-extractable content of not more than 25 mass %"

The opposition division held that due to the deletion of the above features, which defined a narrow particle diameter distribution and which were therefore indispensable for the function of the invention in the light of the technical problem, claim 1 as granted went beyond the content of the application as filed.

1.2 Following the established case law of the boards of appeal (cf. Case Law of the Boards of Appeal of the European Patent Office, 8th edition, 2016, part II.E. 1.), any amendment to the parts of a European patent application relating to the disclosure (the description, claims and drawings) is subject to the mandatory prohibition of extension laid down in Article 100(c) EPC 1973 and Article 123(2) EPC and can therefore, irrespective of the context of the amendment made, only be made within the limits of what a skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of these documents as filed.

1.3 In that respect, the board observes that in the introductory portion of the application as filed, the drawbacks of known production processes of water-absorbent resins are discussed as follows (cf. page 3, lines 9 to 19):

"However, when attempts are made to obtain water-absorbent resins having such high properties with high productivity, it is very difficult to stabilize the production with high properties, and generally, the high properties and the high productivity conflict with each other in continuous production. Generally, the properties have hitherto tended to be deteriorated if the production output (scale) is raised. That is to

say, in a process for continuously producing a surface-modified water-absorbent resin powder comprising a polymerizing step, a drying step, a pulverizing step, a classifying step, and a surface-modifying step, and further, conveying steps of connecting these steps, it has hitherto been very difficult to continuously produce a water-absorbent resin having a narrow particle diameter distribution and high properties with high productivity."

In the light of these difficulties in the prior art, the technical problem to be solved by the invention is formulated as follows (cf. page 3, line 23 to page 4, line 3):

"Considering the present circumstances as mentioned above, an object of the present invention is to provide:
a process for continuously producing a water-absorbent resin having a narrow particle diameter distribution and high properties with high productivity in a process for continuously producing a surface-modified water-absorbent resin powder comprising a polymerizing step, a drying step, a pulverizing step, a classifying step, and a surface-modifying step, and further, conveying steps of connecting these steps; and
a powder surface detector used for the above objective process."

On page 9, line 9 to page 10, line 8 of the application as filed, the original disclosure is more specific on what was, *inter alia*, meant by the requirement of "a narrow particle diameter distribution" and "high properties" in the context of the application:

"As to the particle diameter of the water-absorbent resin powder, it has a narrow particle diameter distribution, specifically, such that: the mass-average particle diameter is in the range of 300 to 600 μm, and the ratio of particles having particle diameters of 850 to 150 μm is in the range of 90 to 100 mass %. [...]"

"The absorption capacity (CRC) of the water-absorbent resin powder for a 0.90 mass % physiological saline is not less than 25 g/g, favorably not less than 31 g/g."

"The water-absorbent resin powder is substantially water-insoluble, and its water-extractable content (extractable content) is not more than 25 mass %, favorably not more than 20 mass %, more favorably not more than 10 mass %."

In line with these explanations of the drawbacks of the prior art, the technical problem to be solved and the proposed solution in the description, independent claim 1 as originally filed equally comprises the requirement of providing a narrow particle diameter distribution and high properties:

"the water-absorbent resin powder is obtained by a process including the step of polymerizing an unsaturated monomer and has a crosslinked structure, and has a mass-average particle diameter of 300 to 600 μm, and includes particles having particle diameters of 850 to 150 μm in a ratio of not less than 90 mass % in particle diameter distribution, and has a property of displaying an absorption capacity of not less than 25 g/g without load, and has a water-extractable content of not more than 25 mass %;"

1.4 From the above-quoted portions of the description, the board concludes that ensuring a narrow particle diameter distribution, an absorption capacity and a water-extractable content are central aspects of the solution proposed in the original application underlying the patent in suit. Hence, the skilled person would not objectively derive from the application, on the date of filing, that the related (and deleted) features as set out above at point 1.1 were merely optional, even though being included in the original independent claim. With the omission of these features claim 1 as granted thus goes beyond what was clearly and unambiguously disclosed in the application as originally filed, Article 100(c) EPC 1973.

2. Auxiliary Request 1 - added subject-matter

2.1 Introduction of the wording *"in order"*

2.1.1 Independent claim 1 has been amended during the examination proceedings by introducing the wording *"in order"* in the following feature:

"comprising a polymerizing step (1), a drying step (2), a pulverizing step (3), a classifying step (4) and a surface-modifying step (5) in order, and conveying steps (6a to 6d) for connecting these steps"

In claim 1 as originally filed the polymerising, drying, pulverising, classifying and surface-modifying steps are already indicated in the order of the feature now contested. However, a positive definition of the sequence of these steps was added only during the examination proceedings by including the wording *"in order"* in the claim.

2.1.2 Regarding the question of whether this restriction goes beyond the content of the application as filed, reference can be made to the flowchart of Figure 1 and the corresponding parts of the description (cf. page 14, line 26 to page 15, line 18), which provide a clear basis for defining the order of the polymerising, drying, pulverising, classifying and surface-modifying steps as presently claimed. This disclosure is not altered by the fact that the original description also indicates other possible variations of the sequence of Figure 1, for example by stating that the drying or the classifying steps could be omitted, that a second classifying step could be foreseen or that the pulverisation could be done before and/or after drying (cf. page 30, lines 1 to 4, page 54 lines 4 to 12, page 55, lines 6 and 7).

Consequently, the addition of the wording *"in order"* in claim 1 does not go beyond what was clearly and unambiguously disclosed in the application as originally filed, Article 100(c) EPC 1973.

2.2 Introduction of the feature *"at least one of the hoppers includes a tank"*

2.2.1 The respondent additionally submits that, while the added features of the *"buffering hopper"* and the *"constant-quantity-supplying hopper"* were based on original claim 2, it was not originally disclosed that at least one of these hoppers (and not both) included a tank. Moreover, Figures 1 and 2 could not be read in combination. In view of the above, the introduction of the feature *"at least one of the hoppers includes a tank"* constituted an unallowable intermediate generalisation.

2.2.2 The board does not share this view. The original wording of the disputed feature in claim 1 reads as follows:

"the conveying steps include at least two hoppers for storing and discharging the water-absorbent resin powder after the pulverizing step wherein at least one of the hoppers includes:
a tank for storing the water-absorbent resin powder;
[...]"

Therefore, the contested wording referring to at least one of the hoppers including a tank was disclosed in original claim 1. In fact, the present wording of the characterising portion of claim 1 is a combination of the second part of original claim 1 with original claim 2. Furthermore, the application as filed explicitly states on page 6, lines 22 to 24 that Figure 2 had to be seen in the context of Figure 1.

Hence, the feature *"at least one of the hoppers includes a tank"* of claim 1 is not based on an unallowable intermediate generalisation, Article 100(c) EPC 1973.

3. Requested remittal to the department of first instance

In view of the above, the ground for revoking the opposed patent is overcome with Auxiliary Request 1.

In the impugned decision, the opposition division only ruled on the question of added subject-matter. It has not yet decided on the further grounds for opposition of insufficiency of disclosure and lack of inventive step. Hence, it is appropriate for the board to exercise the power conferred on it by Article 111(1)

EPC 1973 in following the appellant's uncontested request to remit the case to the opposition division for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chairman:

D. Meyfarth M. Poock

Decision electronically authenticated