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Datasheet for the decision of 10 February 2026

Case Number: T 0293/25 - 3.3.05

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Language of the proceedings: EN

Title of invention:
WATER ABSORBENT AGENT AND METHOD FOR PRODUCING SAME

Patent Proprietor:
Nippon Shokubai Co., Ltd.

Opponent:
Stockhausen Superabsorber GmbH

Headword:
Water absorbent agent/Nippon Shokubai

Relevant legal provisions:
EPC Art. 54(2), 56
RPBA 2020 Art. 13(2)

Keyword:

Decisions cited:
T 2920/18, T 0339/19, T 1800/21, T 1857/19

Catchword:

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Beschwerdekammern

Boards of Appeal

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Case Number: T 0293/25 - 3.3.05

DECISION
of Technical Board of Appeal 3.3.05
of 10 February 2026

Appellant: (Patent Proprietor)	Nippon Shokubai Co., Ltd. 4-1-1, Koraibashi 4-chome Chuo-ku Osaka-shi, Osaka 541-0043 (JP)
Representative:	TBK Bavariaring 4-6 80336 München (DE)
Respondent: (Opponent)	Stockhausen Superabsorber GmbH Alte Untergath 10 47805 Krefeld (DE)
Representative:	Office Freylinger P.O. Box 48 8001 Strassen (LU)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 23 December 2024 concerning maintenance of the European Patent No. 3243565 in amended form.**

Composition of the Board:

Chair	R. Winkelhofer
Members:	R. Elsässer
	J. Roider

Summary of Facts and Submissions

I. The proprietor's appeal is directed against the opposition division’s decision to maintain the patent in amended form on the basis of auxiliary request 2. Method claims 1-4 were not opposed and therefore the scope of the opposition is limited to product claims 5-12.

II. The opposition division found that claim 5 of the main request (patent as granted) was novel over example 1C of **D1** (WO 2013/072268 A1) and over examples 2C and 5C of **D2** (WO 2014/183988 A1), even when considering the experimental results filed by the opponent (**D3, D4, D6, D7**). The alleged prior use (**D10-D19**) was found not to form part of the prior art. However, the opposition division held that claim 5 of the main request lacked an inventive step over **D1**, as did claim 5 of auxiliary request 1. Auxiliary request 2, in particular claim 5, was found to meet all the requirements of the EPC.

III. Granted claims 1 and 5 read as follows:

"1. A method for producing a surface-cross-linked water-absorbing agent containing a polyacrylic acid-based water-absorbing resin and/or polyacrylic acid salt-based water-absorbing resin as a main component, comprising the steps of:
(1) preparing an aqueous monomer solution containing acrylic acid and/or acrylic acid salt as a main monomer component, the step (1) including at least one of the following steps:
  (a) introducing, into said aqueous monomer solution a gas in an amount of not less than 0.0015 ml of the gas per gram of said aqueous monomer solution;

(b) causing gas bubbles to be generated and contained in said aqueous monomer solution by adding a surfactant and/or a dispersant into said aqueous monomer solution to decrease a solubility of dissolved gas in said aqueous monomer solution; and

(c) adding, to said aqueous monomer solution, a foaming agent in an amount of not more than 5 weight% relative to solid content of a below mentioned water-absorbing resin powder;

(2) subjecting said aqueous monomer solution obtained in the step (1) to foaming polymerization in the presence of a foaming agent and/or gas bubbles so that a cross-linked hydrogel polymer is obtained;

(3) grain-refining said cross-linked hydrogel polymer during or after the step (2) by use of a motive power having a gel-grinding energy 2 (GGE2) of not less than 7 J/g and not more than 40 J/g;

(4) drying a grain-refined cross-linked hydrogel polymer obtained in the step (3) so that a dried polymer is obtained;

(5) pulverizing and classifying said dried polymer obtained in the step (4) so that a water-absorbing resin powder is obtained;

(6) surface-cross-linking said water-absorbing resin powder, obtained through the steps (1) through (5) and having a BET specific surface area of

not less than 0.0270 m^2*/g and less than 0.0310 m*^{2}*/g in case GGE2 used in step (3) is of not less than 7 J/g and less than 18 J/g, or*

not less than 0.0310 m^2*/g in case GGE2 used in step (3) is of not less than 18 J/g and not more than 40 J/g,*

a weight average particle diameter (D50) of 300 µm to 450 µm, a proportion of particles having a particle diameter of not less than 150 µm and less than 710 µm being not less than 90 weight%, and a *logarithmic standard deviation (σζ) of a particle size distribution being 0.25 to 0.45, so that water-absorbing resin particles are obtained; and*

(7) adding, to said water-absorbing resin particles obtained in the step (6), a liquid permeability improving agent to obtain a surface-cross-linked water-absorbing agent comprising (B) a gap fluid retention property under pressure of not less than 9 g/g, wherein the liquid permeability improving agent is added in the amounts of (I) through (III) in case GGE2 used in step (3) is of not less than 7 J/g and less than 18 J/g below:

(I) in a case where said liquid permeability improving agent is a polyvalent metal cation, an amount such that an amount of polyvalent metal atoms is less than 1.40×10^{-5} *mol/g;*

(II) less than 2.0 weight%, in a case where said liquid permeability improving agent is a cationic polymer; and

(III) (IIIA) less than 0.3 weight%, in a case where said liquid permeability improving agent is silicon dioxide having a primary particle diameter of less than 20 nm, and (IIIb) less than 1.0 weight%, in a case where said liquid permeability improving agent is silicon dioxide having a primary particle diameter of not less than 20 nm, or

in the amounts of (i) through (iii) in case GGE2 used in step (3) is of not less than 18 J/g and not more than 40 J/g below:

(i) in a case where said liquid permeability improving agent is a polyvalent metal cation, an amount such that an amount of polyvalent metal atoms is less than 3.60×10^{-5} *mol/g;*

(ii) less than 2.5 weight%, in a case where said liquid permeability improving agent is a cationic polymer; and

(iii) (iiia) less than 1.2 weight%, in a case where said liquid permeability improving agent is silicon dioxide having a primary particle diameter of less than 20 nm, and (iiib) less than 2.0 weight%, in a case where said liquid permeability improving agent is silicon dioxide having a primary particle diameter of not less than 20 nm,

each of the amounts of (I) through (III) or (i) through (iii) being a proportion relative to the solid content of said water-absorbing resin powder."

"5. A surface-cross-linked water-absorbing agent obtainable by a method according to any one of claims 1 to 4 comprising: a polyacrylic acid-based water-absorbing resin and/or a polyacrylic acid salt-based water-absorbing resin as a main component and a liquid permeability improving agent, said water-absorbing agent satisfying (A) to (C) and (G) and (H) below:

(A) a saline flow conductivity (SFC) is not less than $20 \times 10^{-7} \cdot cm^{3} \cdot s \cdot g^{-1}$

(B) a gap fluid retention property under pressure is not less than 9 g/g; and

(C) a proportion of particles having a particle diameter of not less than 150 µm and less than 710 µm is not less than 90 weight%;

(G) a weight average particle diameter (D50) is 300 µm to 450 µm; and

(H) a logarithmic standard deviation (σζ) of a particle size distribution is 0.25 to 0.45;

wherein, in (B), when a water-absorbing resin is swollen in a 0.69 weight% aqueous sodium chloride solution, said gap fluid retention property under pressure is a weight of the aqueous sodium chloride solution per gram of said water-absorbing agent, the sodium chloride solution being retained under a load of

2.07 kPa in gaps within said water-absorbing agent."

IV. In their grounds of appeal, the appellant argued, in particular, that claim 5 of the main request involved an inventive step.

V. In their reply to the appeal, the respondent (opponent) argued, in particular, that no limitations were implied by the reference to the process of claim 1 in claim 5, that claim 5 lacked novelty over example 1C of **D1**, examples 2C and 5C of **D2**, even when considering **D3**, **D4**, **D6** and **D7**, and over the alleged public prior use (**D10-D19**). If found novel, claim 5 at least lacked inventive step over **D1**, **D2** or **D22** (WO 2011/126079 A1 with translation **D22a**), when taking into account the teaching of **D5** (US 7,638,570 B2).

VI. The requests of the parties are as follows:

The appellant requests that the decision under appeal be set aside and amended to the effect that the opposition is rejected (main request), or that the patent be maintained on the basis of auxiliary request 1, as submitted on 16 July 2024.

The respondent requests that the appeal be dismissed.

Reasons for the Decision

Main request

1. Public prior use, Article 12(5) RPBA

1.1 In their preliminary opinion, the board set out the reasons why the alleged public prior use, based on documents **D10-D19**, should not be considered.

1.2 The respondent has not challenged the board's preliminary opinion and there is no reason to deviate from the reasoning set out therein:

1.2.1 Under point 4 of the impugned decision, the opposition division set out detailed reasoning as to why they had come to to the conclusion that "*the alleged public prior use [did not] form part of the prior art in the sense of Art. 54(2) EPC*".

1.2.2 In the reply to the appeal, the respondent raised this objection again, without however discussing or dealing with the reasoning of the opposition division in any way. In fact, it appears that, notwithstanding some changes to the formatting, the respondent's objection raised in the reply to the appeal is identical to the one raised at first instance in the submission of 6 April 2023.

1.2.3 This runs counter to Article 12(3) RPBA which requires the parties - in this case the respondent - to clearly and concisely set out the reasons why it is requested that the decision under appeal should be reversed, amended or upheld. It follows from the established jurisprudence that for this requirement to be met, it is normally not sufficient to simply repeat the objections raised in the opposition proceedings, since the appeal proceedings do not constitute second opposition proceedings. Rather, the primary object of the appeal proceedings is to review the decision under appeal in a judicial manner (Article 12(2) RPBA), based on the reasons set out by the parties.

However, in the case at hand, no reasons have been provided by the respondent as to why the opposition division was wrong in their conclusions in this regard, or as to why repeating the objections raised in the opposition proceedings might be sufficient in this regard. As stated above, a mere repetition of the arguments not found convincing by the opposition division, without addressing the corresponding reasoning, is generally not sufficient. This is also the case here.

1.2.4 In view of these findings, it was not possible to consider the objection based on the alleged public prior use (Article 12(5) RPBA).

2. Novelty, Article 100(a) EPC with Article 54(1) and (2) EPC

The subject matter of claim 5 is novel over **D1** and **D2**.

2.1 Neither document explicitly discloses all of the parametric features of claim 5. The respondent attempted to overcome this lack of disclosure by reworking example 1C of **D1** (reference code in **D6**: W244397) and examples 2C (**D6**: W244398) and 5C (**D6**: W244399) of **D2** and measuring the claimed parameters with the reworked materials (**D3**: production process; **D4** and **D6**: results; **D7**: summary of the results). According to the respondent, it could be derived from these experiments that the materials of examples 1C and 2C exhibited all the features of claim 5, including those not disclosed in **D1** or **D2** themselves.

2.2 This is however not convincing, since the reworked materials are not representative of the materials disclosed in **D1** and **D2**.

2.3 In this context, the appellant argued that the reworked materials contained particles having diameters smaller than 150 µm or larger than 710 µm, which was not compatible with the teaching of **D1** or **D2**.

The respondent, though, set out to explain the presence of the small particles in the products of **D1** with the mechanical stress caused by the thorough mixing of the components in the surface-cross-linking step which might have slightly damaged some particles.

2.4 While this explanation appears to be technically sound, it points to a fundamental problem with the reworking of the relevant examples of **D1** and **D2**, namely that the documents disclose insufficient details about how the surface-cross-linking step is carried out (see e.g. in **D1**, page 33, second full paragraph).

2.5 When reworking example 1C, the respondent would appear to have selected conditions that led to a product having a particle mixture as defined in features (C), i.e. having some smaller and larger particles but not so many that feature (C) would not be met. However, these (unknown) conditions employed in the reworking are not disclosed as such in **D1**. It is entirely possible that different conditions, for instance different mixing equipment, a higher mixing intensity and/or duration might lead to a product not exhibiting feature (C), and it is not known which conditions were used in the preparation of the actual materials of **D1** which form the prior art. The respondent itself has acknowledged that mixing conditions can have an influence on particle size distribution.

2.6 Similar considerations apply to features (H) and (G) which will also be affected by the mechanical handling of the particles in the cross-linking step. While the reworked materials exhibit these features, it cannot be concluded that they are also exhibited by the materials of prior art document **D1**.

2.7 In this context, the respondent also referred to the additional information regarding the cross-linking step disclosed on page 22 of **D1**.

This argument is also not convincing since the features disclosed in this passage are not mandatory, but only preferred, such that it is not certain that they are used in the examples. Moreover, even if the examples are read together with this passage, the objections raised above are not overcome since, for example, there are no details regarding the mechanical treatment of the particles in the cross-linking step.

2.8 For the reasons set out above, the reworked materials are not representative of the materials actually disclosed in **D1** or **D2**. Therefore, the parameters measured for the reworked materials reported in **D3**, **D4**, **D6** and **D7** cannot be used to supplement the disclosure of **D1** or **D2**.

2.9 In view of this conclusion, there is no reason to discuss the question whether it is possible to derive with the necessary certainty from **D3** and **D4** that in particular the SFC parameter was measured using the method indicated in the contested patent; this would be at least doubtful, given that **D4** (table on page 3) indicates that internal method GCAS58007040 was used, which is different from the method indicated in the patent.

2.10 For features (A) and (C), the respondent does not solely rely on the values measured for the reworked materials but also on the disclosure of **D1** itself.

2.10.1 The document discloses an SFC value of "83", which is however based on a different sample weight of 1.5 g and not of 0.9 g, as specified in the patent. This fact was also acknowledged by the opposition division, which nevertheless held that, in view of the large numerical difference between the value disclosed in **D1** and the claimed range of "not less than $20 \times 10^{-7} \cdot cm^3 \cdot s \cdot g^{-1}$", it had to be concluded that the feature was disclosed in **D1** (see top of page 15 of the decision). However, in the absence of any support from a technical explanation as to how a change in the amount of material tested might influence the result obtained, this conclusion, albeit not unlikely, falls short of a direct and unambiguous disclosure. Notably, the effect of a reduced test amount need not necessarily be linear.

2.10.2 Similar considerations apply to feature (C). **D1** teaches classifying the intermediate materials before cross-linking in such a way that 100% of the particles have a size in the range of from 150 µm to 710 µm. However, for the reasons set out above, it cannot be taken for granted that the cross-linking step does not influence or change the particle size distribution. Since feature (C) concerns the final and not an intermediate material, **D1** does not disclose feature (C).

2.10.3 Similar arguments apply to **D2**.

2.11 It follows that **D1** and **D2** do not disclose surface cross-linked water-absorbing agents having features (A), (B), (C), (G) and (H). Claim 5 of the main request is thus novel.

3. Inventive step, Article 100(a) EPC with Article 56 EPC

3.1 The invention concerns water-absorbing agents, commonly known as superabsorbers, for use in (among other things) sanitary articles like diapers and sanitary napkins. In particular, the invention aims to provide materials having a high degree of liquid permeability while also providing improved re-wet (paragraph [0011]).

3.2 Closest prior art

3.2.1 **D1** and **D2** are also directed to absorbent materials. Both documents are very similar in terms of their technical teaching and aim to provide superabsorbers having quick liquid acquisition while maintaining high overall quality, in particular in terms of permeability (page 4 of D1 and **D2**). In addition, **D1** also provides technical information about how re-wet can be improved (page 8, first paragraph and page 40, second paragraph). In contrast, **D2** only mentions the definition of the term, without discussing how the problem of re-wet could be addressed. Therefore, **D1** constitutes a better starting point for the assessment of inventive step than **D2.** This conclusion was not contested by the respondent.

As mentioned above, **D1** does not disclose features (A), (B), (C), (G) and (H).

3.2.2 In the reply to the appeal, the respondent also raised an inventive step objection starting from **D22/D22a.** No such attack had been raised in the proceedings leading to the decision under appeal nor was the decision under appeal based on this objection, contrary to Article 12(4) RPBA. The respondent did not provide any reasons why it was submitted only in the appeal proceedings, and why **D22** was an equally promising starting point to **D1**, see point 3.2.1 above. It was thus not possible to consider this attack.

3.3 Problem to be solved

3.3.1 According to paragraph [0012] of the patent, the object of the invention is to provide a water-absorbing agent which maintains a certain degree of liquid permeability and water absorption speed, while also reducing re-wet in a disposable diaper.

3.3.2 The solution proposed by the patent is a water absorbent material having features (A), (B), (C), (G) and (H).

3.3.3 Given that both parties agreed that high gap fluid retention (feature (B)) corresponds to low re-wet, the problem is solved since, by virtue of parameters (A) and (B), claim 5 is limited to water-absorbing agents having a certain minimum liquid permeability (SFC), corresponding to a certain degree of liquid permeability, and relatively high gap fluid retention, corresponding to relatively low re-wet, see above.

3.3.4 Moreover, given that the teaching of **D1** is not detailed enough to reproduce example 1C in a 1:1 fashion and the relevant parameters are not disclosed in the document, see above, no direct comparison of a material of the invention and the materials of example 1C of **D1** is available. However, a comparison can be made between example 1 and comparative example 4 listed in table 2 of the patent in suit. This table provides an overview of the surface-cross-linked materials which do not yet contain the liquid permeability improving agent. It can be seen that the only material in which features (G), (H) and (C) are outside the claimed ranges is comparative example 4. This material can best be compared to example 1 since both are based on the same hydrogel with the exception that the hydrogel of comparative example 4 was classified using an 850 µm sieve (production example 8), while the hydrogel of example 1 was classified using a 710 µm sieve (production example 2), which explains the difference concerning the features relating to particle size distribution. As can be seen, the gap fluid retention of comparative example 4 is considerably lower than that of example 1 and slightly below the claimed threshold. As stated above, the materials listed in table 2 do not yet contain the liquid permeability improving agent. However, it can be seen from tables 3 and 4 that its addition consistently lowers gap fluid retention and it can therefore be safely assumed that the gap fluid retention of comparative example 4 will be even further away from the claimed lower limit. On the other hand, table 3 shows that, if example 1 is treated with the correct amount of liquid permeability improving agent, its gap fluid retention is (still) above the claimed lower limit. Thus, these examples show that proper adjustment of the particle size distribution (features (C), (G) and (H)) contributes to achieving parameters (A) and (B).

Based on this assessment, the claimed features cannot be treated separately in the assessment of inventive step (see the board's preliminary opinion, point 3.3.5., where this conclusion and the corresponding reasoning has already been set out).

3.4 The respondent's submissions during the oral proceedings before the board

3.4.1 The respondent did not respond in writing to the preliminary opinion, but rather contested the conclusion mentioned above at the oral proceedings before the board. In particular, they provided detailed oral submissions as to why it was not possible to derive from a comparison of example 1 and comparative example 4 that features (C), (G) and (H) contributed to achieving features (A) and (B).

3.4.2 It was not possible to consider these submissions because they should have been submitted in writing well ahead of the oral proceedings.

3.4.3 It is to be noted that the experimental section of the patent spans 20 pages and covers not only a great number of examples and comparative examples, but also various intermediate products, with multiple parameters for each of them being presented in 8 different tables.

3.4.4 The respondent's oral submissions lasted for about 45 minutes and mostly, if not entirely, consisted of multiple comparisons of the properties of various examples and comparative examples and pairs thereof, which had not been presented in writing before. This submission of entirely new information was so extensive and complex that it was not possible for either the board or the appellant to take detailed note of, and to understand it sufficiently to form an informed opinion thereon.

In a case where new, technically complex information is provided in oral submissions lasting 45 minutes, the challenge of taking accurate note of what is said in itself prevents the other party from adequately responding thereto. Therefore, taking the new submissions into consideration would have violated the appellant's right to fair proceedings. In addition, postponing the oral proceedings until a later date would have gone against the principle of procedural economy, in particular because the situation could have easily been avoided, had the respondent filed their submissions in writing in due time (cf. the principles of fair proceedings and procedural economy, which are cornerstones of the proceedings (including) before the boards, and which have to be properly balanced, according to Articles 12 et seq of the RPBA, e.g. T 2920/18, T 339/19, T 1857/19, T 1800/21).

The respondent argued that the new submissions had to be taken into account since they were not based on any new facts, as all the data were taken from the contested patent which the appellant could be expected to know.

This is not convincing since, while each of the individual examples and the corresponding sets of parameters was known from the patent, it was the first time the various comparisons between pairs or groups of them had been made in this way and the respective conclusions drawn and presented. Moreover, in order to fully assess the validity of the respondent's submissions, it would have been necessary to check in each case whether the respective materials were indeed comparable in terms of, for example, the method of making the hydrogel, the gel grinding, the amount and type of liquid permeability improving agent, etc. Given the circumstances set out above, this was not possible, for either the appellant or the board.

For these reasons, it was not possible to consider the new submission.

3.5 Obviousness

3.5.1 Faced with the problem cited above, the skilled person had no reason to adjust the particle size distribution in the claimed ranges in such a way as to arrive at a material having features (A), (B), (C), (G) and (H) in combination, since **D1** does not consider features (C), (G) and (H) relevant for this purpose. In particular, there is no teaching that these features contribute to (further) reducing re-wet.

3.5.2 The respondent further argued, to the contrary, that even if the problem was not merely to provide an alternative and the distinguishing features were treated together, the claimed subject matter was rendered obvious by **D5**. The skilled person would consult this document since it disclosed in column 24, line 52 to 56, superabsorbent materials exhibiting excellent liquid diffusibility and decreasing wet-back. According to claim 1 of **D5**, the materials had a mass-average particle diameter in the range of 234 to 394 µm (feature (G)) and a logarithmic standard variation in the range of 0.25 to 0.45 (feature (H)). While feature (C) was not disclosed in the claim, all the inventive samples had a particle size distribution fulfilling the requirements of feature (C).

3.5.3 This is also unconvincing since even if the skilled person had turned to **D5**, they would not have arrived at the subject-matter of claim 5 of the contested patent. While claim 1 of **D5** discloses feature (H), a selection has to be made in order to arrive at feature (G), since the corresponding range in **D5** only partly overlaps with the range of feature (G). The same is true for the amount of liquid-permeability-enhancing agent disclosed in claim 1 of **D5**, which is broader than the maximum range implied by the reference of claim 5 to claim 1. Therefore, another selection has to be made in order to arrive at the claimed subject-matter. While the respondent's argument with regard to feature (C), pointing to the examples listed in tables 2 and 3 of **D5** which all exhibited feature (C), is *per se* correct, taking guidance from these examples would not lead the skilled person to the claimed subject-matter either since several of the examples have a weight-average particle diameter (D50) below 300 µm, i.e. outside of the claimed range.

3.6 In view of the above, the subject-matter of claim 5 is not obvious.

Order

For these reasons it is decided that:

1. **The decision under appeal is set aside.**

2. **The opposition is rejected.**

The Registrar: The Chair:

Beschwerdekammern des Europäischen Patentamts
Boards of Appeal of the European Patent Office
Chambres de recours de l'Office européen des brevets

C. Vodz R. Winkelhofer

Decision electronically authenticated