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Datasheet for the decision of 18 September 2009

Case Number: T 0611/07 - 3.3.10

Application Number: 99943177.8

Publication Number: 1105168

IPC: A61L 15/60

Language of the proceedings: EN

Title of invention:
Superabsorbent polymers having anti-caking characteristics

Patentee:
Evonik Stockhausen GmbH

Opponents:
The Procter & Gamble Company
Nippon Shokubai Company Limited
BASF SE

Headword:
Superabsorbent polymers/EVONIK

Relevant legal provisions:
EPC Art. 56

Keyword:
"All requests: inventive step (no) - purported improvement not shown - reformulation of problem - arbitrary range - obvious alternative"

Decisions cited:
T 0020/81, T 0270/90, T 0355/97

Catchword:
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Case Number: T 0611/07 **-** 3.3.10

D E C I S I O N
of the Technical Board of Appeal 3.3.10
of 18 September 2009

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 6 February 2007 concerning maintenance of European patent No. 1105168 in amended form.**

Composition of the Board:

Chairman: R. Freimuth
Members: J. Mercey
F. Blumer

Summary of Facts and Submissions

I. The Appellant (Opponent III) lodged an appeal against the interlocutory decision of the Opposition Division which found that European patent No. 1 105 168 in amended form met the requirements of the EPC.

II. Notice of Opposition had been filed by the Appellant and the Parties as of right (Opponents I and II) requesting revocation of the patent as granted in its entirety on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC) and insufficient disclosure (Article 100(b) EPC). *Inter alia* the following documents were submitted in opposition proceedings:

(5) US-A-5 419 956,
(9) US-A 4 734 478,
(11) JP-A-9 157 534 and
(11a) partial English translation of (11).

III. The Opposition Division held that the subject-matter of the then pending main request was not novel. It further held that the amendments made to the sole auxiliary request fulfilled the requirements of Article 123(2) EPC, that the invention was sufficiently disclosed and that the subject-matter thereof was novel and involved an inventive step. Document (11) was considered to represent the closest prior art, the comparative data in the patent in suit demonstrating that superabsorbent polymer compositions containing clay particles according to the invention had unexpectedly improved anti-caking characteristics *vis-à-vis* the silicon dioxide-containing superabsorbent

compositions of document (11). Claim 1 of this auxiliary request underlying the contested decision read as follows:

"A particulate material composition comprising an inorganic powder intermixed with particles of superabsorbent polymer, said polymer particles being of such size that less than 60% of said polymer particles, by weight, will pass through a U.S. Standard 50 mesh sieve with 300 micrometer openings, wherein said inorganic powder is selected from the group consisting of clays and wherein the average size of the particles of the inorganic powder is less than 5 micrometers."

IV. With letter dated 18 August 2009, the Respondent (Proprietor of the patent) filed auxiliary requests 1 to 8. Claim 1 of the auxiliary requests 1 and 2 differed from claim 1 of its main request, namely the claims of the auxiliary request underlying the contested decision, in that the average size of the particles of the inorganic powder was less than 3, or less than 0.8 micrometers, respectively. Claim 1 of the auxiliary requests 3 to 5 differed from claim 1 of the main and the auxiliary requests 1 and 2, respectively, in that at least a portion of the polymer particles were surface cross-linked. Claim 1 of the auxiliary requests 6 to 8 differed from claim 1 of the auxiliary requests 3 to 5, respectively, in that the inorganic powder and polymer were intermixed with the addition of water. With this letter, the Respondent also submitted an experimental report (31) in support of inventive step.

V. The Appellant argued that the subject-matter of claim 1 of the main request was not novel over the disclosure of document (11a), which disclosed a composition comprising a powdery water-absorbent resin, wherein the ratio of the particles having particle diameters larger than 300 micrometers was not less than 70 wt.% of the water-absorbent resin, and a water-insoluble inorganic powder such as bentonite, kaolin, hydrotalcite and activated clay having a particle diameter of less than 10 micrometers. Although this document did not explicitly disclose an average particle size of the organic powder of less than 5 micrometers, clays always had an average particle size of less than 5 micrometers, as shown by newly filed document (28):

(28) Römpps Chemie-Lexikon, 8. Auflage 1988, pages 4295 to 4297

such that the claimed particle size was implicitly disclosed in document (11a).

The Appellant submitted that the subject-matter of the patent in suit was not inventive over document (11a), no improvement with regard to any property for the claimed compositions having been shown. The comparative examples in the patent in suit and those in the experimental report (31) were not fair, since they did not differ from one another only by virtue of the particle size of the inorganic powder, but also by virtue of the nature thereof, clay being compared with silica. The problem to be solved by the patent in suit could therefore be regarded merely as the provision of an alternative superabsorbent composition, the choice of clay with a nominally different particle size from

that disclosed in document (11a) being arbitrary, particularly in view of document (28), which taught that clay consisted essentially of particles not larger than 2 micrometers.

VI. The Party as of right (Opponent II) also argued that the subject-matter of claim 1 of the main request was neither novel nor inventive over the disclosure of document (11a). With regard to inventive step, Opponent II argued that document (9) could also be considered to represent the closest prior art, since although not disclosing clays, it specifically addressed the problem of anti-caking.

VII. The Respondent submitted that the basis for the amendments made to the claims in the various requests were to be found in dependent claims 4, 7, 8 and 13, and page 15, lines 6 to 8 and 17 to 18 of the application as filed.

The Respondent submitted that the claimed subject-matter was novel, since document (11a) could not be considered to be a document, as it was merely a partial English translation of the Japanese document (11). As such, the remaining contents of this original document were unknown, since document (11) was in Japanese, Japanese not being an official language of the European Patent Office. The Respondent further argued that even if document (11a) were considered to be a document, a clay having an average particle size of less than 5 micrometers was not directly and unambiguously disclosed therein, since a clay having a particle diameter of less than 10 micrometers did not inevitably

comprise a clay having an average particle size of less than 5 micrometers.

With regard to inventive step, the Respondent submitted that document (9) represented the closest prior art, since it specifically addressed the problem of anti-caking. The problem to be solved by the patent in suit, regardless of whether document (9) or (11a) was considered to be the closest prior art, was the provision of a superabsorbent polymer composition having improved anti-caking and/or absorption under load and good liquid retention properties. The Respondent argued that it did not carry the burden of proving these advantages, but nonetheless referred to Example 1 and Comparison Example 9 in the patent in suit, which showed a significantly improved anti-caking behaviour, and to the experimental report (31), which showed a higher absorption under load of the composition according to the invention. The claimed subject-matter was thus inventive.

VIII. The Party as of right (Opponent I) made no submissions as to the substance of the appeal, nor did it file any requests.

IX. The Appellant requested that the decision under appeal be set aside and the patent be revoked. The Party as of right (Opponent II) supported this request.

The Respondent requested that the appeal be dismissed or, subsidiarily, that the decision under appeal be set aside and the patent be maintained on the basis of any of auxiliary requests 1 to 8, all requests submitted on 18 August 2009.

X. Oral proceedings were held on 18 September 2009 in the absence of the Party as of right (Opponent I), who, after having been duly summoned, informed the Board by its letter dated 31 August 2009 that it would not attend. At the end of the oral proceedings, the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Amendments (Article 123 EPC)*

2.1 The subject-matter of claim 1 is based on original claim 1, together with claim 4 and page 15, lines 6 to 7 of the application as filed.

2.2 The amendments thus made to claim 1 during the opposition proceedings do not extend beyond the content of the application as filed, such that the requirements of Article 123(2) EPC are satisfied.

2.3 These amendments bring about a restriction of the scope of claim 1 as granted, and therefore of the protection conferred thereby, which is in keeping with the requirements of Article 123(3) EPC.

3. *Novelty*

The Appellant and Party as of right (Opponent II) objected to the novelty of the claimed subject-matter on the basis of document (11a). In view of the negative conclusion in respect of the claimed invention for lack of inventive step as set out in point 4 below, a decision of the Board on this issue is unnecessary.

4. *Inventive step*

4.1 According to the established jurisprudence of the Boards of Appeal it is necessary, in order to assess inventive step, to establish the closest state of the art, to determine in the light thereof the technical problem which the invention addresses and successfully solves, and to examine the obviousness of the claimed solution to this problem in view of the state of the art. This "problem-solution approach" ensures assessing inventive step on an objective basis and avoids an *ex post facto* analysis.

4.2 The patent in suit is directed to a composition comprising superabsorbent polymer particles and a clay powder, said composition having good anti-caking, absorption under load and liquid retention properties. A similar composition already belongs to the state of the art in that document (11a) discloses a composition having excellent liquid diffusion and absorption under load (cf. paragraph [0001], lines 3 to 5) comprising a powdery water-absorbent resin, wherein the ratio of the particles having particle diameters larger than 300 micrometers was not less than 70 wt.% of the water-absorbent resin, and a water-insoluble inorganic powder

(cf. claims 1, 5 and 6) such as activated clay having a particle diameter of less than 10 micrometers (cf. paragraph [0074], lines 4 and 8). In other words, said water-absorbent resin is a superabsorbent polymer wherein ≤30 wt.% of the polymer particles will pass through a U.S. Standard 50 mesh sieve with 300 micrometer openings, i.e. a superabsorbent polymer according to claim 1 of the present main request, this fact not being contested by the parties. Whether or not document (11a) necessarily discloses a composition comprising clay particles with an average particle size of less than 5 micrometers was, however, a matter of dispute between the parties.

4.2.1 The Respondent argued firstly that document (11a) could not be regarded as the closest prior art, since it could not be regarded as a document, as it was merely the English translation of 23 from a total of 167 paragraphs of the Japanese document (11). It was important to consider the whole content of a document when assessing its true disclosure, this not being possible in the present case, as large portions of the original document (11) were missing. The remaining disclosure of this document was thus not available, since document (11) was in Japanese, Japanese not being an official language of the European Patent Office.

However, the Board holds that there are no reasons to doubt the validity of what is actually disclosed in document (11a), the Respondent not having provided any arguments in this respect. The mere fact that only a part of a document is available does not, in itself, throw doubts on the disclosure of said part of the document. Thus, although document (11) contains

additional information to that disclosed in document (11a), this fact does not in any way depreciate the actual disclosure of document (11a), more particularly that of claims 1, 5 and 6 together with the definition of the water-insoluble powder in paragraph [0074]. The Board thus holds that document (11), to the extent of its translation into English in the form of document (11a), is to be considered as forming part of the state of the art for the purposes of Article 56 EPC.

4.2.2 The Respondent further argued, as did the Party as of right (Opponent II), that not document (11a), but rather document (9), was the closest state of the art, since document (9) specifically addressed (cf. col. 2, lines 20 to 21) the technical problem which underlies the patent in suit (cf. paragraph [0014] thereof), namely the prevention of caking, whereas document (11a) did not refer to anti-caking at all.

However, the clay-containing superabsorbent polymer composition disclosed in document (11a) is clearly structurally closer than the silica-containing composition of document (9), the Appellant and Party as of right (Opponent II) even having argued that document (11a) was in fact novelty destroying for the subject-matter of the patent in suit. Furthermore, document (11a) may indeed not specifically mention anti-caking, but is, as is the patent in suit, concerned with absorbent compositions having good liquid retention and absorption properties for use in diapers, with the consequence that document (11a) cannot be discarded for this reason alone. In any case, the alleged improvement in anti-caking has not been shown (cf. points 4.5 to 4.7 below), such that this aim of the patent in suit

should be given less weight in determining the closest prior art. The Board concludes therefore that document (9) represents prior art which is further away from the patent in suit than document (11a).

4.2.3 Thus, the Board considers, in agreement with the Appellant and the Opposition Division, that in the present case the clay-containing superabsorbent polymer composition of document (11a) represents the closest state of the art and, hence, takes it as the starting point when assessing inventive step.

4.3 In view of this state of the art the problem underlying the patent in suit, as formulated by the Respondent at the oral proceedings, was the provision of a superabsorbent polymer composition having improved anti-caking and good retention and absorption properties. During the proceedings, it amended this problem to the provision of a superabsorbent polymer composition having improved absorption under load.

4.4 As the solution to this problem, the patent in suit proposes a superabsorbent polymer composition, wherein the characterising feature, according to the Respondent, is the average size of the particles of the clay powder of less than 5 micrometers.

4.5 The Appellant, together with the Party as of right, and the Respondent were divided as to whether or not the evidence presented convincingly showed the successful solution of the problem defined in point 4.3 above ***vis-à-vis*** the closest prior art. To demonstrate that the absorbent composition achieves the alleged improvement in anti-caking and/or absorption under load, the

Respondent, who by alleging this fact carries the burden of proving it (see decisions T 270/90, OJ EPO 1993, 725, point 2.1 of the reasons, T 355/97, point 2.5.1 of the reasons, not published in OJ EPO), relied on Example 1 and Comparison Example 9 comprised in the specification of the patent in suit and on the experimental report (31).

4.6 However, in neither the patent in suit nor in the experimental report (31), is there a comparison with the structurally closest embodiment disclosed in document (11a), namely a composition comprising superabsorbent polymer particles and a clay powder having a particle diameter of less than 10 micrometers. Instead, only comparisons with a composition comprising superabsorbent polymer particles and silica, more particularly Aerosil 200, are provided. Indeed in the patent in suit (cf. page 13, line 35), the comparative examples are described as reflecting the prior art document (5). Hence, the experimental data relied upon by the Respondent for supporting the various alleged improvements do not provide a comparison with the prior art which is closest to the invention, namely the clay-containing superabsorbent composition disclosed in document (11a), and thus cannot demonstrate that the technical problem has been solved ***vis-à-vis*** this prior art (cf. point 4.3 above).

4.7 According to the jurisprudence of the Boards of Appeal, alleged but unsupported advantages cannot be taken into consideration in respect of the determination of the problem underlying the invention (see e.g. decision T 20/81, OJ EPO 1982, 217, point 3, last paragraph of the reasons). Since in the present case the alleged

improvement, namely better anti-caking and/or absorption under load, lacks the required experimental support, the technical problem as defined in point 4.3 above needs reformulation in a less ambitious way.

4.8 Consequently, the objective problem underlying the patent in suit in the light of the teaching of document (11a) is merely the provision of a further superabsorbent polymer composition having good anti-caking, absorption under load, and liquid retention properties.

4.9 Finally, it remains to decide whether or not the proposed solution to that objective problem underlying the patent in suit is obvious in view of the state of the art.

4.9.1 The average size of the clay particles of less than 5 micrometers is neither critical nor a purposive choice for solving the objective problem underlying the patent in suit, since no unexpected effect has been shown to be associated with this particular size range. The act of picking out at random an upper limit for the average particle size of the clay powder of 5 micrometers from clays having a particle size under 10 micrometers according to the closest prior art document (11a) is within the routine activity of the skilled person faced with the mere problem of providing a further superabsorbent polymer composition having good anti-caking, absorption under load, and liquid retention properties. In the present case, the skilled person is all the more guided to pick out clays having an average particle size of less than 5 micrometers, since it is common general knowledge (cf. document (28), page 4295,

right hand column, 8th to 3rd line from bottom), that clay soils comprise particles of less than 2 micrometers in size. Therefore, the arbitrary choice of an average size of the clay particles of less than 5 micrometers, particularly in the light of the common general knowledge that clays usually have a particle size within this range, cannot provide the claimed absorbent with any inventive ingenuity.

4.10 As a result, the Respondent's main request is not allowable as the subject-matter of claim 1 thereof lacks inventive step pursuant to Article 56 EPC.

Auxiliary requests 1 and 2

5. *Amendments (Article 123 EPC)*

5.1 Claim 1 of each of auxiliary requests 1 and 2 has been amended ***vis-à-vis*** claim 1 of the main request by restriction of the average size of the particles of the inorganic powder to less than 3, or less than 0.8 micrometers, respectively. Basis for these amendments is page 15, lines 7 and 8, respectively, of the application as filed.

5.2 Therefore, the amendment made to claim 1 of each of auxiliary requests 1 and 2 does not generate subject-matter extending beyond the content of the application as filed or beyond the scope of the granted claims, such that the requirements of Article 123(2) and (3) EPC are satisfied.

6. *Inventive step*

6.1 Claim 1 according to each of auxiliary requests 1 and 2 differs from claim 1 of the main request exclusively in that the average size of the particles of the inorganic powder is restricted to less than 3, or less than 0.8 micrometers, respectively.

6.2 Since, however, no effect has been shown to be associated with these average size ranges, which also cover the usual particle sizes known from common general knowledge for clays (cf. document (28)), they are also merely arbitrary choices from within the general teaching of document (11a). Therefore, the considerations having regard to the assessment of inventive step given in points 4.2 to 4.9 above and the conclusion drawn in point 4.10 above with respect to claim 1 of the main request apply also to claim 1 of each of auxiliary requests 1 and 2.

6.3 Thus, auxiliary requests 1 and 2 are also not allowable for lack of inventive step pursuant to Article 56 EPC.

Auxiliary requests 3 to 5

7. *Amendments (Article 123 EPC)*

7.1 Claim 1 according to each of auxiliary requests 3 to 5 has been amended ***vis-à-vis*** claim 1 of the main and auxiliary requests 1 and 2, respectively, in that at least a portion of the polymer particles were surface cross-linked. Basis for this amendment is original claim 13.

7.2 Therefore, the amendment made to claim 1 of each of auxiliary requests 3 to 5 does not generate subject-matter extending beyond the content of the application as filed or beyond the scope of the granted claims, such that the requirements of Article 123(2) and(3) EPC are satisfied.

8. *Inventive step*

8.1 Claim 1 according to each of auxiliary requests 3 to 5 has been amended ***vis-à-vis*** claim 1 of the main and auxiliary requests 1 and 2, respectively, in that at least a portion of the polymer particles are surface cross-linked.

8.2 However, the closest prior art document (11a) already discloses that the absorbent may be surface cross-linked (cf. paragraph [0044], lines 1 to 3), and thus surface cross-linking cannot contribute to inventiveness of the subject-matter of claim 1 of the auxiliary requests 3 to 5 ***vis-à-vis*** that document. Therefore, the considerations having regard to the assessment of inventive step given in points 4.2 to 4.9 ***supra*** and the conclusion drawn in point 4.10 ***supra*** with respect to claim 1 of the main request apply also to claim 1 of each of auxiliary requests 3 to 5.

8.3 Thus, auxiliary requests 3 to 5 are also not allowable for lack of inventive step pursuant to Article 56 EPC.

Auxiliary requests 6 to 8

9. *Amendments (Article 123 EPC)*

9.1 Claim 1 of each of auxiliary requests 6 to 8 has been amended ***vis-à-vis*** claim 1 of auxiliary requests 3 to 5, respectively, by specifying that the inorganic powder and polymer were intermixed with the addition of water. Basis for this amendment is page 15, lines 17 to 18 of the application as originally filed.

9.2 Therefore, the amendment made to claim 1 of each of auxiliary requests 6 to 8 does not generate subject-matter extending beyond the content of the application as filed or beyond the scope of the granted claims, such that the requirements of Article 123(2) and (3) EPC are satisfied.

10. *Inventive step*

10.1 Claim 1 according to auxiliary requests 6 to 8 differs from claim 1 of auxiliary requests 3 to 5 exclusively in that the inorganic powder and polymer were intermixed with the addition of water.

10.2 However, document (5), which describes high performance absorbent articles containing particulate superabsorbent hydrogel-forming materials with improved fluid uptake and distribution rates (cf. col. 2, lines 59 to 61), already teaches the mixing of an inorganic powder, such as a clay with a particle size of less than 1 micrometer (cf. col. 10, lines 5 to 6 and 19 to 20) and superabsorbent polymer particles with the addition of water (cf. col. 10, lines 33 to 35).

Document (5) thus provides the skilled person with a clear incentive to incorporate water into a composition comprising a superabsorbent polymer and a clay. Since the addition of water to the absorbents according to any of auxiliary requests 6 to 8 has not been alleged nor shown to be associated with any unexpected effect, the objective problem remains the provision of a further superabsorbent polymer composition (cf. point 4.8 above). Thus, the addition of water cannot contribute to inventiveness of the subject-matter of claim 1 of auxiliary requests 6 to 8 *vis-à-vis* document (11a), with the consequence that the subject-matter thereof is obvious and does not involve an inventive step.

10.3 Thus, auxiliary requests 6 to 8 are also not allowable for lack of inventive step pursuant to Article 56 EPC.

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:

C. Rodríguez Rodríguez R. Freimuth