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**Datasheet for the decision  
of 12 June 2007**

**Case Number:** T 0281/04 - 3.3.05

**Application Number:** 98928775.0

**Publication Number:** 0989956

**IPC:** C01B 33/143

**Language of the proceedings:** EN

**Title of invention:**

Polysilicate Microgels and silica-based materials

**Applicants**

Akzo Nobel N.V.  
Eka Chemicals AB

**Opponent:**

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**Headword:**

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**Relevant legal provisions:**

EPC Art. 54, 82, 84, 123(2)  
EPC R. 29(2)

**Keyword:**

-

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0281/04 - 3.3.05

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.05  
of 12 June 2007

**Appellants:**

Akzo Nobel N.V.  
Velperweg 76,  
Postbus 9300  
NL-6824 BM Arnhem (NL)

Eka Chemicals AB  
S-44580 Bohus (SE)

**Representative:**

Van Deursen, Petrus Hubertus  
Akzo Nobel N.V.  
Intellectual Property Department  
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**Decision under appeal:**

Decision of the Examining Division of the  
European Patent Office posted 8 October 2003  
refusing European application No. 98928775.0  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** M. Eberhard  
**Members:** J.-M. Schwaller  
S. Hoffmann

## Summary of Facts and Submissions

I. The appeal was lodged against the decision of the examining division to refuse the European patent application No. 98928775.0. The decision was based on amended claims 1 - 24 filed with the letter dated 5 December 2002.

II. The following prior art was relied upon during the examination proceedings:

D1 = EP-A-0359552

D2 = Chem. Abstracts, vol. 107, No. 4, 27.07.1987, abstract 25574 (abstract of JP 62-083311)

D3 = WO 89/06637.

III. In the contested decision, the examining division held that the rejected set of claims neither met the requirements of Article 82 EPC, the claims lacking unity, nor those of Rule 29(2) EPC, owing to the presence of a plurality of independent claims in the same category. Claims 5 (or 9) then on file also contravened Article 84 EPC, because they defined the process in terms of a desired result to be achieved.

It was further held that the use of the generic expression "an acid" in claims 1 and 2 furthermore infringed the requirements of Articles 123(2) and 84 EPC for the reasons indicated in the communication dated 09 August 2002. In the latter, it was specified that the only basis for the limitation to an acid could be found at page 6 where it was stated that *"suitable acids which can be used in the mixing process to obtain the desired pH value or range include conventional*

*acids*" and that it appeared necessary to specify the function of the added acid.

The examining division also drew attention to the objection of lack of novelty raised initially against product-by-process claim 21 then on file.

- IV. With the grounds of appeal, the appellants filed ten sets of claims respectively as a main and 1<sup>st</sup> to 9<sup>th</sup> auxiliary requests. They also requested oral proceedings before any decision other than grant of a patent on the basis of the main request.
- V. In its communication accompanying the summons to oral proceedings, the board made reference to documents JP 62 - 083311 (D2a) and its corresponding PAJ abstract (D2b), as well as to pages B - 74 and B - 117 from the CRC Handbook of Chemistry and Physics, 62<sup>nd</sup> edition (1981-1982).

In said communication, the board raised several objections under Articles 123(2) EPC and 84 EPC against the amended claims. Concerning in particular the feature "*an acid*" in claim 1 of the main request then on file, it was observed that a basis for the use of an acid could be found in the passage at page 6, lines 23-30 of the published PCT application WO 98/53716, but that said passage referred to a mixing operation, and not simply to bringing into contact particles of salt or ions with an acid. Said passage furthermore specified that the acids were used in said mixing process to obtain a desired pH value or range, a suitable range being from 5 to 11. The board also noted that a lack of clarity arose from the wording of the

independent claims 1 of the 6<sup>th</sup> to 9<sup>th</sup> auxiliary requests and their dependent claim 2 then on file, because on the one hand, DB was defined as being a water-soluble salt (claim 1) while on the other hand, DB was selected from protonic acids comprising hydrogen(s) D and the ion B (claim 2). Since a protonic acid did not fall under the definition of a salt, this discrepancy implied that said claims were unclear.

The board also questioned the novelty, on the one hand, of the process according to claim 1 of all the requests over the method B described in D3, and on the other hand, of the independent product-by-process claim of all the requests over the microgels obtained by method B of D3 and those described respectively in D1 and in D2/D2b.

VI. With a letter dated 25 May 2007, the appellants withdrew all the previous requests and replaced them by six new sets of claims as a main request, followed by five auxiliary requests.

The requests no longer contained product claims.

VII. During the oral proceedings, which took place on 12 June 2007, the allowability of the amendments in claim 1 of the main request filed on 25 May 2007 was first discussed. In reply, the appellants filed a new set of claims 1 - 11 as a main request, in replacement of the previous one. This request contains no product claim.

Claim 1 of the new main request reads as follows:

"1. A process for the preparation of polysilicate microgels, characterized in that it comprises mixing particles of salt AB with an aqueous silicate or polysilicate solution, or mixing an ion A with an ion B in the presence of an aqueous silicate or polysilicate solution whereby the salt AB is precipitating in the aqueous phase, using an acid to obtain a pH in the mixtures in the range of 5 to 11, said salt AB representing a precipitable salt having a  $pK_s$  value of at least 4, measured at 20°C in water."

VIII. The appellants submitted the following arguments in favour of the novelty of the process as defined in claim 1 of the main request:

Under the conditions of method B on page 15 of D3, no aluminium sulphate would be formed. The overriding factor was that use was made of sodium aluminate. It was a safe assumption that the pH of the experiment was the same as that used in method A described on page 14, i.e. about 3. Under these circumstances,  $Al^{3+}$  formation out of aluminate  $[Al(OH)_4^-]$  ions was slow and any  $Al^{3+}$  formed would react with the polysilicic acid, rather than with sulphate. At higher pH (i.e. about 4 and higher), no more  $Al^{3+}$  formation took place. Aluminate  $[Al(OH)_4^-]$  ions were very reactive towards silica and they would react with the silica surfaces.

IX. The appellants requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 - 11 of the main request filed during the oral proceedings, or in the alternative, on the basis of the first or second auxiliary requests filed as

fourth and fifth auxiliary requests, both filed on  
25 May 2007.

## **Reasons for the Decision**

### *Main request*

1. Allowability of the amendments under Article 123(2) EPC

Claims 1-11 have a basis as follows in the international application published as WO 98/56716:

- claim 1: claims 1 and 2; page 1, line 31 to page 2, line 12; page 2, lines 25-29; page 6, lines 23-30; page 7, lines 1-3 of the PCT application
- claim 2: page 4, lines 11-12
- claim 3: claim 7; page 4, lines 26-29
- claim 4: page 4, lines 33-34
- claim 5: page 4, lines 17-18; page 5, lines 8, 10-11, 28, 30-31
- claim 6: page 4, lines 20-23; page 5, lines 8, 10-11, 28, 30-31
- claim 7: page 5, lines 13-14
- claim 8: page 5, lines 33-35
- claim 9: page 5, lines 35-36
- claim 10: page 7, lines 20-21
- claim 11: page 7, lines 22-25

The claims thus meet the requirements of Article 123(2) EPC.

2. Rule 29(2) EPC

The application no longer contains a plurality of independent claims in the same category, thus the provisions of Rule 29(2) EPC are met.

3. Clarity - Support by the description

The claims objected to by the examining division as containing a result to be achieved have been deleted.

The function of the "*acid*" recited in claim 1 is now specified as being "*to obtain a pH in the mixtures in the range of 5 to 11*". The mixing operation has furthermore been recited in claim 1. These amendments to claim 1 thus overcome both the objections raised by the board and those raised in this respect by the examining division.

DB is now specified as being either a water-soluble salt and/or an ion pair in claims 5 and 6. Claim 9, which is dependent *inter alia* on claims 5 and 6, describes DB as being a protonic acid comprising hydrogen D and the ion B. In view of DB's definition in claims 5 and 6, i.e. that DB can in particular be an ion pair, the discrepancy mentioned in the board's communication no longer exists.

Claims 1 - 11 thus meet the requirements of Article 84 EPC.



4. *Novelty*

The present set of claims contains no product claim. The novelty issues raised in this respect by both the board and the examining division thus no longer apply.

The board has also no reason to put in doubt the arguments referred to in point VIII. *supra* regarding the novelty of the process now claimed. Furthermore, it is observed that none of the documents cited in the search report and during the procedure, in particular D1, D2/D2a/b2b or D3, disclose the preparation of a polysilicate microgel by a process involving both a precipitable salt having a  $pK_s$  value of at least 4 (measured at 20°C in water) and an acid.

Claim 1 (and thus also its dependent claims 2 - 11) therefore fulfil the requirements of Article 54 EPC.

5. *Unity*

The present set of claims contains only one independent process claim and no further independent claim in another category. The examining division's considerations and conclusion stated in the decision appealed against and concerning the lack of unity of invention (Article 82 EPC) no longer apply to the present set of claims since the latter contains no claim directed to aqueous silicate or polysilicate solutions.

6. *Remittal*

Since the examining division has not yet addressed in particular the inventive step issue, the Board considers it appropriate to exercise its power conferred by Article 111(1) EPC to remit the case to the first instance 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 first instance for further prosecution

The Registrar:

The Chairman:

C. Vodz

M. Eberhard