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**D E C I S I O N**  
**of 6 December 2002**

**Case Number:** T 0261/00 - 3.3.5

**Application Number:** 93104057.0

**Publication Number:** 0563653

**IPC:** C01F 7/02

**Language of the proceedings:** EN

**Title of invention:**

Fine flaky boehmite particles and process for the preparation  
of the same

**Patentee:**

YKK CORPORATION

**Opponent:**

Akzo Nobel N.V.

**Headword:**

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**Relevant legal provisions:**

EPC Art. 56, 111(1), 113(1)

EPC R. 67

**Keyword:**

Main and auxiliary requests:

"Inventive step (no) - obvious modification"

"Remittal - not justified"

"Reimbursement of appeal fee (no) - appeal not allowable"

**Decisions cited:**

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**Catchword:**

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Case Number: T 0261/00 - 3.3.5

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.5**  
**of 6 December 2002**

**Appellant:** YKK CORPORATION  
(Proprietor of the patent) No. 1, Kanda Izumi-cho  
Chiyoda-ku,  
Tokyo (JP)

**Representative:** Patentanwälte  
Leinweber & Zimmermann  
Rosental 7  
D-80331 München (DE)

**Respondent:** Akzo Nobel N.V.  
(Opponent) Patent Department  
Velperweg 76  
P.O. Box 9300  
NL-6800 SB Arnhem (NL)

**Representative:** Verbart, Jeanette J.M.  
Akzo Nobel N.V.  
Intellectual Property Department (Dept. AIP)  
P.O. Box 9300  
NL-6800 SB Arnhem (NL)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 18 January 2000  
revoking European patent No. 0 563 653 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** R. K. Spangenberg  
**Members:** A. T. Liu  
J. H. Van Moer

## Summary of Facts and Submissions

I. European patent No. 0 563 653 was granted with a set of 6 claims, of which claim 1 was directed to a fine flaky boehmite particle with claims 2 to 5 depending thereon and claim 6 directed to a process for the preparation of products according to claim 1.

II. A notice of opposition was filed against the patent on the grounds of lack of novelty and lack of inventive step (Article 100(a) EPC) and supported, *inter alia*, by the following documents:

D1: US-A-4 716 029,

D4: US-A-2 656 250.

III. By letter dated 7 October 1999, the patentee filed new claims as basis for a main request and a (first) auxiliary request. A further claim was filed at the oral proceedings of 12 November 1999 as second auxiliary request. The sole claim of this request read as follows:

"A process for the preparation of fine flaky boehmite particles having an orthorhombic crystal form and a crystal phase grown in the form of a flat plate in which the aspect ratio (i.e. ratio of minor axis to thickness) of the particles is between 3 and 100 which comprises subjecting aluminium hydroxide or hydrated alumina having a particle size adjusted to the order of submicron to a hydrothermal treatment in water or an aqueous alkali solution at a temperature of 300°C or above and a pressure of 100 atm or below."

- IV. At the end of the oral proceedings, the opposition division decided to revoke the patent. Essentially, it was held that the subject-matter of the claim of the main request was not novel with respect to the process of D4. Furthermore, the claim of the (first) auxiliary request was not allowable because it additionally contained a disclaimer, which was neither appropriate as such nor necessary for establishing novelty with regard to D4. Lastly, the second auxiliary request was considered late filed and not admitted into the proceedings.
- V. On appeal, the appellant was notified by letter of 20 September 2002 that the Board had reservations as to the basis for the subject-matter of the sole claim still on file, which was that according to the late filed second auxiliary request.
- VI. At the oral proceedings on 6 December 2002, the appellant filed a further amended claim, which was distinguished from that cited in point III above through the additional stipulation of a higher limit of temperature for the hydrothermal treatment (" ... hydrothermal treatment in water or an aqueous alkali solution at a temperature of 300°C or above **but below 350°C ...**").
- VII. The appellant's submissions were essentially the following:
- The problem solved by the claimed process was an improvement of the process of D4.
  - The solution proposed in the claim of the main and auxiliary request was to effect the hydrothermal

treatment at a temperature of 300°C or above (but below 350°C, respectively).

- The onus was on the respondent to prove that the claimed process was not efficient.
- Historically, similar hydrothermal processes were always effected at about 200°C to 210°C. The prior art had reasons for not suggesting temperatures of 300°C or higher.
- Remittal to the first instance was justified to allow the patentee two levels of jurisdiction. This would also provide the time necessary for carrying out comparative experiments.
- The opposition division committed a substantial procedural violation by depriving the appellant of the right to be heard, which should justify a reimbursement of appeal fees.

VIII. The respondent's arguments may be summarised as follows:

- There was no evidence that the claimed process was more efficient than that of D4.
- There was no prejudice against treatment temperatures of 300°C or above. On the contrary, this temperature range was envisaged by the prior art.
- There was no reason for a remittal.

IX. At the end of the oral proceedings, the requests were

as follows:

The appellant (patentee) requested that the decision under appeal be set aside and that the patent be maintained, as main request, on the basis of the second auxiliary request filed at the oral proceedings of 12 November 1999 or, in the alternative, on the basis of the claim filed at the oral proceedings before the Board of Appeal. He also requested, alternatively, to remit the case to the first instance for further prosecution. He also requested reimbursement of the appeal fees.

The respondent requested that the appeal be dismissed.

## Reasons for the Decision

### 1. *Main request*

1.1 The sole claim of this request is directed to a process for the preparation of fine flaky boehmite particles having a specified form and shape. The claimed process is defined by the following features:

- (i) the particle size of the starting material (aluminium hydroxide or hydrated alumina) is adjusted to the order of submicron
- (ii) the alumina is subjected to a hydrothermal treatment in water or an aqueous alkali solution
- (iii) the treatment is effected at a temperature of 300°C or above

(iv) the pressure is at 100 atm or below.

- 1.2 It is common ground that the closest prior art is represented by D4 which discloses a hydrothermal process for obtaining fine flaky boehmite particles having a form and shape as stipulated in the present claim. Also, it is not further in dispute that the process according to Example II of D4, in particular Example II (b), comprises the features (i), (ii) and (iv) as laid out above.
- 1.3 The appellant has asserted that, with respect to D4, the problem that the patent in suit has set out to solve is the provision of an efficient process for preparing boehmite particles which are suitable for use as pigments and fillers in rubbers. The appellant has submitted that, by the term "efficient" it is meant that the claimed process should entail a higher yield of boehmite particles with the desired properties as compared to the process of D4.
- 1.4 To solve the technical problem as stated above, it is proposed in the claim to effect the hydrothermal treatment at a temperature of 300°C or above (see point 1.1 above, feature (iii)).
- 1.5 The Board notes that the formulation of the problem to be solved (according to point 1.4 above) was submitted for the first time at the oral proceedings, without any evidence to show that the claimed process is indeed more efficient than that of D4.

The appellant has alleged that the onus is on the respondent - opponent to demonstrate that a patent is flawed and not on the appellant - patentee to prove the



contrary. The Board remarks that, in the present case, the respondent has already shown that the patent as granted is invalid, with the consequence that the appellant has relinquished the claims to the products and amended the process claim by restricting the treatment temperature to a range outside that expressly favoured by the prior art. The Board therefore holds that, since the appellant for the first time wants to base the inventive merit of his claimed subject-matter on the selection of a technical feature which was not present in the granted claims, namely a particular temperature range, the burden necessarily falls upon him to make it at least plausible that the technical problem formulated by him is credibly solved. In other words, the onus is upon the appellant to show that the proposed temperature range is not arbitrary. As he has not argued and the Board can definitely not see that evidence in favour of an improvement of any sort could be derived from the data on file, the Board cannot accept that the technical problem as advanced by the appellant is solved by the claimed process. The Board therefore holds that the problem to be solved with respect to D4 can be seen in the provision of a further process for producing boehmite with the same properties. The question is whether the solution proposed in the claim is obvious in view of the available prior art.

- 1.6 The appellant has argued that there does not exist a specific teaching in the prior art to work above 250°C. This would be reflected in the preferred temperature range 160°C to 250°C, backed by the selection of a temperature of 210°C in all the examples of D4 or in the treatment temperature of 200°C in the examples of D1. He has also submitted that it is common general

knowledge that alpha-alumina is produced at high temperatures. Therefore, the skilled person would not choose to work in a high temperature range such as 300°C or above.

The Board wishes to remark that, whilst the hydrothermal preparation of boehmite is preferably carried out in D4 in the temperature range from 160°C to 250°C, the general teaching of this prior art encompasses temperatures above 120°C (column 1, lines 9 to 16). It is furthermore undisputed that D1 relates to the same technical field since it also concerns the hydrothermal preparation of fine flaky boehmite particles (see claim 1). In this document, it is explicitly disclosed that boehmite can be obtained from hydrated alumina in a temperature range between 100°C and 400°C, more specifically between 150°C and 300°C (see column 3, lines 17 to 21 and column 3, line 67 to column 4, line 3). Thus, not only the temperature of 300°C is preferred for the process of D1, but also the range of 300°C to 400°C is referred to as a working range for such processes. If the skilled person seeks to modify the specific examples of D4 within the general limits as taught in D4, he would therefore apply the teaching of D1 and incorporate the working temperatures disclosed therein. By thus doing he would arrive in a straightforward manner at the process as presently claimed.

2. *Auxiliary request*

The subject-matter of the present claim differs from the previous one only in the stipulation of the upper limit of 350°C for the temperature range.

As is entirely in agreement with the appellant's submissions, it is well known in the art that alpha-alumina may form at high temperatures (see also point 1.6 above). The Board thus considers it a matter of routine for the skilled person, when carrying out the hydrothermal treatment within the temperature ranges disclosed in D1 and D4, to assess the crystal phase of the product. No inventive step is required for him to recognise that the working temperature is too high when the hydrothermal treatment leads to the formation of alpha-alumina instead of the desired boehmite product. The reasoning for the claim of the main request therefore applies *mutatis mutandis* to the present claim. Consequently, neither request is allowable due to lack of inventive step (Article 56 EPC).

3. *Request for remittal*

It is foreseen in Article 111(1) EPC that, following the examination as to the allowability of the appeal, the Board has the alternatives of exercising any power within the competence of the first instance or remit the case to that department. Having arrived at the present stage of the proceedings, the Board is thus not obliged to remit the case but has the power to assess the appropriateness of a remittal for each case on its merits. More particularly, a remittal to the department of first instance would be appropriate if a new submission were made by an opposing party which could jeopardise the maintenance of the patent (see also Case Law of the Boards of Appeal of the EPO, fourth edition, December 2001, VI.F.7).

In the present case, the examination as to the

allowability of the claims is made in respect of the same documents as those taken into consideration by the department of first instance, namely D1 and D4. The appellant has had the time to study those documents and his arguments have been heard at the oral proceedings before the Board. In response, the respondent has not submitted any new argument, let alone a new fact, which could have taken the appellant by surprise.

On the contrary, it is the appellant who argues that he would need time to carry out experiments in order to show the advantage of the claimed process. In this respect, the Board would like to observe that, even if the opposition division did not formally admit the claim according to the present main request into the proceedings, they did give a reason as to why said claim did not appear to involve an inventive step (see decision under appeal, item 5). Thus, the appellant could not have been unaware of the arguments challenging the patentability of his claim(s). Since the oral proceedings of 12 November 1999, he has had ample time to file evidence in support of his case, in reply to the objections raised.

The Board therefore does not see any justification for a remittal and exercises its discretionary power under Article 111(1) EPC to take a final decision.

4. *Request for reimbursement of appeal fees*

According to Rule 67 EPC, a reimbursement shall be ordered (i) where the Board deems the appeal allowable and (ii) if such reimbursement is equitable by reason of a substantial procedural violation.

The appellant has submitted that the opposition

division rejected the claim filed during the oral proceedings as late filed before he was given the opportunity to present his comments concerning the alleged belatedness, Article 113(1) EPC. By thus doing, the department of first instance committed a substantial procedural violation.

The Board concedes that the minutes of the oral proceedings would appear to support the appellant's allegation that he was not given the opportunity to argue his case. Therefore, it would appear that the opposition division may have made a hasty decision in rejecting the claims as late filed before having heard the representative in this respect. This point, however, needs not be examined any further because a reimbursement shall only be ordered where the Board deems an appeal to be allowable, which is not the case at present for the reasons as expounded in points 1 to 3 above.

## **Order**

### **For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

U. Bultmann

R. Spangenberg