

**Internal distribution code:**

- (A) [ ] Publication in OJ  
(B) [ ] To Chairmen and Members  
(C) [X] To Chairmen  
(D) [ ] No distribution

**Datasheet for the decision  
of 4 July 2012**

**Case Number:** T 0586/10 - 3.3.06

**Application Number:** 00309421.6

**Publication Number:** 1095685

**IPC:** B01D 3/32

**Language of the proceedings:** EN

**Title of invention:**

Distillation apparatus and distilling method

**Patentee:**

NIPPON SHOKUBAI CO., LTD.

**Opponent:**

BASF SE

**Headword:**

Distillation apparatus for polymerizable material/SHOKUBAI

**Relevant legal provisions:**

EPC Art. 83, 54, 56

**Keyword:**

"Admissibility of prior art documents (yes)"  
"Remittal to first instance (no)"  
"Sufficiency of disclosure (yes)"  
"Novelty - main request (yes)"  
"Inventive step - main request (yes)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0586/10 - 3.3.06

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.06  
of 4 July 2012

**Appellant:** BASF SE  
(Opponent) D-67056 Ludwigshafen (DE)

**Respondent:** Nippon Shokubai Co., Ltd.  
(Patent Proprietor) 1-1, Koraibashi 4-chome, Chuo-ku, Osaka-shi  
Osaka 541-0043 (JP)

**Representative:** Daniels, Jeffrey Nicholas  
Page White & Farrer  
Bedford House  
John Street  
London WC1N 2BF (GB)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 14 January 2010  
rejecting the opposition filed against European  
patent No. 1095685 pursuant to Article 101(2)  
EPC.

**Composition of the Board:**

**Chairman:** P.-P. Bracke  
**Members:** E. Bendl  
J. Geschwind

## Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division to reject the opposition against the European patent no. 1 095 685.

II. Claims 1 and 7 as granted read as follows:

"1. A distillation apparatus comprising:  
a distillation tower (1);  
a bottom outflow portion (4,5,6) for allowing a liquid from the bottom of the distillation tower (1) to flow out of the distillation tower (1); and a  
pot portion (3, 3A, 3B) provided between the bottom of the distillation tower (1) and the bottom outflow portion (4, 5, 6), the pot portion (3, 3A, 3B) having a cross-sectional area smaller than the cross-sectional area of the distillation tower (1), and larger than the cross-sectional area of the bottom outflow portion (4,5,6), satisfying the condition that the total pot portion cross-sectional area divided by the cross-sectional area of the distillation tower is equal to from 0.02 to 0.5;  
also satisfying the condition that the cross-sectional area of a pot portion divided by the cross-sectional area of the pipe comprising the bottom outflow portion that is connected to the pot portion is equal to from more than 1 to 20."

"7. A distilling method comprising the step of distilling an easily polymerizable compound using a distillation apparatus as outlined in claim 1. "

Claims 2-6 and 8-9 were dependent upon Claims 1 and 7.

III. The Appellant/Opponent filed an appeal against the decision of the Opposition Division, considered the patent-in-suit to be insufficiently disclosed and objected to lack of novelty and inventive step. Inter alia the following documents were cited:

D1 = JP-A-60/61002

D2 = Distillation Operation, H.Z. Kistler, McGraw-Hill Publishing Company, pages 88-101,210-213, 1989

IV. The Respondent/Proprietor disputed Appellant's arguments, regarded documents D1, D2 (pages 88,92,93,95,96,97,100,101,210,213, which were not already cited in opposition procedure; thereafter referred to as D2(part)) as late filed and submitted inter alia auxiliary requests 1 and 2.

V. The main arguments of the **Appellant** were as follows:

Admissibility of D1, D2(part)

- The intention was to further put an emphasis on the Appellant's initial argumentation, which was wrongly interpreted by the Opposition Division.
- D1 was the result of an additional search due to the argumentation in the Opposition Division's decision.
- Therefore, the documents should be introduced into the procedure.

Remittal to the department of first instance

- The Appellant does not see any reason for a remittal of the case to the department of first instance.

Sufficiency of disclosure

- To re-work the invention the person skilled in the art has to carry out many experiments, which represents an undue burden to the skilled person.
- The invention is consequently not sufficiently disclosed.

Novelty

- D1 and D2 are novelty-destroying.
- Although the ratio of the total pot portion cross-sectional area divided by the cross-sectional area of the distillation tower ( $S1/S2$ ) and the ratio of the cross-sectional area of a pot portion divided by the cross-sectional area of the pipe comprising the bottom outflow portion that is connected to the pot portion ( $S1/S3$ ) have not been explicitly disclosed, they are implicitly derivable from both documents.

Inventive step

- D2 is the closest state of the art.
- Only an effect with regard to the ratios  $S1/S2$  and  $S1/S3$  has been demonstrated, but reduced polymerisation, i.e. the problem to be solved,

depends on the retention time of the product to be polymerised in the pot portion.

- Since no effect in this respect has been shown, the objective problem lies in the provision of a distillation apparatus alternative to the one of D2.
- However, such an apparatus is derivable from D2. Therefore the claimed subject-matter does not involve an inventive step.

The main arguments of the **Respondent** were as follows:

Admissibility of D1, D2(part)

- None of the documents newly introduced in appeal procedure is highly relevant.
- They should consequently not be admitted into the procedure.

Remittal to the department of first instance

- In order to give the Proprietor the possibility to have the case examined by two instances the file should be remitted to the department of first instance in case inter alia D1, D2(part) were to be admitted in the procedure.

Sufficiency of disclosure

- Examples are described in the patent-in-suit. The Appellant has not provided any proof for the allegation that excessive experimentation is necessary to re-work these examples.

- Consequently, the invention is sufficiently disclosed.

#### Novelty

- None of D1 or D2 discloses the ratios S1/S2 and S1/S3 as claimed.
- As a consequence novelty of the claimed subject-matter is given.

#### Inventive step

- The effect shown in the examples of the patent-in-suit is not derivable from the available prior art documents.
- Therefore the claimed subject-matter involves an inventive step.

VI. The Appellant requested that the decision under appeal be set aside and that the European patent no. 1 095 685 be revoked.

The Respondent requested that the appeal be dismissed or in the alternative that the patent be maintained on the basis of one of the first or second auxiliary requests filed with letter of 22 November 2010.

## Reasons for the Decision

1. Admissibility of documents D1, D2(part) and request for remittal to the department of first instance

1.1 Two reasons were given by the Appellant for the submission of the documents during the appeal proceedings:

(a) D2(part) is representative of the skilled person's common knowledge, which was insufficiently taken into account by the Opposition Division in its decision.

(b) D1, a document allegedly being prima facie relevant to destroy novelty of Claim 1 of the main request, was found on the occasion of an additional search in order to invalidate the reasons given by the Opposition Division in its decision.

1.2 In both cases the documents additionally retrieved are a reaction to the decision of the Opposition Division. Being submitted with the grounds of appeal the Respondent had sufficient time to get acquainted with their content and to react accordingly.

In addition Respondent's objection with regard to D2(part) was raised for the first time in the oral proceedings.

1.3 Taking these circumstances into account, the Board exercises its discretion according to Article 13(1),(3) RPBA to introduce these documents into the procedure.



1.4 The Respondent requested remittal of the case to the department of first instance inter alia in the case of introduction of the documents D1, D2(part) into the procedure.

1.5 The arguments provided by the Appellant in the statement of the grounds of appeal with regard to these documents are considered to be a reaction to the reasons in the appealed decision and thus are only seen as an attempt to deepen Opponent's initial argumentation. Being not more relevant that the documents already on file (see the reasoning below), also newly introduced D1 does not change this.

1.6 Therefore, in the present case, the Board does not find it appropriate to remit the case to the department of first instance.

## 2. Sufficiency of disclosure

2.1 The Appellant objected that further parameters in addition to the ones disclosed in the patent-in-suit were necessary to re-work the present examples; excessive experimenting would be the consequence.

2.2 The Board cannot share the Appellant's view, because no proof was submitted in this respect. It was admitted by the Representative in the oral proceedings that no practical experiments were carried out by the Appellant. Also with regard to computer-simulations, which were allegedly unsuccessful due to the lack of disclosure of the patent-in-suit, no further details were given.

2.3 The only calculation made in the grounds for appeal was the "Volumenstrom" of Example 1. It was concluded that calculations based on this example lead to different results than calculations based on specific parts of the description. However, this does not mean that Example 1 or the invention in general cannot be reproduced.

2.4 Thus, Appellant's unproven allegation that further details were needed to carry out the invention of the patent-in-suit does not suffice to successfully substantiate the objection with regard to lack of sufficiency of disclosure.

### 3. Novelty

3.1 Documents D1 and D2 were considered by the Appellant to be novelty-destroying.

3.2 D1 discloses that the inner diameter of the bottom section of distillation columns may be reduced by 5-90% to create a pot portion.

The Appellant calculated, that one of the preferred S1/S2 ratios of D1 lies within the S1/S2 range presently claimed. However, even when starting from this specifically selected value and furthermore assuming that the S1/S3 ratio in D1 must be  $>1$ , since the pot portion is smaller than the distillation column, D1 would still not be novelty destroying.

Following the reasoning above, the S1/S3 ratio of D1 would be an open ended range ( $S1/S3 >1$ ). No combination

of the cited selected S1/S2 ratio and an S1/S3 ratio between >1 and 20 has been disclosed in D1.

3.3 Thus, the disclosure of D1 is not novelty-destroying for Claim 1 of the main request.

3.4 The second document cited, D2, discloses in Figure 4.8 (a) a distillation column for thermally unstable materials. The column possesses a pot portion and a bottom outlet portion.

3.5 As has been accepted by the Appellant during the oral proceedings, the said figure merely represents a schematic drawing. The dimensions can therefore not be derived from this figure and further details are not given in the text.

Consequently specific ratios for S1/S2 and S1/S3 and their combination are not unambiguously derivable from this figure and the corresponding text.

3.6 D2 is not novelty-destroying for Claim 1 of the main request.

3.7 Similar considerations apply to Claim 7, referring to the apparatus according to Claim 1.

4. Inventive step

4.1 The patent-in-suit aims at providing a distillation apparatus effectively preventing polymerization within the tower without entrainment of gas into the liquid.

Both parties cited D2 as the closest state of the art. Taking into account the disclosures of the further available prior art documents, the Board also considers D2 as a suitable starting point.

The most relevant passage of D2 on page 99 refers to the distillation of thermally unstable materials using the design represented by Fig. 4.8 (a) to avoid material degradation.

4.2 Vis-à-vis D2 the objective problem resides in the provision of a distillation apparatus preventing polymerisation and gas entrapment of material sensible to polymerization.

4.3 To solve this problem, a distillation column according to Claim 1 of the main request has been proposed.

Claim 1 of the main request of the patent-in-suit differs in the specific ratios S1/S2 and S1/S3.

4.4 Examples 1 and 2 of the patent-in-suit show, that distillation columns meeting the S1/S2 and S1/S3 ratios as claimed were run for at least one month, whereas in the examples with parameters outside these ratios operation was stopped the longest after 16 days.

In spite of Appellant's objections as to these results, no proof has been submitted that the improved operation times were **not** caused by the parameters in question.

Furthermore, although the Appellant objected that the claimed scope would be so broad that not all

encompassed embodiments solved the posed problem, no proof in this respect has been submitted.

Therefore, the Board has no reason to doubt that the problem has been solved over the entire range claimed.

- 4.5 The question to be answered is, whether the claimed subject-matter was obvious, when starting from D2.

D2 relates in general to the distillation of thermally unstable materials and neither mentions avoidance of a vortex or polymerisation within the distillation apparatus, nor points towards the solution proposed in Claim 1 of the patent-in-suit.

The remaining documents also neither deal with the specific problems nor point towards the claimed S1/S2 and S1/S3 ratios. A combination of D2 with further cited documents therefore does not lead to the claimed distillation apparatus either.

- 4.6 The subject-matter of Claim 1 is considered to be inventive.
- 4.7 Similar considerations apply to Claim 7 referring to the apparatus according to Claim 1.

**Order**

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

The appeal is dismissed.

The Registrar

The Chairman

D. Magliano

P.-P. Bracke