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**Datasheet for the decision
of 9 July 2010**

Case Number: T 1857/07 - 3.3.06

Application Number: 99118332.8

Publication Number: 0987600

IPC: G03F 7/09

Language of the proceedings: EN

Title of invention:

Method for forming a photoresist relief image

Patentee:

ShIPLEY Company LLC

Opponent:

Clariant Verwaltungsgesellschaft mbH
Brewer Science, Inc.

Headword:

Photoresist/SHIPLEY

Relevant legal provisions:

EPC Art. 123(2)

Relevant legal provisions (EPC 1973):

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Keyword:

"Late-filed requests - admitted"
"Lack of inventive step - all requests"

Decisions cited:

-

Catchword:

-



Case Number: T 1857/07 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 9 July 2010

Appellant: Shipley Company LLC
(Patent Proprietor) 455 Forest Street
Marlborough, MA 01752 (US)

Representative: Prinz & Partner
Patentanwälte
Rundfunkplatz 2
D-80335 München (DE)

Respondent I: Clariant Verwaltungsgesellschaft mbH
(Opponent) Brüningstrasse 50
D-65929 Frankfurt am Main (DE)

Representative: Isenbruck, Günter
Isenbruck Bösl Hörschler Wichmann LLP
Eastsite One
Seckenheimer Landstrasse 4
D-68163 Mannheim (DE)

Respondent II: Brewer Science, Inc.
(Opponent) 2401 Brewer Drive
Rolla, Missouri 65401 (US)

Representative: Nohlen, Martin
Uexküll & Stolberg
Patentanwälte
Beselerstrasse 4
D-22607 Hamburg (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 28 August 2007
revoking European patent No. 0987600 pursuant
to Article 102(1) EPC 1973.

Composition of the Board:

Chairman: P. Ammendola
Members: E. Bendl
U. Tronser

Summary of Facts and Submissions

- I. The appeal is from the decision of the Opposition Division to revoke the European patent 0 987 600.
- II. In opposition procedure the Opponents raised inter alia an objection with regard to Article 123(2) EPC. In its decision the Opposition Division also came to the conclusion that the then pending main request and the auxiliary request extended beyond the content of the application as originally filed.
- III. The Proprietor, thereafter referred to as Appellant, filed on 06 November 2007 an appeal against this decision and paid the appeal fee on the same day. The grounds of appeal were filed on 04 January 2008.
- IV. Oral proceedings before the Board took place on 09 July 2010.
- V. The Appellant requests that the decision under appeal be set aside and the patent be maintained on the basis of the main request or one of the auxiliary requests 1 to 3, all requests submitted with a letter dated 28 June 2010.

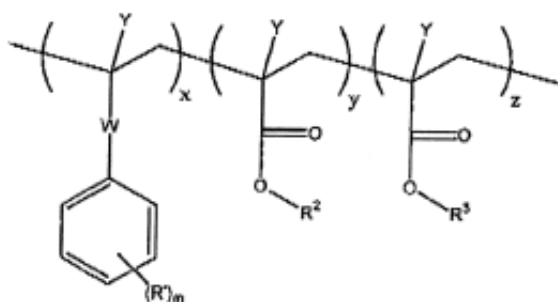
The Respondents requests that the appeal be dismissed.

- VI. The **main request** consists of a total of three claims, the only independent Claim 1 reads as follows:

" 1. A method for forming a photoresist relief image comprising:

- (a) applying on a substrate a layer of an antireflective composition that comprises an acid or an acid generator compound, a crosslinker and a resin,
- (b) thermally curing the antireflective composition layer;
- (c) applying over the cured antireflective composition a layer of a photoresist composition, the photoresist designed for imaging with radiation having a wavelength of 193 nm; and
- (d) exposing the photoresist layer to activating radiation having a wavelength of 193 nm and developing the exposed photoresist layer;

wherein the resin of the antireflective composition has acrylate units in addition to repeat units that have phenyl chromophore units, the resin being a terpolymer comprising units of the following formula



where W is a chemical bond or an ester linkage;

each R' is hydrogen, optionally substituted alkyl, optionally substituted alkoxy, ester, optionally substituted alkanoyl, optionally substituted carbocyclic aryl, or optionally substituted aralkyl;

m is an integer of from 0 to 5;

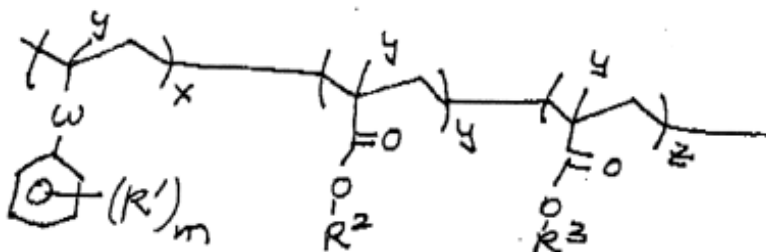
R^2 is C_{1-6} hydroxyalkyl;

R^3 is unsubstituted alkyl;

each Y is independently hydrogen or methyl; and
x, y and z are mole percents of the respective units in
the resin, wherein x is from 10 to 60 percent, y is
from 1 to 60 percent, and z is from 10 to 70 percent."

The **first auxiliary request** differs from the main
request in the deletion of dependent Claims 2 and 3.

The **second auxiliary request** distinguishes from the
main request in the replacement of the computer-drawn
formula by a hand-written formula according to page 7
of the application as originally filed:



The **third auxiliary request** differs from the first
auxiliary request also in the replacement of the said
computer-drawn formula by the hand-written formula
cited above.

VII. The main arguments of the **Respondents** were as follows:

Admissibility of the requests filed on 28 June 2010

- The Appellant had more than six months to respond to
the objections raised. Filing amendments some days

prior to the oral proceedings is too late, in particular since no details as to the kind of changes and to the grounds for the amendments were given.

- Furthermore, the amendments are not suitable to overcome the objections raised.

Article 123(2) EPC

- The Respondents listed the selections which had to be made within the disclosure of the patent application as originally filed to arrive at the wording of Claim 1 of any of the requests.

- They argued, that the **combination** of these selections has not been originally disclosed.

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

Admissibility of the requests filed on 28 June 2010

- The amendments were a response to the arguments by the Respondents and the Board and were made to streamline the procedure.

- The changes consisted only of deletions of the dependent claims, re-arrangement of the order of the features and a more precise definition of the formula, which can be derived from the whole context of the application.

Article 123(2) EPC

- The Appellant showed where the individual features can be found in the application as originally filed.

- It was argued, that the combined features referred mainly to preferred embodiments.

- Upon being asked, the Appellant conceded that the claimed ranges for the parameters x, y, z were the broadest disclosed in the application, rather than the preferred ones.

Reasons for the Decision

1. *Admissibility of the sets of claims*

1.1 The Board agrees that the Appellant had more than half a year to react to the comments and objections raised by the Parties and the Board. Since the Appellant reacted only less than two weeks prior to the oral proceedings by filing the new requests, these requests are late-filed.

1.2 On the other hand, taking into account the kind of amendments, the Board has no doubt that the amendments aim at overcoming the objections with regard to Articles 123(2)(3), 84 EPC and Rule 57a EPC 1973 independently of whether they succeed in doing so.

The changes made to the wording of the claims consist of the deletions of dependent claims and changes in the order of features of the independent claim, **compared to the claims filed with the grounds of appeal**. Only the feature "wherein the resin of the antireflective composition has acrylate units in addition to repeat units that have phenyl chromophore units, the resin being a terpolymer" was not already present in the

claims submitted with the grounds of appeal and was taken from the description. Given the clarification that parameters x , y , z of the polymer are all greater than zero, it is, however, already derivable from the formula that the terpolymer possess the units mentioned.

1.3 Thus, the changes are only of minor nature and no changes have been carried out, which could not be examined within short time or which even would necessitate adjournment of the oral proceedings. Therefore the Board admits the sets of claims into the proceedings.

2. *Article 123(2) EPC - main request*

2.1 The Respondents objected that the features of Claim 1 of the main request were taken from the description and the claims and that they were arranged in such a way, that the resulting combination of features did not have a basis in the documents as originally filed.

2.2 Among the multitude of objections raised in this context it was argued that selecting the terpolymer from the different kinds of polymers originally described was a first selection; that further selections with regard to the definitions of the various groups and substituents were made and that the specific composition obtained was further combined with an acid or acid generator and an undefined crosslinker, the latter combination again not being originally disclosed.

2.3 The Appellant tried to defend the amendments by citing support for each of the objected features individually, making particular reference to Claim 11 and paragraph [21] of the application as published and argued inter alia that only preferred embodiments had been combined.

2.4 The Board cannot share the Appellant's view that the **combination** of features has been originally disclosed.

Indeed, Formula III, i.e. the formula of the terpolymer referred to by the Appellant, is only disclosed in Claim 11 and on page 7 of the application as originally filed. However, none of these original passages provides a basis for the formula in Claim 1 of the main request for the following reasons:

2.4.1 Claim 11 as originally filed does not define parameter m , whereas groups R^2 and R^3 are described as being each different and independently optionally substituted alkyl or optionally substituted carbocyclic aryl, but not specifically as R^2 being C_{1-6} hydroxyalkyl and R^3 being unsubstituted alkyl, as required in Claim 1 of the main request. These definitions can also not be found in claims dependent on Claim 11.

2.4.2 Furthermore, Claim 11 as originally filed refers to Claim 1, which has no limitation as to the wavelength used for irradiating the photoresist. Only Claim 2 cites "below about 200 nm" and Claim 3 mentions 193 nm. However, as Claims 2 and 3, like Claim 11, exclusively refer to Claim 1, a combination of the features of Claims 1, 3 and 11 is not disclosed.

2.4.3 Consequently, Claim 11 as originally filed cannot serve as a basis for the combination of the features of Claim 1 of the main request.

2.4.4 Starting from the Formula III on page 7 as originally filed and the passages referenced on page 7, parameters W , R' , R^2 , R^3 , Y and x - z are defined in broader terms than in Claim 1 of the main request. A more narrow definition can be found in the specific embodiment bridging pages 8 and 9 as originally filed. From this embodiment, in order to arrive at the definitions of Claim 1 of the main request, specific definitions for R^2 and R^3 had to be selected and were arbitrarily combined with end-values selected from several options for the parameters x , y , z . Said combinations again were not originally disclosed.

Hence, no disclosure in the description of the application as originally filed is given for this very specific terpolymer. Nor is disclosed therein its combination with processing steps like the incorporation of an undefined crosslinker, which is according to page 3, last line, optional. Also the combination with an acid or acid generator is, according to page 11, lines 14/15, only a further embodiment. Choosing **thermal** curing is another optional feature, as is the use of the wavelength 193 nm.

2.4.5 The examples cannot be used to show the original disclosure of the general formula either, since they refer to specific polymers which do not allow to draw conclusions about the general structure of the terpolymer.

2.4.6 Furthermore, the Appellant's argument, that only preferred embodiments have been combined, which means implicitly that a hint was given to the skilled person to combine those features, can also not be accepted by the Board, as for the parameters x-z the broadest possible ranges were chosen from the embodiment bridging pages 8/9, but not the preferred ones, as conceded by the Appellant during the oral proceedings.

2.5 Thus, Claim 1 of the main request contains a combination of selections of features from the claims and the description which was not originally disclosed. Thus, the requirement of Article 123(2) EPC is not met.

3. *Article 123(2) EPC auxiliary requests 1-3*

3.1 The wording of Claims 1 of auxiliary requests 1 is identical to the wording of Claim 1 of the main request. Claims 1 of auxiliary requests 2 and 3 differ from the main request and the first auxiliary request in the hand-written-formula instead of the computer-drawn formula. However, the features discussed above are the same.

3.2 Therefore, the considerations concerning Article 123(2) EPC with regard to the main request apply to the auxiliary requests 1-3 as well.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar

The Chairman

G. Rauh

P. Ammendola