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D E C I S I O N
of 11 February 2002

Case Number: T 0561/99 - 3.2.2

Application Number: 93118150.7

Publication Number: 0597445

IPC: C23C 16/00

Language of the proceedings: EN

Title of invention:
Method of making synthetic diamond film

Applicant:
NORTON COMPANY

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 83, 84

Keyword:
"Sufficiency of disclosure (yes)"

Decisions cited:
-

Catchword:
-



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Boards of Appeal

Chambres de recours

Case Number: T 0561/99 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 11 February 2002

Appellant:

NORTON COMPANY
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Representative:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 15 December 1998
refusing European patent application
No. 93 118 150.7 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: W. D. Weiß
Members: R. Ries
R. T. Menapace

Summary of Facts and Submissions

- I. The present appeal is against the decision of the Examining Division to refuse European patent application No. 93 118 150.7 (EP-A-0 597 445). The Examining Division reasoned that the claimed subject matter did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Article 83 EPC).
- II. In a communication by the Board dated 17 October 2001, the appellant was informed that the revised set of claims according to the auxiliary request enclosed with the grounds of appeal would meet the requirements of Articles 83 and 84 EPC.
- III. In response, the appellant submitted a set of amended claims 1 to 5 to be substituted for all earlier requests and a description adapted thereto, and requested that
- the impugned decision be set aside;
 - a patent to be granted on the basis of the amended application documents;
 - oral proceedings be held, should a negative decision be contemplated by the Board.

Independent claim 1 reads as follows:

"1. A method for making a free-standing synthetic diamond film of desired thickness, comprising the steps of:

providing a substrate;

selecting a target thickness of diamond to be produced, said target thickness being in the range 200 μm to 1000 μm ;

finishing a surface of the substrate to a roughness, R_A , that is a function of the target thickness, said roughness being determined from

$$0.38t/600 \mu\text{m} \leq R_A \leq 0.50 \mu\text{m} \quad 200 \mu\text{m} < t \leq 600 \mu\text{m}$$

$$0.38 \mu\text{m} \leq R_A \leq 0.50 \mu\text{m} \quad 600 \mu\text{m} < t < 1000 \mu\text{m}$$

where t is the target thickness;

depositing an interlayer on said substrate, the interlayer having a thickness in the range of 1 to 20 μm ;

depositing synthetic diamond on said interlayer, by chemical vapor deposition, to a thickness within plus or minus ten percent of the target thickness; and

cooling said synthetic diamond to effect the release thereof."

Reasons for the Decision

1. The appeal complies with the provisions mentioned in Rule 65(1) EPC and is, therefore, admissible.
2. *Amendments*

Claim 1 derives from original claim 1 in combination with the part of the description page 6, lines 8 to 10. Claims 2 to 5 correspond to dependent claims 2 to 5 as originally filed.

The requirements of Article 123(2) EPC are, therefore, satisfied.

3. *Clarity (Article 84 EPC)*

Independent claim 1 as amended now specifies that the synthetic diamond film which is deposited on the interlayer exhibits a thickness in a range

corresponding to the selected target thickness ± 10 percent (ie. $200 \mu\text{m} \pm 10\%$ to $1000 \mu\text{m} \pm 10\%$). Moreover, claim 1 stipulates that, depending on the preselected thickness t of the diamond film, a specific degree of surface roughness R_a has to be adhered to in order to guarantee a degree of mechanical bonding which prevents premature separation of the film from the substrate.

Given that independent claim 1 is clear and concise, formulated in positive terms and supported by the description, the requirements of Article 84 EPC are met.

The dependent claims 2 to 5 refer to preferred embodiments of the method claimed in claim 1 and do not comprise relative or unclear terms either. Hence, they too satisfy the requirements of Article 84 EPC.

4. *Disclosure of the invention (Article 83 EPC)*

Apart from the requirements for patentability set out in Articles 52 to 57 EPC, the requirements for sufficiency of disclosure and reproducibility belong to the basic prerequisites for the grant of a valid patent. In particular, the disclosure of the application as a whole must be sufficient to enable the skilled reader to carry out the invention.

In its most general form, the present invention is expressed by method claim 1 which includes all the process steps necessary for producing a free-standing synthetic diamond film of a desired thickness. The Examining Division argued that, given that a final

thickness of the diamond film of $\pm 10\%$ of the selected thickness (t) is tolerable and thus could fall outside the selected target thickness (t) of 200 to 1000 μm , it would be unclear in which roughness regime the skilled worker should operate.

The Examining Division did, however, not make a necessary distinction between

- (i) the selected target thickness (t), which represents a preselected exact value before starting the deposition process and
- (ii) the actual thickness of the film that results after finishing the deposition process and which is restricted to fall within the limits of the preselected value $t \pm 10\%$. It is, however, clear from the proviso given in claim 1 that the optimum surface roughness R_A has to be chosen on the basis of the preselected target thickness (t) rather than on the final thickness (t_{dep}). It also appears from the examples given in the specification in which way the claimed process is to be put into practice.

It is not the function of the claims to be complete in a sense that a person skilled in the art is enabled to carry out the invention, this being required, pursuant to Article 83 EPC, of the patent as a whole. This is not identical with the requirements of Article 84 EPC which calls for a claim to indicate all the technical features necessary for solving the problem to which the invention relates. In the present case, the skilled reader is presented with sufficient technical information and ample explanations, in particular those given in the examples and the detailed description, to put into practice the claimed invention.

Having regard to this technical information, the Board is unaware of any verifiable facts which could cast a serious doubt on the capability of a skilled person to carry out the claimed invention on the basis of what was originally disclosed in the application. The Board, therefore, concludes that the requirements of Article 83 EPC are met.

5. Since the request for oral proceedings was conditional on a negative decision, which condition is not met, no oral proceedings are necessary.
6. Given that the reasons set out in the decision of the Examining Division no longer apply, the decision under appeal is to be set aside. The first instance has not yet examined whether or not the present application as amended meets the requirements of novelty and inventive step. It is, therefore, in the circumstances considered appropriate, in accordance with Article 111(1), EPC to remit the case to the first instance for further prosecution.

Order

For these reasons it is decided that:

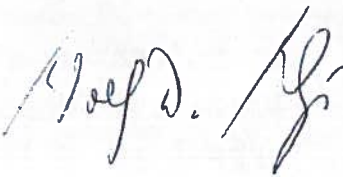
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1. The decision under appeal is set aside.

 2. The case is remitted to the first instance for further prosecution.

The Registrar:


V. Commare

The Chairman:


W. D. Weiß