

Internal distribution code:

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

D E C I S I O N
of 3 December 2003

Case Number: T 0820/01 - 3.2.6

Application Number: 91910756.5

Publication Number: 0549585

IPC: B23P 15/28

Language of the proceedings: EN

Title of invention:

Binder enriched CVD and PVD coated cutting tool

Patentee:

KENNAMETAL INC.

Opponent:

MITSUBISHI MATERIALS CORPORATION Intellectual Property
Department

Headword:

-

Relevant legal provisions:

EPC Art. 123(2)

Keyword:

"Amendments - added subject-matter (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0820/01 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 3 December 2003

Appellant: KENNAMETAL INC.
(Proprietor of the patent) P.O. Box 231
Latrobe, PA 15650 (US)

Representative: Bunke, Holger, Dr.rer.nat. Dipl.-Chem.
Prinz & Partner GbR
Manzingerweg 7
D-81241 München (DE)

Respondent: MITSUBISHI MATERIALS CORPORATION
(Opponent) Intellectual Property Department
Ohtemachi-Blgd
1-6-1, Ohtemachi
Chiyoda-ku
Tokyo 100 (JP)

Representative: Gille Hrabal Struck Neidlein Prop Roos
Patentanwälte
Brucknerstrasse 20
D-40593 Düsseldorf (DE)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 20 June 2001
revoking European patent No. 0549585 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Alting van Geusau
Members: H. Meinders
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. European Patent No. 0 549 585, granted on application No. 91910756.5, was revoked by the Opposition Division by decision posted on 20 June 2001. It based the revocation on the finding that the subject-matter of claim 1 of the patent as granted (main request) lacked novelty with respect to:

D4: JP-A-1 252 305 in an English translation as furnished by the patentee.

It further considered that the subject-matter of claim 1 as amended according to the auxiliary request 1 and 2 did not comply with the requirements of Article 123(2) and (3) respectively.

In the decision under appeal also:

D6: US-A-4 610 931 was referred to.

II. The Appellant (Patentee) both filed a notice of appeal against this decision and paid the appeal fee on 23 July 2001. On 26 October 2001 the grounds of appeal were filed.

III. Oral proceedings were held on 3 December 2003.

The Appellant requested cancellation of the decision under appeal and maintenance of the patent according to its single request as filed in the oral proceedings. It withdrew its request for remittal of the case to the first instance for further prosecution, its request for

referral of a question to the Enlarged Board of Appeal and its request for reimbursement of the appeal fee.

The Respondent (Opponent) requested dismissal of the appeal and revocation of the patent.

IV. Claim 1 of the patent according to the request of the Appellant reads:

"A cutting tool comprising:

a rake face and a flank face,

a cutting edge at a junction of the rake face and the flank face,

the cutting tool having a coating bonded to a tungsten carbide (WC)-based substrate having at least 70 wt-% WC, wherein the substrate comprises a cemented carbide having hard refractory grains bonded together by a binder material and the concentration of the binder material is greater near a peripheral boundary of the substrate than away from the peripheral boundary of the substrate,

characterized in that

said greater concentration of said binder material is in a binder enriched zone near a peripheral boundary of the substrate, said binder content in said zone reaching a maximum value which is 200 to 300 percent of the bulk binder concentration of the substrate, the coating having a number of hard refractory layers including a chemical vapor deposition layer adjacent to

the substrate and a physical vapor deposition layer in a state of residual compressive stress and said WC in said substrate having a residual compressive stress."

- V. In support of the formal acceptability of claim 1 of this request the Appellant argued essentially as follows:

The amendment of claim 1 as granted by the limitation of the substrate to being **tungsten carbide (WC)-based** and of **having at least 70% wt-% WC** was allowable pursuant to Article 123(2) EPC, as the application as originally filed, the sentence bridging pages 7 and 8, mentioned this as a preferred embodiment of the substrate. It provided the necessary support in the description (Article 84 EPC) for the inclusion in claim 1 of the feature of the tungsten carbide based substrate.

The amendment of claim 1 to the tungsten carbide (WC) in said substrate **having a residual compressive stress** resulted in inventive step to be acknowledged for the subject-matter of claim 1 over the combination of teachings of D6 and D4. It was further disclosed on page 13, lines 26, 27 of the original application documents, which reads: "In all cases, the WC in the substrate had a residual compressive stress". This applied not only to the binder enriched substrates produced according to the procedure mentioned from page 10, line 25 onwards, but also to the preferred embodiments discussed more generally, earlier in the application documents, like in the passage bridging pages 7 and 8 relating to the tungsten carbide content in the substrate.

VI. The Respondent argued that the feature of the tungsten carbide (WC) in the substrate having residual compressive stress was only mentioned for the binder enriched substrates made by the procedure as described on page 10, line 25 onwards, for which procedure and for which substrates clearly no "at least 70 wt-% tungsten carbide content" was mentioned. If any, it was a percentage resulting from stages I and II of the production process for the inserts, with 53.8 and 40.4 wt-% of charge respectively. The "at least 70% wt-% tungsten carbide" was only a preferred embodiment, but not one for which it was established that the tungsten carbide in the substrate had a residual compressive stress.

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments (Article 123(2) EPC)*
 - 2.1 Claim 1 as granted has been amended, among others, by the inclusion of the substrate being "tungsten carbide (WC)-based" and "having at least 70wt-% WC", as well as "said WC in said substrate having a residual compressive stress".

The Appellant included the second feature so as to distinguish the subject-matter of claim 1 inventively over the combination of teachings of D6 and D4, an amendment which is thus occasioned by a ground of

opposition, therefore the requirements of Rule 57a EPC are met.

The first feature was included as there was not sufficient support in the description of the patent for a tool as now claimed with a tungsten carbide based substrate, irrespective of the amount of tungsten carbide in the substrate (Article 84 EPC).

- 2.2 The now claimed **combination** of a cutting tool with a binder enriched zone near a peripheral boundary, the CVD layer adjacent to the substrate, the PVD layer in a state of residual compressive stress and the tungsten carbide in said substrate also being in a state of residual compressive stress is disclosed in the application as filed for only one substrate, namely the one mentioned on page 12, lines 30 to 32, produced according to the procedure disclosed on page 12, line 25 onwards. Only to the substrates produced according to that procedure applies the following sentence on page 13, lines 27, 28: "In all cases (i.e. the ones where the outermost layer was a CVD TiN layer having residual tensile stress or was a PVD TiN layer having residual compressive stress, see page 13, lines 23 to 28), the WC in the substrate had a residual compressive stress".

For the substrates produced according to that procedure there is, however, no mention of "at least 70 wt-%" of tungsten carbide in the substrate, as presently claimed. Further, this specific value cannot be directly and unambiguously derived from the "weight% of charge" or the "chemistry weight %" as mentioned in table 1 of the application as originally filed.

2.3 In an attempt to substantiate support for the amendment, the Appellant referred to the sentence bridging pages 7 and 8 of the application as originally filed, which stated: "In a preferred embodiment, the substrate is a WC based cemented carbide substrate containing at least 70 weight percent WC, and more preferably, at least 80 weight percent WC." The expression "In all cases etc.", referred to above, meant that the tungsten carbide in the substrate was always in a state of residual compressive stress, thus also applied to the preferred embodiments discussed prior to the tested substrates.

The Board cannot concur with the latter opinion, as this conclusion was only drawn in connection with the analysis performed on the substrates subjected to the tests, which had either an outer CVD TiN layer under residual tensile stress, or an outer PVD TiN layer under residual compressive stress, **both** for enriched and non-enriched substrates.

Further, in the part of the description referred to there is no mention whatsoever of the tungsten carbide in the substrate being in a state of residual compressive stress. However, this feature was apparently an important feature of the invention, so as to establish inventive step for the subject-matter of claim 1 in view of D6 and D4.

2.4 Thus, there is no basis in the application as filed for the amendment to "at least 70 wt-%" of tungsten carbide as presently claimed in combination with a CVD layer adjacent the substrate, a PVD layer in a state of

residual compressive stress and the tungsten carbide in the substrate also being in a state of residual compressive stress.

The requirements of Article 123(2) EPC are thus not met and the Appellant's request is thus to be refused.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chariman:

M. Patin

P. Alting van Geusau