

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

CERAMTEC GMBH,
Petitioner,

v.

CERAMEDIC, LLC,
Patent Owner.

IPR2015-00424
Patent 6,066,584

Before GRACE KARAFFA OBERMANN, KRISTINA M. KALAN, and
JEFFREY W. ABRAHAM, *Administrative Patent Judges*.

KALAN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Petitioner CeramTec GmbH filed a Petition (Paper 2, “Pet.”) to institute an *inter partes* review of claims 14 and 26–29 of U.S. Patent No. 6,066,584 (Ex. 1101, “the ’584 patent”) pursuant to 35 U.S.C. §§ 311–319. Patent Owner CeraMedic LLC filed a Preliminary Response (Paper 6, “Prelim. Resp.”). We instituted an *inter partes* review of claims 14 and 26–29 on one of the grounds of unpatentability alleged in the Petition (Paper 9, “Dec.”). After institution of trial, Patent Owner filed a Patent Owner Response (Paper 15, “PO Resp.”) and Petitioner filed a Reply (Paper 17, “Reply”). An oral hearing was held on March 4, 2016. A transcript of the hearing has been entered into the record. Paper 28 (“Tr.”).

The Board has jurisdiction under 35 U.S.C. § 6(c). In this Final Written Decision, issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73, we determine that Petitioner has shown by a preponderance of the evidence that all claims for which trial was instituted, namely, claims 14 and 26–29, are unpatentable.

A. *Related Matters*

The parties indicate that the ’584 patent is the subject of the following district court proceeding, among others: *CeraMedic, LLC v. CeramTec GmbH*, Civil Action No. 3:14-cv-01969 (N.D. Ind.). Pet. 1; Paper 4, 1. The ’584 patent also is the subject of an *inter partes* review in IPR2015-00398. Pet. 1–2; Paper 4, 1.

B. *The ’584 Patent*

The ’584 patent, titled “Sintered Al₂O₃ Material, Process for its Production and Use of the Material,” issued on May 23, 2000. The ’584 patent describes “sintered Al₂O₃ compositions produced from corundum

powder and also methods for the use of the invented compositions as medical implants or tool material.” Ex. 1101, Abstract. An initially unsintered precursor having a relative density of $\rho \cong 55\%$ is produced from $\alpha\text{-Al}_2\text{O}_3$ powder having defined properties using at least two different dispersing methods, and this precursor is subsequently subjected to heat treatment and sintering. *Id.* The sintered material is characterized in part “by means of a dimensionless defect density,” or “DDD,” defined as the sum of the squares of the defect sizes per area analyzed. *Id.* at 4:16–20.

C. *Illustrative Claims*

Claims 14 and 26 of the '584 patent are reproduced below:

14. The sintered material produced according to claim 7,¹ wherein said sintered material comprises a mean grain size of $2.0\ \mu\text{m}$ or less, a density of no less than 98.5% of a theoretical density, a Vickers hardness greater than or equal to 1,750 at a test load from 10 to 100 N, and a flexural strength of 800 MPa

¹ Claim 7 provides: “A method, comprising the steps of: a) dispersing $\alpha\text{-Al}_2\text{O}_3$ powder having a particle size of d_{16} greater than $0.065\ \mu\text{m}$, d_{50} not less than $0.2\ \mu\text{m}$ and not greater than $0.4\ \mu\text{m}$, d_{84} not less than $0.45\ \mu\text{m}$ and not greater than $0.8\ \mu\text{m}$, and a chemical purity of $\cong 99.9\%$ $\alpha\text{-Al}_2\text{O}_3$, in an aqueous solution to create a mixture, said mixture effected through the application of at least two different dispersing methods; b) treating said mixture so as to create a shaped unsintered body having a relative density of $\rho \cong 55\%$; c) heating said unsintered body; and d) sintering said unsintered body so as to create a sintered material. Ex. 1101, 15:39–52. We note that claim 14 is a product-by-process claim. *See In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985) (internal citations omitted) (noting that “even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process”).

or greater, said sintered material having a dimensionless defect density of less than 30×10^{-3} .

Ex. 1101, 16:1–7.

26. Sintered Al_2O_3 material comprising a mean grain size of $2.0 \mu\text{m}$ or less, and a density of no less than 98.8% of a theoretical density, a Vickers hardness greater than or equal to 1,750 at a test load from 10 to 100 N, and a flexural strength of 800 MPa or greater, said sintered material having a dimensionless defect density of less than 30×10^{-3} .

Ex. 1101, 16:66–17:4. Claims 27–29 depend from claim 26. Each challenged claim requires a specific DDD, ranging from less than 30×10^{-3} (claims 14 and 26) to 0.6×10^{-3} (claim 29).

D. Prior Art Reference Relied Upon by Petitioner

Petitioner relies on the following prior art reference in the instituted challenge: Japanese Patent Application Publication No. JP 1990255563, published October 16, 1990 (“Igarashi”) (Ex. 1103).²

E. Instituted Grounds of Unpatentability

We instituted *inter partes* review on the following ground of unpatentability asserted in the Petition: Claims 14 and 26–29 under 35 U.S.C. § 103(a) as unpatentable over Igarashi.

II. ANALYSIS

A. Claim Construction

The Board interprets claim terms in an unexpired patent according to the broadest reasonable construction in light of the specification of the patent

² Exhibit 1103 is a certified translation of the original Japanese Patent Application Publication; Exhibit 1113 is the original untranslated version.

in which they appear. *See In re Cuozzo Speed Techs., LLC*, 793 F.3d 1268, 1278–79 (Fed. Cir. 2015), *aff'd sub nom. Cuozzo Speed Techs., LLC v. Lee*, No. 15–446, 2016 WL 3369425, at *12 (U.S. June 20, 2016) (upholding the use of the broadest reasonable interpretation standard); 37 C.F.R. § 42.100(b). Under that standard, and absent any special definitions, we give claim terms their ordinary and customary meaning, as would be understood by one of ordinary skill in the art at the time of the invention. *See In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007). Any special definitions for claim terms must be set forth with reasonable clarity, deliberateness, and precision. *See In re Paulsen*, 30 F.3d 1475, 1480 (Fed. Cir. 1994). Only those terms which are in controversy need to be construed, and only to the extent necessary to resolve the controversy. *See Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Petitioner argues that “dimensionless defect density” should be construed to mean “the sum of the squares of the defect sizes per area analysed.” Pet. 12. The Specification expressly defines “dimensionless defect density” as “the sum of the squares of the defect sizes per area analysed.” Ex. 1101, 4:19–20. Regarding defect size, the Specification expressly states: “Here, the defect size employed is the maximum recognizable extent of the defect in any direction in the analysed plane.” *Id.* at 4:22–24. Thus, we construed the term “dimensionless defect density” to mean “the sum of the squares of the defect sizes per area analysed, wherein each defect’s size is the maximum recognizable extent of that defect in any direction in the analysed plane.” Dec. 5.

Neither party specifically addresses or contests this claim construction. We see no reason to modify it in light of the record developed

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