

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

REACTIVE SURFACES LTD., LLP,
Petitioner,

v.

TOYOTA MOTOR CORPORATION,
Patent Owner.

Case IPR2017-00572
Patent 8,252,571 B2

Before CHRISTOPHER M. KAISER, JEFFREY W. ABRAHAM, and
MICHELLE N. ANKENBRAND, *Administrative Patent Judges*.

KAISER, *Administrative Patent Judge*.

DECISION

Institution of *Inter Partes* Review
37 C.F.R. § 42.108

INTRODUCTION

A. Background

Reactive Surfaces Ltd., LLP (“Petitioner”) filed a Petition (Paper 1, “Pet.”) requesting an *inter partes* review of claims 1–23 of U.S. Patent No. 8,252,571 B2 (Ex. 1001, “the ’571 patent”). Toyota Motor Corporation (“Patent Owner”) filed a Preliminary Response. Paper 34 (“Prelim. Resp.”).

We have authority to determine whether to institute an *inter partes* review. 35 U.S.C. § 314(b); 37 C.F.R. § 42.4(a). The standard for instituting an *inter partes* review is set forth in 35 U.S.C. § 314(a), which provides that an *inter partes* review may not be instituted unless “there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.”

After considering the Petition, Preliminary Response, and the evidence currently of record, we determine that Petitioner has demonstrated that there is a reasonable likelihood that it would prevail with respect to at least one of the claims challenged in the Petition. Accordingly, we institute an *inter partes* review.

B. Related Matters

The parties have not identified any judicial or administrative matters that involve the ’571 patent or that are otherwise related to this case.¹ Pet. 1; Paper 4, 1.

¹ The parties note that the ’571 patent was the subject of *Reactive Surfaces Ltd. LLP v. Toyota Motor Engineering & Manufacturing North America, Inc.*, Case No. 1-13-CV-1098-LY (W.D. Tex.), and *Reactive Surfaces Ltd. LLP v. Toyota Motor Corporation*, Case No. 1:14-CV-1009-LY (W.D. Tex.), both of which have been dismissed without prejudice. Pet. 1–2; Paper 4, 1.

C. The Asserted Grounds of Unpatentability

Petitioner contends that claims 1–23 of the '571 patent are unpatentable based on the following grounds (Pet. 21, 24–64):²

Statutory Ground	Basis	Challenged Claim(s)
§ 103	Dordick ³	1, 4–6, 14–19, and 21
§ 103	Dordick and Adams ⁴	2, 3, 8–11, and 13
§ 103	Dordick and Bonaventura ⁵	7, 20, 22, and 23
§ 103	Dordick, Adams, and Bonaventura	12
§ 103	McDaniel ⁶	22 and 23
§ 103	McDaniel and Huynh-Ba ⁷	1–21

D. The '571 Patent

The '571 patent is directed to “[p]rocesses for preparation of a protein-polymer composite material.” Ex. 1001, at [57]. These processes “include providing an admixture of a polymer resin, a surfactant and a non-aqueous organic solvent,” then mixing that admixture with “[a]n aqueous solution containing bioactive proteins and substantially free of surfactant” to produce an emulsion, which “is mixed with a crosslinker to produce a curable composition.” *Id.* The '571 patent describes its processes as

² Petitioner also relies on declarations from Dr. David Rozzell and Dr. Douglas Lamb. Ex. 1008; Ex. 1009.

³ Dordick et al., U.S. Patent No. 6,291,582 B1, issued Sept. 18, 2001 (Ex. 1003, “Dordick”).

⁴ Adams et al., US 2007/0282070 A1, published Dec. 6, 2007 (Ex. 1004, “Adams”).

⁵ Bonaventura et al., U.S. Patent No. 5,998,200, issued Dec. 7, 1999 (Ex. 1007, “Bonaventura”).

⁶ McDaniel, US 2004/0109853 A1, published June 10, 2004 (Ex. 1005, “McDaniel”).

⁷ Huynh-Ba, U.S. Patent No. 6,472,493 B1, issued Oct. 29, 2002 (Ex. 1006, “Huynh-Ba”).

“characterized by dispersion of bioactive proteins in solvent-borne resin prior to curing and in the composite materials, in contrast to forming large aggregates of the bioactive proteins which diminish the functionality of the bioactive proteins and protein-polymer composite materials.” *Id.* at 3:16–22.

E. Illustrative Claims

All the claims of the '571 patent are challenged. Claims 1 and 22 are independent and illustrative; they recite:

1. A process for preparation of a protein-polymer composite material, comprising:
 - providing an admixture of a polymer resin, a surfactant and a non-aqueous organic solvent;
 - mixing an aqueous solution containing bioactive proteins with the admixture, wherein the aqueous solution is substantially free of surfactant, to produce an emulsion
 - mixing the emulsion with a crosslinker to produce a curable composition; and
 - curing the curable composition, thereby producing the protein-polymer composite material.

Id. at 11:53–63.

22. A protein-polymer composite material, comprising:
 - bioactive proteins dispersed in a two component solvent-borne polymer resin, the average particle size of bioactive protein particles in the protein-polymer composite material is in the range of 1 nm to 10 μ m (average diameter), inclusive, with the proviso that the bioactive proteins are not ion-paired.

Id. at 13:9–14:3.

ANALYSIS

A. Claim Construction

In an *inter partes* review, we construe claim terms in an unexpired patent according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); *see Cuozzo Speed Techs., LLC v. Lee*, 136 S. Ct. 2131, 2144–45 (2016) (upholding the use of the broadest reasonable interpretation standard). Claim terms generally are given their ordinary and customary meaning, as would be understood by one of ordinary skill in the art in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Petitioner and Patent Owner both propose construing “bioactive proteins are not ion-paired,” a phrase that appears in claims 22 and 23. Pet. 12; Prelim. Resp. 15–19. Specifically, Petitioner argues that we should interpret this phrase as “particles of the bioactive proteins that are not ionically bound with an added surfactant within an aqueous solution, which is then combined with a polymer and organic solvent component of the two component solvent-borne polymer resin,” and Patent Owner argues that we should interpret the phrase as “bioactive proteins are not ionically bound to surfactant molecules in the protein-polymer composite material.” Pet. 12; Prelim. Resp. 16. Thus, the parties agree that bioactive proteins that are not ion-paired are bioactive proteins that are not ionically bound to a surfactant, but the parties disagree as to the medium in which the lack of ionic bonding takes place. Under Petitioner’s construction, a lack of protein-surfactant bonding in an aqueous phase during construction of a protein-polymer

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