

The opinion in support of the decision being entered today  
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* KAREN A. BARKAC,  
DEIRDRE D. RAGAN, and  
KAREN S. RECHENBERG

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Appeal 2007-2062  
Application 10/360,263  
Technology Center 1700

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Decided: July 16, 2007

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Before BRADLEY R. GARRIS, CHARLES F. WARREN, and  
THOMAS A. WALTZ, *Administrative Patent Judges*.

WALTZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's non-final rejection of claims 1 through 38, which are the only claims pending in this application. Although the action appealed from was a non-final rejection, we have jurisdiction since the claims have

been twice presented and rejected. See *Ex parte Lemoine*, 46 USPQ2d 1420, 1423 (BPAI 1994); and 35 U.S.C. §§ 134 and 6(b).

According to Appellants, the invention is directed to a curable powder film-forming composition comprising a crosslinking agent, a polymer containing a plurality of functional groups reactive with the crosslinking agent, and particles having a mean particle size less than 100 nanometers (nm), where the particles are substantially free of hydroxyl functional groups on the particle surface and are present in an amount sufficient to improve the flow and leveling of the composition when applied to a substrate and cured, as compared to a similar cured coating without the particles (Br. 2).<sup>1</sup> Claim 1 is illustrative of the invention and is reproduced below:

1. A curable powder film-forming composition comprising
    - (i) 5 to 95 percent by weight based on the total weight of the film-forming composition of a crosslinking agent;
    - (ii) 5 to 95 percent by weight based on the total weight of the film-forming composition of a polymer containing a plurality of functional groups reactive with the crosslinking agent; and
    - (iii) particles having a mean particle size less than 100 nm, wherein the particles are substantially free of hydroxyl functional groups on the particle surface, said particles present in an amount at least sufficient to improve the flow and leveling of the composition when applied to a substrate and cured, as measured by longwave scanning, compared to a similar cured coating without the particles.

The Examiner has relied on the following prior art reference as evidence of unpatentability:

Schneider US 2002/0137872 A1 Sep. 26, 2002

<sup>1</sup> We refer to and cite from the Brief dated Sep. 28, 2006.

## ISSUES ON APPEAL

Claims 1-5, 7-23, and 25-38 stand rejected under 35 U.S.C. § 102(e) as anticipated by Schneider (Answer 3).

Claims 1-38 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Schneider (Answer 4).

Appellants contend that the end points of the claimed particle size range and the particle size range of Schneider do not overlap, i.e., “about 0.1 micron [100 nm]” does not read on the claimed “less than 100 nm” (Br. 3; Reply Br. 1).<sup>2</sup>

Appellants contend that even if “about 0.1 micron” did overlap with the claimed end point, there is no description in the reference to Schneider with sufficient specificity to anticipate the claim, citing *Atofina v. Great Lakes Chemical Corp.*, 441 F.3d 991, 1000, 78 USPQ2d 1417, 1424 (Fed. Cir. 2006) (Br. 3-4; Reply Br. 1).

Appellants contend that the express recital in the claims that the particles are substantially free of hydroxyl functional groups is not taught by Schneider (Br. 4).<sup>3</sup>

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<sup>2</sup> Appellants admit that Schneider discloses, in addition to the particles previously discussed, the incorporation of nanoparticles clearly within the size range recited in claim 1 on appeal (Br. 4). However, Appellants contend that Schneider does not disclose that these nanoparticles are substantially free of OH functional groups on the surface of the particles (*id.*).

<sup>3</sup> In footnote 1 on page 4 of the Brief, Appellants contend that Mr. Schneider stated that it would be apparent to those skilled in the art that the particles in the Schneider reference will have hydroxyl functional groups on the surface of the particle. Appellants further contend that this fact is so well known that a signed Declaration is unnecessary (Reply Br. 2).

With regard to the rejection based on § 103(a), Appellants contend that there is no motivation in Schneider to use particles any smaller than 0.1 microns, nor any motivation to use particles substantially free of hydroxyl groups on their surface (Br. 5).

The Examiner contends that the Schneider end point of “about 0.1 micron” reads on “less than 100 nm” by the definition of “about,” and the amounts of particles in the reference will necessarily give the claimed improvements in flow and leveling (Answer 3 and 5).

The Examiner contends that there is no showing that the filler particles of Schneider have surface hydroxyl (OH) groups, while several disclosed fillers would be expected to not have OH groups (Answer 5-6).

Accordingly, the issues presented from the record in this appeal are as follows: (1) does any disclosure or teaching of particle size range in Schneider anticipate or render obvious the claimed range of “less than 100 nm”?; (2) does any disclosure or teaching in Schneider anticipate or render obvious that the particle surfaces are “substantially free” of OH functional groups?

We determine that the Examiner has established a *prima facie* case of anticipation and obviousness in view of the reference evidence, which *prima facie* case has not been adequately rebutted by Appellants’ arguments. Therefore we AFFIRM both rejections on appeal essentially for the reasons stated in the Answer, as well as those reasons set forth below.

#### OPINION

We determine the following factual findings from the record in this appeal:

- (1) Schneider discloses coating compositions having improved mar and scratch resistance, where the composition includes particles added to a film-forming resin, and the film-forming resin is formed by reaction of a polymer containing functional groups with a curing agent (Abstract; ¶ [0002], [0013], and [0020]);
- (2) Schneider teaches that the particles have a size range of about 0.1 to 15 microns (¶ [0008] and [0025]);<sup>4</sup>
- (3) Schneider teaches that, for average particle sizes “smaller than 1 micron” TEM can be used to determine the average particle size (¶ [0026]);
- (4) Schneider teaches that the size of the particles can affect the level of mar and scratch resistance as well as appearance, and in automotive clear coating compositions where appearance is particularly relevant, low particle sizes are useful; Schneider further teaches that one skilled in the art can optimize particle size (¶ [0034]);
- (5) Schneider teaches another embodiment of the invention where “nanoparticles” are also incorporated into the particle-containing polymer coating composition, and these nanoparticles include organic and inorganic particles with an average particle size of 0.8 to less than 500 nm, such as between 10 and 100 nm (¶ [0036]);

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<sup>4</sup> Schneider discloses this range of “average particle sizes” (¶ [0025]) while claim 1 on appeal recites a “mean particle size.” Neither Appellants nor the Examiner comment on these terms (*see* the Brief, Reply Brief, and Answer in their entirety). Therefore, for purposes of this appeal, we consider these terms to be equivalent.

- (6) Schneider teaches materials useful for the nanoparticles include silica, alumina, graphite, and metals (¶ [0037]);
- (7) Schneider exemplifies nanoparticle compositions where the particles include fused quartz/borosilicate glass microspheres and alpha-alumina in sizes from 50 to 60 nm, with some nanoparticles dispersed in an acid-functional siloxane (Table 1, Samples 5 and 6, footnote 13; Samples 12 and 13, Table 9, Example 4, ¶ [0073]; Example 7, ¶ [0078] and [0079], footnote 19; and Table 16, footnote 28, ¶ [0080]).

Implicit in our review of the Examiner's anticipation analysis is that the claim must first have been correctly construed to define the scope and meaning of each contested limitation. *See Gechter v. Davidson*, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997). During examination proceedings, claims are given their broadest reasonable interpretation consistent with the specification as it would be understood by one of ordinary skill in the art. *See In re Graves*, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995). "We agree, however, with the Board that the disclosure in the McGill patent of a carbon monoxide concentration of 'about 1-5%' does allow for concentrations slightly above 5%." *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990). The use of the term "about" shows that the applicants did not intend to limit the claimed ranges to their exact end-points. *See Jeneric/Pentron, Inc. v. Dillon Co.*, 205 F.3d 1377, 1381, 54 USPQ2d 1086, 1089 (Fed. Cir. 2000). Disclosure in the prior art of any value within the claimed range is an anticipation of the claimed range. *See In re Wertheim*, 541 F.2d 257, 267, 191 USPQ 90, 100 (CCPA 1976). The earlier disclosure of a range that

Appeal 2007-2062  
Application 10/360,263

partially overlaps with the claimed range is not necessarily sufficient to anticipate the entire claimed range, but at least there is a presumption of obviousness. *See Atofina*, 441 F.3d at 1000, 78 USPQ2d at 1424; *In re Peterson*, 315 F.3d 1325, 1329-30, 65 USPQ2d 1379, 1382 (Fed. Cir. 2003); *In re Geisler*, 116 F.3d 1465, 1469-70, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); cf., *Perricone v. Medicis Pharmaceutical Corp.*, 432 F.3d 1368, 1376, 77 USPQ2d 1321, 1326 (Fed. Cir. 2005); and *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1346-48, 51 USPQ2d 1943, 1945-47 (Fed. Cir. 1999).

Applying the preceding legal principles to the factual findings in the record of this appeal, we determine that a *prima facie* case of anticipation and obviousness has been established, which *prima facie* case has not been adequately rebutted by Appellants' arguments. First, we construe the contested limitation of "less than 100 nm" for the particle size. *See Gechter v. Davidson, supra*. We rely on Appellants' Specification, which is usually the best guide for determining the scope of any contested limitation. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1310, 75 USPQ2d 1321, 1327 (Fed. Cir. 2005)(*en banc*). Appellants disclose that any numbers used in the specification and claims "are to be understood as being modified in all instances by the term 'about'" (Specification 4:11-14). Therefore it is clear that Appellants did not intend to limit the end-points of their ranges to the exact number. *See Jeneric/Pentron Inc. v. Dillon Co., supra*. Similarly, the use of the term "about" in the Schneider patent clearly evinces that patentee does not limit the range to the exact end-points. *See In re Woodruff, supra*. Furthermore, as shown by factual finding (3) listed above, Schneider contemplates particles with a size less than 0.1 micron (100 nm).

Accordingly, as we construe the claim limitation and the disclosure of Schneider (*see* factual findings (1) and (2) listed above), the range of the reference overlaps with the claimed range. However, here we need not look at the degree of overlap and specificity of the disclosure since Schneider discloses an embodiment, including specific examples, of “nanoparticles” with sizes directly within the range specified for the particles in claim 1 on appeal (*see* factual findings (5), (6), and (7) listed above). Disclosure of an example within the range specified in the claims is an anticipation of that claim. *See In re Wertheim, supra.* We also note that the Examples of Schneider (*see* factual finding (7) listed above) disclose amounts of the particles that are within the disclosed amounts used by Appellants (Specification 16). We determine that it reasonably appears that the particles in the Examples of Schneider discussed above do not contain OH groups on the surface of the particle. Although Appellants aver that these particles do contain OH groups on the particle surface (Br. 4; *see* footnote 1), we note that there is no evidence in this record that supports this statement. Additionally, we determine that the term “substantially free of [hydroxyl] functional groups” has not been defined in the Specification (*see* the Specification:17). Therefore, we give the broadest reasonable interpretation to the word “substantially,” which means “being largely but not wholly that which is specified.”<sup>5</sup> Appellants’ statement that the particles of Schneider contain surface OH groups does not address the quantity of any OH groups.

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<sup>5</sup> *See Webster’s New Collegiate Dictionary*, 1161, G. & C. Merriam Co., Springfield, Mass., 1977.

Appeal 2007-2062  
Application 10/360,263

For the foregoing reasons and those stated in the Answer, we affirm both rejections on appeal. The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tf/ls

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