

# United States Court of Appeals for the Federal Circuit

04-1246

RHODIA CHIMIE and RHODIA INC.,

Plaintiffs-Appellants,

v.

PPG INDUSTRIES INC.,

Defendant-Appellee.

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Appealed from: United States District Court for the District of Delaware

Judge Kent A. Jordan

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DECIDED: April 11, 2005

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Before NEWMAN, CLEVINGER, and GAJARSA, Circuit Judges.

GAJARSA, Circuit Judge.

Rhodia Chimie and Rhodia, Inc. (collectively "Rhodia") appeal from a decision by the United States District Court for the District of Delaware granting summary judgment on Rhodia's claims of patent infringement in favor of defendant PPG Industries, Inc ("PPG"). Rhodia Chimie & Rhodia, Inc. v. PPG Indus. Inc., Civ. Action No. 01-389 (D. Del. Jan. 23, 2004) ("Summary Judgment Opinion"). Rhodia also appeals the district court's decision to exclude as untimely certain evidence proffered by Rhodia. Because the district court properly construed the disputed claim terms and did not abuse its discretion in excluding Rhodia's proffered evidence, we affirm in part the court's decision. We conclude, however, that the evidence properly before the court created a

genuine issue of material fact regarding one of PPG's accused products and therefore we reverse in part for further proceedings consistent with this opinion.

## I. BACKGROUND

Rhodia is an international chemical company that is the assignee of United States Patent Number 6,013,234 ("the '234 patent"). The '234 patent discloses and claims certain essentially spheroidal precipitated silica particulates and their process of manufacture. Only one of the product claims of the '234 patent and none of its process claims were asserted in the instant litigation. Rhodia markets the silica particulate covered by the terms of the '234 patent under the trademark "Micropearl." Micropearl silica is used as a filler to reinforce elastomeric products such as automobile tires and as a carrier in the nutraceutical industry.

The initial application that led to the '234 patent was filed in April 1980.<sup>1</sup> Conventional elastomeric fillers in use at that time, such as carbon black, were inherently dusty and did not flow easily. The '234 patent was designed as an improvement to granulated silica and silica powders. The form of silica described in the '234 patent has an "essentially spheroidal" geometry of a certain mean particle size and morphology that distinguishes it from the prior art. '234 patent, Abstract. Claim 1 of the '234 patent, the only claim at issue here, reads in its entirety:

Dry, dust-free and non-dusting, solid and homogenous atomized precipitated silica particulates essentially spheroidal in geometrical configuration, said particulates having a mean particle size in excess of 150 microns, a fill density in compacted state in excess of 0.200, a BET surface area ranging from 100 to 350 m<sup>2</sup>/g, and a CTAB surface area ranging from 100 to 350 m<sup>2</sup>/g.

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<sup>1</sup> The '234 patent, which issued January 11, 2000, was the culmination of eleven continuation applications filed between October 23, 1981 and April 28, 1994.

'234 patent, col. 13, ll. 61-67 (emphases added). The underlined terms are disputed by the parties.

In addition to the claim language identified above, the specification of the '234 patent contains ten examples of silica products and the results of several tests making comparisons among those products. The test results were designed to show ways that a person of ordinary skill could understand or comprehend the advantages of the claimed invention and differentiate it from the prior art. The cited tests considered both the flowability and the dusting properties of the different silica products. Flowability was identified as a "relative measurement" and defined as "the time required for the product to flow into appropriate receptable [sic] having a calibrated aperture under slight vibration." '234 patent, col. 4, ll. 29-32.

The tests conducted to assess the properties of the claimed invention included: (1) a pour test which constituted a side-by-side comparison of the flowability of the Micropearl silica versus the prior art; and (2) tests to measure the level of dust formed by the various silica particulates, including a test using the DIN 53 583 standard (the "DIN test"). The DIN test is a German standard developed to measure certain physical properties of carbon black by determining the fines (dust) and weight loss by abrasion according to a defined procedure.

In June 2001, Rhodia sued PPG for willful infringement of claim 1 of the '234 patent. Rhodia identified three silica products made by PPG that it alleged infringed its patent rights. The three accused products were identified as Hi-Sil SC60M, SC72, and SC72C.

The district court held a Markman hearing regarding the construction of the terms of Claim 1. The primary disputed term at issue in this appeal is the limitation "dust-free and non-dusting."<sup>2</sup> PPG asserted that the term "dust-free and non-dusting" should be interpreted literally to mean "no dust cloud whatsoever." Conversely, Rhodia argued that a person of ordinary skill in the art would not ascribe such a meaning to the claim term, particularly in light of the results of the pour test showing that the invention produced some dust. Rhodia advocated construing "dust-free and non-dusting" to mean "very low dust."

The court construed the disputed term as follows:

"dust-free and non-dusting" means "a level of dust formation associated with the silica particulates of the '234 patent, as measured in percentage weight according to DIN 53 583, that has a fines content value less than or equal to 13 and weight loss by abrasion value less than or equal to 0.5."

Rhodia Chimie v. PPG Indus. Inc., Civ. Action No. 01-389, slip op. at 21-22 (D. Del. Oct. 9, 2003) ("Claim Construction Opinion"). The court clarified its reference to DIN 53 583 with a detailed explanatory footnote:

'DIN 53 583' is an industrial standard provided by the Deutsches Institut für Normung e.V., a self-governing institution of trade and industry responsible for the preparation of National Standards in Germany, for measuring the fines content and weight loss by abrasion of palletized carbon black used as fillers in the rubber processing industry. The inventors of the '234 patented silica made specific reference to that standard as a means of measuring the dust qualities of their silica. I am referring specifically to DIN 53 583 dated November 1969.

Id. at 14 n.3.

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<sup>2</sup> We also address the proper construction of the term "atomized precipitated silica particulates" in Section III.C infra. As explained below, the construction of this second disputed term was not dispositive to the district court's decision, but may be relevant on remand.

The court's construction of "dust-free and non-dusting" was a reflection of its determination that the term was ambiguous because it could not be read literally to mean that the invention creates no dust at all. Id. at 14. The court was concerned, however, that Rhodia's proposed definition of the term to mean "very low dust" was a relative phrase which would not meet the statutory requirement that the claims "particularly point out and distinctly claim the subject matter which the applicant claims as his invention." Id. (citing 35 U.S.C. § 112 ¶ 2). In order to resolve the perceived ambiguity of the claim term in a manner that preserved the term's validity, the court adopted "a construction based upon the only meaningful guidance provided in the patent," namely the DIN test. Id.

Following the court's rejection of Rhodia's motion to reconsider the Claim Construction Opinion, the parties expressly agreed to close all discovery related to case dispositive motions on November 5, 2003, with the filing of all such motions to follow immediately thereafter. Trial was scheduled to begin on February 23, 2004.

In accordance with the pre-trial schedule, PPG filed motions for summary judgment on the issues of invalidity, unenforceability and non-infringement of the '234 patent. On December 1, 2003, in conjunction with its opposition to PPG's motions, Rhodia filed a request for a continuance to extend the time for discovery in order to complete DIN testing and produce evidence supporting its claim for infringement. Between December 22, 2003 and January 9, 2004, Rhodia served PPG with three expert reports providing evidence of infringement through DIN testing results.

Subsequently, the court issued an order excluding Rhodia's DIN testing evidence as untimely. On January 23, 2004, the court issued an opinion granting PPG's motion

for summary judgment of non-infringement on the basis that Rhodia had not established that PPG's products included the "dust-free and non-dusting" limitation of claim 1. Summary Judgment Opinion, slip op. at 7. In so holding, the court determined that PPG's products did not literally infringe the '234 patent and that prosecution history estoppel barred Rhodia from asserting that the accused products infringe under the doctrine of equivalents. Id. at 7-9. Because it found dispositive the issue of whether PPG's products meet the "dust-free and non-dusting" limitation, the court did not reach the other question raised by PPG's motions, namely whether the accused products meet the "atomized precipitated silica particulates" limitation.

Rhodia appeals the district court's grant of summary judgment and exclusion of its evidence. This court has jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

## II. DISCUSSION

### A. Standard of Review

We review a district court's grant of summary judgment de novo, reapplying the same standard used by the district court. Ethicon Endo-Surgery, Inc. v. U.S. Surgical Corp., 149 F.3d 1309, 1315 (Fed. Cir. 1998). Summary judgment is appropriate if, drawing all factual inferences in favor of the nonmoving party, there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law. Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 255 (1986).

Courts determine patent infringement by construing the patent's claims and then applying that construction to the accused process or product. Markman v. Westview Instruments, Inc., 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996). Claim construction is a question of law reviewed without deference on appeal.

Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1454 (Fed. Cir. 1998) (en banc). In determining whether summary judgment resolving the issue of literal infringement is proper, the court considers whether a "reasonable jury could find that every limitation recited in the properly construed claim either is or is not found in the accused device." Bai v. L&L Wings, 160 F.3d 1350, 1353 (Fed. Cir. 1998). Application of prosecution history estoppel to limit the doctrine of equivalents presents a question of law that this court reviews without deference. Glaxo Wellcome, Inc. v. Impax Labs., Inc., 356 F.3d 1348, 1351 (Fed. Cir. 2004).

Evidentiary rulings are procedural matters that do not raise issues unique to patent law, therefore this court applies the law of the appropriate regional circuit in reviewing such rulings. ATD Corp. v. Lydall, Inc., 159 F. 3d 534, 548 (Fed. Cir. 1998). According to the law of the Third Circuit, which controls here, exclusion of evidence by the district court is reviewed by an appellate court for abuse of discretion. Glass v. Philadelphia Elec. Co., 34 F.3d 188, 191 (3d Cir. 1994).

B. Claim Construction of "dust-free and non-dusting"

Courts construe claim terms in order to assign a fixed, unambiguous, legally operative meaning to the claim. Liquid Dynamics Corp. v. Vaughan Co., Inc., 355 F.3d 1361, 1367 (Fed. Cir. 2004). Claim construction begins with the intrinsic evidence of record, looking first to the claim language itself to define the scope of the patented invention. Vitronics Corp. v. Conceptoronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996). "When the claim language itself lacks sufficient clarity to ascertain the scope of the claims," we look to the written description for guidance. Deering Precision Instruments, L.L.C. v. Vector Distrib. Sys., Inc., 347 F.3d 1314, 1324 (Fed. Cir. 2003). We consult

the written description "to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. The specification acts as a dictionary when it expressly defines terms used in the claims or when it defines terms by implication." Vitronics, 90 F.3d at 1582. Finally, we refer to the prosecution history, when it is of record, to discern the applicant's express acquiescence with or distinction of the prior art as further indication of the scope of the claims. Liquid Dynamics, 355 F.3d at 1368.

Here the district court determined that the disputed term "dust-free and non-dusting" could not be read literally to mean that the invention creates no silica dust at all. Claim Construction Opinion, slip op. at 10. It reached this conclusion recognizing that the test results detailed in the written description indicate that the invention itself produces some dust, but less dust than the prior art. '234 patent, Figs. 3-6 & Tables I & II. Because a literal construction of the term "dust-free and non-dusting," which PPG advocates to mean "no dust cloud whatsoever," would not read on the preferred embodiment, we agree with the district court that a person of ordinary skill in the art would not interpret this term in that manner. As we have frequently stated, a construction that "would not read on the preferred embodiment . . . would 'rarely if ever [be] correct and would require highly persuasive evidentiary support.'" Interactive Gift Express, Inc. v. CompuServe Inc., 231 F.3d 859, 876 (Fed. Cir. 2000) (quoting Vitronics, 90 F.3d at 1583); Hoechst Celanese Corp. v. BP Chems. Ltd., 78 F.3d 1575, 1578 (Fed. Cir. 1996); see also Modine Mfg. Co. v. United States Int'l Trade Comm'n, 75 F.3d 1545, 1550 (Fed. Cir. 1996) ("a claim interpretation that would exclude the inventor's device is rarely the correct interpretation"). The specification, prosecution history and

prior art contain no "highly persuasive evidentiary support" that would require reaching such an unlikely construction. Modine Mfg., 75 F.3d at 1550.

Relying on the use of the term in the written description, Rhodia proposes that the term "dust-free and non-dusting" should be construed to mean that the level of dust "is very low when compared to other silica forms." As the district court recognized, this definition is "a relative phrase, including within its ambit a desirable characteristic of the invention," which can only be understood in comparison to the prior art. Claim Construction Opinion, slip op. at 10. Accordingly, we look to the written description to determine the scope afforded to the comparative phrase very low levels of dust.

The written description includes ten examples of different forms of silica selected to illustrate the advantages of the invention. '234 patent, col. 3, l. 40 – col. 8, l. 48. Varying combinations of the examples were subjected to testing designed to quantify certain physical properties in order to document and reveal the patentable characteristics of the claimed invention. The resultant physical properties of the ten examples are accumulated in Tables I and II of the '234 patent "such that the physiochemical properties of the various final products can be compared." '234 patent, col. 7, ll. 23-24. It is worth noting that, with the exception of particle size, all the physical properties for which numerical ranges are specifically provided in Claim 1, namely fill density, BET surface area and CTAB surface area, are outlined in Tables I and II. "Dust formation and abrasion as in DIN 53 583, in % by weight" appears in the last row of each of each table.

Although ten examples of silica products are referenced in the written description, the parties agree that only two of the examples constitute a product of the

issued claims: Examples 5 and 10. Example 5 is twice referred to as the product of the invention: "As additional illustrations of the product according to the invention, Fig. 1 is an enlarged photograph of a pellet according to the invention (Example 5)," Id., col. 8, ll. 50-51, and "the product according to the invention (Example 5)," Id., col. 9, ll. 2-3. Example 10 is a refined version of Example 5. Id., col. 8, l. 45. Thus, although ten examples are addressed in the description, the preferred embodiment of Example 5 is repeatedly described as the invention itself. See id., col. 8, ll. 50-51 & col. 9, ll. 2-3.

The written description identifies two tests that were conducted to assess the tendency of the different examples to form dust. The first test was conducted on Examples 1, 2, and 4, whereas the second test was conducted on Examples 4, 5, 9 and 10. The first test used stable, fluidized beds of Examples 1, 2 and 4 and applied a vector gas to them to assess "the quality of the resulting product . . . expressed in terms of the formation of dust therefrom and its resistance to attrition." Id., col. 6, ll. 47-49. The description of this test concluded with the statement: "[d]ust formation and abrasion were also measured in accordance with the standard DIN 583 [sic]." Id., col. 6, ll. 66-67.

Results according to the DIN 53 583 standard were provided for Examples 4, 5, 9 and 10. Id., Tables I and II. Because the only measurement of the dust produced by Examples 5 and 10 was articulated in terms of the DIN 53 583 standard, the district court properly incorporated that articulation into its construction of the term "dust-free and non-dusting." The results of the DIN testing showed that Example 5 produced more dust than Example 10. Accordingly, the court defined the outer limit for the level of dust created by the invention by reference to the DIN test results for Example 5.

We agree with the district court that the reference to the DIN test results for Example 5, as provided in the written description, reconciles the ambiguous claim language with the inventor's disclosure. Comark Communications, Inc. v. Harris Corp., 156 F.3d 1182, 1187 (Fed. Cir. 1998) (indicating that interpreting claim language in light of the specification is proper when a term is "so amorphous that one of skill in the art can only reconcile the claim language with the inventor's disclosure by recourse to the specification"). As such, the court's construction of the term "dust-free and non-dusting" does not contravene the basic teaching that limitations from the specification should not be imported to the claims. Id. at 1186-87; see also E.I. Du Pont De Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433 (Fed. Cir. 1988) (counseling that it is improper to read a limitation "into a claim from the specification wholly apart from any need to interpret what the patentee meant by particular words or phrases in the claim"). Furthermore, this construction is consistent with the proposition that "when the preferred embodiment is described in the specification as the invention itself, the claims are not necessarily entitled to a scope broader than that embodiment." Modine Mfg., 75 F.3d at 1551.

Rhodia challenges the court's construction on the grounds that the DIN 53 583 standard is not the only means by which to assess the amount of dust produced by the invention in comparison to the prior art. It asserts that the pour test, which was applied to Example 5, could also be used to determine the level of dustiness identified in the claim. The written description provides the following summary of the pour test:

The test comprises placing one liter of the product to be studied in an Erlenmeyer flask having a neck 4.4 cm in diameter. The flask is rocked and the flowability of the product visually observed. The height from which

the product is spilled is 63 cm. The experiment is shown in Fig. 3 at the very instance that the product begins to flow/spill, and then, in the subsequent photographs, every two seconds thereafter.

It will be seen from the first photograph that the product according to the invention has a fluid appearance and was more freely flowing from the very outset. It can then clearly be seen that the product according to the invention not only flows better than a product in powder form (that prepared as in Example 2), but also flows better than a granulated product as prepared in Example 4. The granulated product is in the center of the photographs while the product according to the invention (Example 5) is at the right hand side thereof.

'234 patent, col. 8, l. 54 – col. 9, l. 3. According to Rhodia, the results of the pour test, which appear in the patent only as a series of pictures, can serve as an alternative means of distinguishing the level of dust produced by the invention from the prior art and therefore it is inappropriate to limit the term "dust-free and non-dusting" to the DIN specifications. In support of this interpretation, Rhodia relies heavily on statements made during the prosecution of the patent showing that the pictures of the pour test were cited as evidence of the "non-dusting and free-flowing properties."

Rhodia's argument ignores the written description of the patent and the fundamental purpose of the claims, which is to define the scope of the patented invention. Liquid Dynamics, 355 F.3d at 1368. Although the pour test may also provide evidence of the dust produced by the various forms of silica, the results presented in the patent were only identified as evidence of the products' flowability. See '234 patent, col. 8, ll. 56-57. There is no language in either the claims or the written description that teaches application of the pour test to determine the level of dust production claimed by the invention and Rhodia's statements made during the prosecution of the patent cannot serve to fill that gap. "Although the prosecution history can and should be used to understand the language used in the claims, it . . . cannot 'enlarge, diminish, or vary' the

limitations in the claims." Markman v. Westview Instruments, Inc., 52 F.3d 967, 980 (Fed. Cir. 1995). Although the pour test and the stabilized fluid bed test may provide alternative means for assessing dust production, it remains that the only articulation of the dustiness of the claimed invention is made with reference to the DIN 53 583 standard.

Rhodia chose to define the term "dust-free and non-dusting" solely by reference to characteristics of the prior art and the only comparison of those characteristics was explained according to the DIN 53 583 standard. It was not improper for the district court to limit the scope of this relative term to the only disclosure on the subject made in the patent. We affirm the claim construction of the district court.

#### C. Summary Judgment of Non-infringement

Applying its construction of the term "dust-free and non-dusting" to the three accused products, the district court determined that none of the three met the limitation as defined. Accordingly, it found that the accused products did not literally infringe the '234 patent. Summary Judgment Opinion, slip op. at 6-7. The court also found that Rhodia was not entitled to any scope of equivalents with respect to the limitation "dust-free and non-dusting" because the limitation was added during prosecution in order to avoid the prior art. Id. at 8-9. Rhodia challenges the court's infringement findings, both as to literal infringement and infringement under the doctrine of equivalents.

Rhodia attacks the court's finding of no literal infringement on evidentiary grounds. First, it argues that it was improperly denied the opportunity to submit evidence showing the results of its testing under the DIN 53 583 standard. Alternatively, Rhodia asserts that even without the excluded DIN test results, the

evidence submitted raised a genuine issue of material fact such that the district court erred in entering summary judgment of non-infringement.

Rhodia's assertion that the district court abused its discretion in excluding its DIN testing evidence is without merit. Rhodia claims that because the machinery for conducting DIN testing was not readily available, it was not able to produce the necessary results and related expert report in the four weeks between the time the court issued its Claim Construction Opinion and the close of discovery. Accordingly, it believes that it was entitled to an extension of discovery in order to respond to the court's construction of "dust-free and non-dusting" by reference to the DIN 53 583 standard.

Rhodia's argument was presented to and rejected by the district court, which found that it was unreasonable for Rhodia to delay investigation into DIN testing until after the issuance of the Claim Construction Opinion. See Rhodia Chimie v. PPG Indus. Inc., Civ. Action No. 01-389, slip op. at 1 (D. Del. Jan. 23, 2004) ("Order Denying Reconsideration of Evidentiary Decision"). The court found that Rhodia was on notice at least as early as the summer of 2003 that the court considered the DIN 53 583 standard relevant to the construction of the disputed term. Id. at 2. In support of that finding, the court noted that it inquired into the English translation of the DIN 53 583 standard in July 2003 and then, in August 2003, it explicitly invited the parties to provide input on the construction of the term "dust-free and non-dusting" in light of that standard. Id. Because Rhodia submitted its DIN testing evidence seven weeks after the close of discovery and the passing of the deadline for filing case dispositive motions and six weeks prior to trial, the Court held that PPG would be substantially and unfairly

prejudiced if such evidence was admitted. See Rhodia Chimie v. PPG Indus. Inc., Civ. Action No. 01-389, slip op. at 2 (D. Del. Jan. 16, 2004) ("Order Excluding Evidence").

Rhodia presents no authority in support of its assertion that the district court's decision to exclude its evidence as untimely was an abuse of discretion. When a party fails to obey an order regarding discovery, Federal Rule of Civil Procedure 37 provides district courts with broad discretion to "make such orders in regard to the failure as are just," which includes "prohibiting the party from introducing designated matters in evidence." Fed. R. Civ. Proc. 37(b)(2). While recognizing the severity of a decision to exclude critical evidence for failure to comply with a pretrial order, the Third Circuit will not disturb the trial court's decision "absent a clear abuse of discretion." Semper v. Santos, 845 F.2d 1233, 1237 (3d Cir. 1988). The Third Circuit typically considers four factors in evaluating whether the district court properly exercised its discretion. In re TMI Litig., 193 F.3d 613, 721 (3d Cir. 1999). Those factors are: (1) the prejudice or surprise in fact of the party against whom the excluded evidence would have been submitted; (2) the ability of that party to cure the prejudice, (3) the extent to which waiver of the discovery deadline would disrupt the orderly and efficient trial of the case or of other cases in the court, and (4) bad faith or willfulness in failing to comply with the district court's order. See id. (citing Meyers v. Pennypack Woods Home Ownership Assoc., 559 F.2d 894, 904-05 (3d Cir. 1977)).

None of the cited factors counsel in favor of finding that the district court abused its discretion. PPG filed timely case dispositive motions according to a schedule specifically agreed to by Rhodia after the issuance of the Claim Construction Opinion. The admission of Rhodia's untimely evidence would have undermined, if not negated

PPG's motions for summary judgment and disrupted the scheduled trial. Because Rhodia did not submit its request for a continuation of discovery until well after the deadline had passed and its response to PPG's motions was due, PPG had no opportunity to correct the prejudice created by Rhodia's failure to comply with the district court's order. Rhodia offers no explanation as to why it postponed engaging in DIN testing until the eve of the close of discovery and why it failed to bring its problems in conducting such testing to the attention of the court in a timely manner. Under the circumstances, we cannot say that the district court abused its discretion in excluding Rhodia's untimely evidence.

Rhodia also argues that, even without considering its untimely DIN testing evidence, the district court erred in entering summary judgment finding no literal infringement. It rests this argument on evidence provided by PPG showing DIN 53 583 results for SC60M within the range established by the court's claim construction. PPG argues that this evidence was irrelevant because the results were produced prior to the issuance of the '234 patent and Rhodia produced no evidence linking the sample tested to PPG's post-issuance commercial practices. In support of its theory requiring the establishment of a linkage, PPG relies on Chiuminatta Concrete Concepts, Inc. v. Cardinal Industries, Inc., 145 F.3d 1303 (Fed. Cir. 1998). In Chiuminatta, we affirmed the district court's conclusion that a study performed after a patent's filing date was not relevant to determining whether the patent was obvious. Id. at 1313. We held that a post-filing date report was insufficient to raise a genuine issue of material fact regarding the state of the prior art unless evidence was produced that demonstrated the relationship of the report to the prior art. Id. Relying on that holding, PPG argues that

Rhodia's production of pre-issuance evidence without more was insufficient to raise a genuine issue of material fact as to whether PPG's post-issuance products infringed.

PPG's reliance on Chiuminatta is misplaced. A determination of obviousness, as was at issue in Chiuminatta, turns on the scope and content of the art prior to the filing date of the patent application. SIBIA Neurosciences, Inc. v. Cadus Pharm. Corp., 225 F.3d 1349, 1355-56 (Fed. Cir. 2000). Thus, as a prima facie matter, a report drafted after a patent application was filed would not inform the necessary inquiry into the scope and content of the prior art. In contrast, although a patent cannot be infringed by acts done before its issuance, evidence regarding pre-issuance activities may be relevant to establishing that post-issuance products constitute infringement. See Hoover Group, Inc. v. Custom Metalcraft, Inc., 66 F.3d 299, 303 (Fed. Cir. 1995) (holding that pre-issuance engineering drawings and templates used to build accused products sold after the issuance of the patent could be relied on to show infringing characteristics). PPG's challenge to the link between PPG's accused product and the silica product tested in the report relied upon by Rhodia does not show that the report is irrelevant, but rather raises questions of fact, the resolution of which will determine the weight to be afforded the evidence.

Although the existence of a pre-issuance report indicating that SC60M produced DIN 53 583 results in the range defined by the court's claim construction does not establish infringement, it does create a genuine issue of material fact as to whether the post-issuance form of SC60M infringes. Accordingly, the trial court erred as a matter of law in entering summary judgment of non-infringement for PPG's SC60M and we reverse for further proceedings limited to that product. Rhodia has identified no

evidence establishing a genuine issue of material fact in regards to the other two accused products and therefore there is no reason to reverse the court's decision for SC72 or SC72C.

Rhodia also argues that it is entitled to show that PPG's products infringe under the doctrine of equivalents. It asserts this argument despite its acknowledgement that the limitation "dust-free and non-dusting" was added during prosecution to distinguish the claimed invention from the prior art. Rhodia claims that this amendment does not bar it from asserting equivalents under the doctrine of Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., 535 U.S. 722, 733 (2002). Under Festo, a narrowing amendment made to satisfy a requirement of the Patent Act may give rise to an estoppel. Id. at 736. Such a narrowing amendment creates a presumption that the patentee surrendered the territory between the original claims and the amended claims. Id. at 741. The patentee may rebut that presumption by showing that the alleged equivalent was unforeseeable at the time the amendment was made, that the alleged equivalent was tangential to the purpose of the amendment, or that there was some other reason suggesting that the patentee could not reasonably be expected to have described the insubstantial substitute in question. Id. at 740-41. Rhodia argues that its amendment of Claim 1 to include the limitation "dust-free and non-dusting" does not estop it from asserting infringement under the doctrine of equivalents because the equivalent in question was tangential to the purpose of the amendment.

This court has held that the primary consideration in determining when an amendment bears only a tangential relation to the equivalent in question is "whether the reason for the narrowing amendment was peripheral, or not directly relevant, to the

alleged equivalent." Insituform Tech., Inc. v. CAT Contracting, Inc., 385 F.3d 1360,1370 (Fed. Cir. 2004) (citing Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd., 344 F.3d 1359, 1365 (Fed. Cir. 2003) (en banc)). Here, Rhodia argues that the prosecution history shows that the limitation "dust-free and non-dusting" was added to Claim 1 of the '234 patent to distinguish the invention of precipitated silica particulates from the prior art of "powdered or granulated [or otherwise shaped] silicas." According to Rhodia, because the accused products are "spray-dried silica microspheres" and not "powdered or granulated silicas" they are not within the distinguished prior art and therefore the narrowing amendment is not directly relevant to the accused equivalents.

Rhodia misunderstands the scope of the inquiry into the relationship between the narrowing amendment and the accused equivalent. As we have stated, "an amendment made to avoid prior art that contains the equivalent in question is not tangential," Festo, 344 F.3d at 1369. It does not follow, however, that equivalents not within the prior art must be tangential to the amendment. Here, Rhodia amended its claim to incorporate numerous limitations identifying the specific characteristics that distinguished its invention from the prior art, including the trait that it was "dust-free and non-dusting." Rhodia's articulation of these characteristics was not limited to the form of the silica produced and therefore, Rhodia presumptively surrendered all forms of silica with dust levels too great to be considered "dust-free and non-dusting." As a claimed improvement over the prior art, the relative dustiness of Rhodia's invention was at issue during prosecution and thus the reason for the narrowing amendment cannot be said to be tangential to an equivalent that has that characteristic. Talbert Fuel Sys. Patents Co. v. Unocal Corp., 347 F.3d 1355, 1360 (Fed. Cir. 2003) (holding that a narrowing

amendment to address issues raised during prosecution was the "direct, not tangential, reason" for the narrowing amendment). Accordingly, we hold that Rhodia has not rebutted the presumption that it surrendered the range between its original claim and its amended claim and is therefore estopped from asserting infringement under the doctrine of equivalents.

### C. Additional Issues

Although the district court's final judgment of non-infringement was based solely on the absence of evidence that PPG's products contain the limitation "dust-free and non-dusting," PPG had presented an alternative argument for summary judgment on the ground that its accused products do not include the limitation "atomized precipitated silica particulates." Despite disposing of the case on the "dust-free and non-dusting" limitation, the court expressly included its construction of "atomized precipitated silica particulates" into its Summary Judgment Opinion. Accordingly, the parties fully briefed the dispute regarding the construction of "atomized precipitated silica particulates" before this court. Furthermore, as discussed above, a limited remand of this case is necessary and the construction of this second term may be determinative in the future proceedings. Under these circumstances, we conclude that judicial economy would best be served by our reviewing this second claim construction issue. Microsoft Corp. v. Multi-tech Sys., Inc., 357 F.3d 1340, 1351 n.6 (Fed. Cir. 2004) (reviewing the construction of all disputed claim terms, not just the ones necessary to resolve the appeal).

The district court interpreted the term "atomized precipitated silica particulates" to mean "that a pulverized slurry of precipitated silica is spray dried using a liquid pressure

nozzle as an atomizer to form the claimed silica particulates." Claim Construction Opinion, slip op. at 14-15. The court reached this construction by reference to the prosecution history, where Rhodia distinguished the prior art by emphasizing that its claimed silica particulates could be obtained only by applying liquid pressure nozzle sprayers to a pulverized slurry. Id. at 15. Rhodia argues that its statements regarding the use of liquid pressure nozzle sprayers and a pulverized slurry were directed at its process claims, which appear at claims 16-28 of the '234 patent, and not its product claims. Thus, Rhodia asserts, it was improper for the district court to rely on the prosecution history to interpret product Claim 1 in light of argument directed at the patent's process claims.

Rhodia's argument does not comport with well-established principles of claim construction. The purpose of consulting the prosecution history in construing a claim is to "exclude any interpretation that was disclaimed during prosecution." ZMI Corp. v. Cardiac Resuscitator Corp., 844 F.2d 1576, 1580 (Fed. Cir. 1988). Accordingly, "where the patentee has unequivocally disavowed a certain meaning to obtain his patent, the doctrine of prosecution disclaimer attaches and narrows the ordinary meaning of the claim congruent with the scope of the surrender." Omega Eng'g., Inc. v. Raytek Corp., 334 F.3d 1314, 1324 (Fed. Cir. 2003). Such a use of the prosecution history ensures that claims are not construed one way in order to obtain their allowance and in a different way against accused infringers. Southwall Tech., Inc. v. Cardinal IG Co., 54 F.3d 1570, 1576 (Fed. Cir. 1995).

Over a series of responses to office actions, Rhodia amended Claim 1 to include the term "atomized precipitated silica particulates." The amendments were made, in

part, to traverse rejections based on U.S. Patent No. 3,383,172, which was issued to Biegler et al., and U.S. Patent No. 4,094,771, which was issued to Brandt et al. The Biegler art disclosed a "method for preparing silica in the form of hollow spheres," U.S. Patent No. 3,383,172, Claim 1, whereas the Brandt art disclosed a "process for the production of a sprayable, highly concentrated aqueous suspension of a precipitated silicic acid," U.S. Patent No. 4,094,771, Claim 1.

Both the product and the process claims of the '234 patent were initially rejected as unpatentable in light of the Biegler and Brandt prior art. Rhodia distinguished the Biegler invention on the grounds that it disclosed a method for preparing silica in the form of hollow spheres and was directed at pyrogenic silica, unlike Rhodia's claimed invention of "precipitated silica." Furthermore, Rhodia noted that Biegler did not require a pulverization step and "no slurry which has not been pulverized per applicants' invention would be capable of ultimately providing a homogeneous and solid particulate product, much less those precipitated silica beads having those particular physical and chemical properties now set forth in all of applicant's newly presented claims."

Rhodia distinguished the Brandt invention on the grounds that "the spraying or atomization of the suspension obtained by the process of Brandt et al. does not necessarily lead to the claimed subject matter of the present invention . . . the silica particulates are much smaller than the claimed atomized precipitated silica particulates of the present application." Furthermore, Rhodia argued that Brandt does not specify the type of nozzle or spray drying technique used in its process, whereas to obtain Rhodia's "claimed silica particulates, liquid pressure nozzle sprayers must be used."

In light of the prosecution history, it is evident that Rhodia disclaimed products created using non-pulverized slurries and atomization techniques other than liquid pressure nozzle sprayers. There is no indication that Rhodia attempted to limit these disclaimers to its process claims. Rhodia was required to distinguish both its product and process claims from the inventions of Biegler and Brandt and it did so by focusing on the necessity of using liquid pressure nozzle sprayers and pulverized slurries to obtain its claimed product. Accordingly, we see no error in the district court's construction of the term "atomized precipitated silica particulates" to mean that "a pulverized slurry of precipitated silica is spray dried using a liquid pressure nozzle as an atomizer to form the claimed silica particulates." We affirm that construction.

### III. CONCLUSION

For the foregoing reasons, we affirm the district court's construction of the disputed claim terms "dust-free and non-dusting" and "atomized precipitated silica particulates." We also affirm the district court's exclusion of Rhodia's evidence as untimely, its entry of summary judgment of no literal infringement for PPG products SC72 and SC72C, and its finding of no infringement by equivalence because of prosecution history estoppel for all three products. Because the district court erred in holding that there was no genuine issue of material fact regarding the literal infringement of PPG's product SC60M, we vacate the district court's grant of summary judgment as to SC60M and remand for further proceedings consistent with this opinion.

### IV. COSTS

No costs.

AFFIRMED-IN-PART, REVERSED-IN-PART and REMANDED