

United States Court of Appeals for the Federal Circuit

05-1434, 06-1009

ANDERSEN CORPORATION,

Plaintiff-Appellant,

v.

FIBER COMPOSITES, LLC,

Defendant-Cross Appellant.

Ronald J. Schutz, Robins, Kaplan, Miller & Ciresi L.L.P., of Minneapolis, Minnesota, argued for plaintiff-appellant. With him on the brief were Becky R. Thorson, Misti Nelc, and Busola A. Akinwale.

John M. Skenyon, Fish & Richardson P.C., of Boston, Massachusetts, argued for defendant-cross appellant. With him on the brief was Katherine A. Moerke, of Minneapolis, Minnesota.

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

Judge Joan N. Ericksen

United States Court of Appeals for the Federal Circuit

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ANDERSEN CORPORATION,

Plaintiff-Appellant,

v.

FIBER COMPOSITES, LLC,

Defendant-Cross Appellant.

DECIDED: January 26, 2007

Before BRYSON and PROST, Circuit Judges, and SARIS, District Judge.*

BRYSON, Circuit Judge.

Andersen Corporation owns a number of patents relating to composite materials made from a mixture of polymer and wood fiber, and to structural parts made from those composite materials. Fiber Composites, LLC, manufactures and sells deck railing and spindle products (the “Fiberon products”), which are made from a polymer and wood fiber mixture. Andersen brought this action in the United States District Court for the District of Minnesota, alleging that the Fiberon products infringe six of its patents.

* Honorable Patti B. Saris, District Judge, United States District Court for the District of Massachusetts, sitting by designation.

The parties have classified the six asserted patents into two groups. The four Group I patents cover compositions capable of being extruded into structural members. The two Group II patents cover the extruded structural members themselves. The parties agree that the disputed claim terms—“composite composition” for the Group I patents and “composite structural member” for the Group II patents—have the same meaning throughout each respective group.

The Fiberon products are made by direct extrusion, a process in which polymer and wood fibers are mixed and melted in an extruder and then forced through a die to form a finished structural part. Fiber contends that its products do not infringe any of the asserted patents because the “composite compositions” of the Group I patents are limited to compositions in either pellet or linear extrudate form, and because the “composite structural members” of the Group II patents are limited to members that are extruded from composites that have previously been extruded into either pellet or linear extrudate form.

After a hearing, the district court agreed with Fiber that the “composite compositions” claimed in the Group I patents are limited to materials that have been extruded to make pellets or the linear extrudate from which pellets can be cut. The court agreed with Andersen, however, that the “composite structural members” claimed in the Group II patents constitute any articles that are made from a composite polymer and wood fiber mixture and have load-bearing capabilities. The court rejected Fiber’s contention that “composite structural members” are limited to items made from a composite mixture that has previously been extruded into pellet or linear extrudate form.

Based on the district court's construction of the term "composite composition," Andersen modified its theory of infringement to allege that its Group I patents are infringed by Fiber's "repro," a substance made from reground rejected railing parts and used as an ingredient in the manufacturing process. Following discovery, both parties moved for summary judgment. The district court held that Fiber's "repro" did not infringe the Group I patents, but that a subset of the Fiberon products (those with more than 30% wood content) infringed the Group II patents.

At trial, the jury found that (1) the Group II patents are not invalid due to obviousness, inadequate written description, or lack of enablement, (2) the Group II patents are not invalid due to anticipation, and (3) Fiber's infringement of the Group II patents was not willful. The jury awarded Andersen \$46,020 in damages. The district court denied Andersen's request for a permanent injunction with regard to the Group II patents.

I

Andersen challenges the district court's construction of the term "composite composition" as used in the Group I patents. In its cross-appeal, Fiber challenges the court's construction of the term "composite structural member" as used in the Group II patents. We agree with the court's construction of the Group I claims but disagree with its construction of the Group II claims.

A

Group I comprises four patents, each of which includes claims to a polymer and wood fiber composition. The patents are: U.S. Patent Nos. 5,827,607 ("the '607 patent"); 5,932,334 ("the '334 patent"); 6,015,611 ("the '611 patent"); and 6,015,612

("the '612 patent"). The four patents each contain claims to compositions in the form of a pellet, claims to compositions in the form of a linear extrudate, and claims to a "composite composition" without an explicit form limitation. Andersen concedes that the Fiberon products do not infringe any of the claims containing explicit pellet or linear extrudate limitations; thus, only the composite composition claims are at issue in this case.

A representative example of the asserted claims is claim 19 of the '334 patent, which provides as follows:

19. A thermoplastic composite composition, capable of extrusion into a dimensionally stable structural member, which consists essentially of a thermoplastic composition which comprises:
(a) a continuous phase comprising a polyvinyl chloride homopolymer;
(b) an effective amount of wood fiber having a minimum width of 0.1 mm and an aspect ratio of greater than about 1.8 to provide structural properties to the composite;
(c) about 0.01 to 25 wt % of an intentionally recycled impurity comprising thermoplastic polymer, an adhesive, a paint, a thermoplastic resin or mixtures thereof; and
(d) less than about 10 wt % water;
wherein the polyvinyl chloride homopolymer and wood fiber are mixed at elevated temperature and pressure such that an intimate admixture is formed and the wood fiber is dispersed throughout the continuous thermoplastic polyvinyl chloride homopolymer phase and the composite has a Young's modulus of at least about 600,000 psi.

The relevant claims of the '607 and '611 patents similarly claim a "composite composition, capable of extrusion into a dimensionally stable structural member," while the '612 patent claims a "thermoplastic polymer composite composition capable of formation into a structural profile or member." The parties agree that the term "composite composition" has the same meaning in all four patents.

After considering the claim language, the specification, and the prosecution history, the district court determined that "composite composition" means "a solid pellet or a

solid linear extrudate, which may subsequently be remelted and extruded to make a structural member.” We agree with that construction. While nothing on the face of the asserted claims states that the term “composite composition” is limited to a mixture that is in pellet or linear extrudate form, the specifications make clear that the term, as used in the Group I patents, must be construed to be limited in that manner.

1

The asserted claims all recite that the “composite” or “composite composition” must have certain properties and be capable of extrusion into a structural profile or member. The common specification of the four Group I patents, which differs only slightly from patent to patent, describes how those properties are achieved. The specification explains that the claimed properties are attributable to the reduction of water content in the polyvinyl chloride and wood fiber composition and the “intimate mixing” of the components. The required “intimate mixture” is achieved, according to the specification, “by extrusion of the polyvinyl chloride and wood fiber composite through an extrusion die resulting in a linear extrudate that can be cut into a pellet shape.” ’607 patent, col. 4, ll. 45-47; ’334 patent, col. 5, ll. 6-8; ’611 patent, col. 4, ll. 38-40; ’612 patent, col. 4, ll. 39-41. As the specification explains:

During the pelletizing process for the composite pellet, the polyvinyl chloride and wood fiber are intimately contacted at high temperatures and pressures to insure that the wood fiber and polymeric material are wetted, mixed, and extruded in a form such that the polymer material, on a microscopic basis, coats and flows into the pores, cavity, etc., of the fibers. The fibers are preferably substantially oriented by the extrusion process in the extrusion direction.

’607 patent, col. 3, ll. 54-61; ’334 patent, col. 4, ll. 15-22; ’611 patent, col. 3, ll. 47-54; ’612 patent, col. 3, ll. 49-56. The composition, which is in pellet or linear extrudate form,

is then remelted and re-extruded to produce the desired structural members. The specification explains that in the manufacturing process,

[T]he successful manufacture of structural members for windows and doors requires the preliminary manufacture of the polyvinyl chloride wood fiber composite in the form of a pellet wherein the materials are intimately mixed and contacted in forming the pellet prior to the extrusion of the members from the pellet material. We have found that the intimate mixing of the polyvinyl chloride, wood fiber, and waste in the manufacture of the pellet process with associated control of moisture content produces a pelletized product that is uniquely adapted to the extrusion manufacture of PVC/wood fiber components and achieves the manufacture of a useful wood replacement product.

'607 patent, col. 3, ll. 1-13; '334 patent, col. 3, ll. 30-42; '611 patent, col. 2, line 62, through col. 3, line 7; '612 patent, col. 2, line 65, through col. 3, line 10. Although the specification generally refers to the process of pelletization and the use of pellets in the later extrusion step, it makes clear that the formation of pellets is convenient but not necessary, and that the linear extrudate from which the pellets are normally cut can be used without pelletization in the later extrusion step. See '334 patent, col. 1, ll. 40-43 (“Alternatively, the extruded thermoplastic mass, in the form of a [sic] elongated linear extrudate without a pelletizing step, can be immediately directed after formation into an extruder or injection molding apparatus.”); '612 patent, abstract (same).¹

¹ Andersen argues that the statement that a pelletizing step is not required proves that the patent is directed to a composite composition unlimited to any particular form. A fair reading of that passage, however, indicates that it merely refers to the possibility of re-extruding the linear extrudate without first cutting it into pellets. Moreover, the quoted material supports the district court’s claim construction by emphasizing that the thermoplastic mass must be extruded in pellet or linear extrudate form, thus implicitly excluding all other forms. The same answer applies to Andersen’s argument based on the reference in the specification to “the composition material or pellet,” '607 patent, col. 6, line 27; '612 patent, col. 6, line 33, and to the pellet form as “preferred,” '607 patent, col. 2, line 55. In context, it is clear those statements simply

Contrary to Andersen's contention, the district court's construction of the Group I claims as limited to compositions in pellet or linear extrudate form does not impermissibly limit the invention to particular embodiments. The district court did not construe the Group I claims to be limited to "composite compositions" in the pellet and linear extrudate forms on the ground that those are the only disclosed embodiments. Rather, the court construed the claims in that way because the patents use the term "composite composition" restrictively and state that the step of extruding the composite in pellet or linear extrudate form is "require[d]" in order for the composite composition to be capable of extrusion into a structural member having the claimed physical properties.

The Group I common specification repeatedly states that the steps of linear extrusion or pelletization are not merely embodiments, but are essential features of the claimed composite composition. For example, the specification of the '334 patent states that "[t]he invention relates to a composition comprising a polymer and wood fiber composite that can be used in the form of a linear extrudate or thermoplastic pellet to manufacture structural members." '334 patent, col. 1, ll. 10-13; see also '607 patent, abstract ("The composite can be used in the form of a linear extrudate or a thermoplastic pellet to manufacture structural members."); '612 patent, abstract (same); '611 patent, abstract ("A composition in the form of pellets comprising a thermoplastic and wood fiber composite material suitable for forming structural members as a replacement for wood in the manufacture of doors and windows."). The invention, according to the specifications, "relates to the use of polyvinyl chloride and wood fiber

reflect that the extruded composite composition may be in either pellet or linear extrudate form.

composite materials with a controlled water content in the form of a pelletized material wherein the wood fiber is intimately contacted and wetted by the organic materials.” ’607 patent, col. 3, ll. 18-23; ’611 patent, col. 3, ll. 11-15; ’612 patent, col. 3, ll. 14-18.

The portions of the specification that describe how the physical properties of the claimed composite composition are obtained make clear that the formation of linear extrudates or pellets is not merely a preferred embodiment, but is a critical element in the process that produces those properties. See ’607 patent, col. 3, ll. 1-7 (“[T]he successful manufacture of structural members for windows and doors requires the preliminary manufacture of the polyvinyl chloride wood fiber composite in the form of a pellet wherein the materials are intimately mixed and contacted in forming the pellet prior to the extrusion of the members from the pellet material.”) (emphasis added); ’334 patent, col. 3, ll. 30-36 (same); ’611 patent, col. 2, line 62, through col. 3, line 1 (same); ’612 patent, col. 2, line 65, through col. 3, line 4 (same). Those statements are not descriptions of particular embodiments, but are characterizations directed to the invention as a whole. As such, they make clear that the term “composite composition,” as used in the Group I patents, does not encompass broader subject matter. See Phillips v. AWH Corp., 415 F.3d 1303, 1316 (Fed. Cir. 2005) (en banc) (“[T]he specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess.”); Microsoft Corp. v. Multi-Tech Sys., Inc., 357 F.3d 1340, 1348 (Fed. Cir. 2004) (statements in common specification serve to limit claim language because they “are not limited to describing a preferred embodiment, but more broadly describe the overall inventions of all three patents”); Alloc, Inc. v. Int’l Trade Comm’n, 342 F.3d 1361, 1370 (Fed. Cir. 2003) (“[T]his court

looks to whether the specification refers to a limitation only as a part of less than all possible embodiments or whether the specification read as a whole suggests that the very character of the invention requires the limitation be a part of every embodiment.”).

Andersen argues that the Group I specification cannot be read to require that the composite composition be extruded in linear extrudate or pellet form, because on several occasions the specification refers to the invention as a “composite material,” without adding any reference to the linear extrudate or pellet form. See, e.g., ’612 patent, col. 1, ll. 14-29. That argument is unpersuasive, however, as the term “composite material” is just a synonym for “composite composition,” and the use of that alternative term in the “Field of the Invention” portion of the specification is not inconsistent with the restrictive definition provided in the body of the specification where the invention is described in more detail.

2

The district court’s claim construction finds additional support in the prosecution history. The Group I patents all stem from continuations based on U.S. Patent Application Serial No. 07/938,364 (“the ’364 application”). The prosecution history of that parent application is highly instructive in light of the similarity between the claims of the application and those of the patents in suit. See Masco Corp. v. United States, 303 F.3d 1316, 1324 (Fed. Cir. 2004) (prosecution history of a parent application “may be considered in construing claim terms”); Biovail Corp. v. Andrx Pharms., Inc., 239 F.3d 1297, 1301 (Fed. Cir. 2001) (claim language “must be read consistently with the totality of the patent’s applicable prosecution history,” including parent applications); see also Microsoft Corp., 357 F.3d at 1349; Elkay Mfg. Co. v. EDCO Mfg. Co., 192 F.3d 973, 980

(Fed. Cir. 1999) (“When multiple patents derive from the same initial application, the prosecution history regarding a claim limitation in any patent that has issued applies with equal force to subsequently issued patents that contain the same limitation.”).

The '364 application contained all three types of claims (pellet form, linear extrudate form, and “composite composition” form), and the language of the application claims is nearly identical to the language of the claims that eventually issued in the Group I patents. Responding to the examiner’s rejection of all three types of claims, the applicants repeatedly distinguished the invention from the prior art by referring to the pellet form or the pelletization process as an essential part of the invention. For example, the applicants distinguished two prior art references by relying heavily on the role of pelletization in the claimed invention:

The invention resides in part in a thermoplastic composite pellet. The invention also resides in a vinyl chloride polymer and wood fiber composite material, with a controlled water content, in the form of a thermoplastic pellet, wherein the wood fiber is intimately contacted and wetted by the thermoplastic polymer. The moisture control combined with the intimate contact and wetting between the components in the pelletizing process and other pellet characteristics ensures high quality physical properties in the extruded composite material after manufacture. . . . Applicant’s invention comprises a pellet [N]either reference teaches a pellet material.

The applicants further distinguished one of the two cited references by noting that it “does not teach the pelletizing of the composite material,” while the claimed invention “first pelletizes the thermoplastic composite material, and then, manufacturers [sic] a structural member from the pelleted materials by melting and extruding the composite. Thus, [the reference] does not teach or suggest the manufacture or composition of the thermoplastic pellet materials of the Applicant’s invention.”

The applicants subsequently filed a continuation application, U.S. Patent Application Serial No. 08/224,396 (“the ’396 application”), which is also common to all four Group I patents. Again, responding to a rejection of all three types of claims, the applicants distinguished their invention by stating (emphasis added):

[N]one of [the cited] prior art teaches the manufacture of a pellet intermediate between mixing the polyvinyl chloride and wood fiber and the final manufacture of a finished composite member. The manufacture of the pellet intermediate in this process, provides the opportunity to obtain an intimate mixing of a thermoplastic and fiber. The manufacture of the pellet is important in obtaining the final structural properties of the composite member. . . . Applicants assert that the combination of the selection of polyvinyl chloride, the critical selection of particle size and aspect ratio, the water content and preparation of the pellet by ensuring that the polymer wets and penetrates the fiber and the fiber pores, results in a structural material with mechanical properties significantly superior to the prior art materials.

Throughout the prosecution of the Group I patents, the applicants continued to distinguish the claimed inventions from prior art references in the same manner. Thus, in the prosecutions leading to the patents at issue in this case, the applicants variously characterized their invention (including claims that referred only to the composition), by stating that the invention consists of “a resin and fiber composite thermoplastic pellet,” that the invention “resides in a material that is a thermoplastic pellet,” that the “recited invention is a composite thermoplastic pellet,” and that the “manufacture of the pellet is important in obtaining the final structural properties of the composite member.”

Those statements serve to limit the scope of the applicants’ claimed subject matter. The statements about pelletizing were global—they applied to all the claims of the patent—and thus they served to limit all the claims.

Andersen challenges the district court's form-limited claim construction of the Group I claims on several additional grounds. First, Andersen argues that the court's construction violates the doctrine of claim differentiation. That doctrine is based on "the common sense notion that different words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope." Karlin Tech. Inc. v. Surgical Dynamics, Inc., 177 F.3d 968, 971-72 (Fed. Cir. 1999). "To the extent that the absence of such difference in meaning and scope would make a claim superfluous, the doctrine of claim differentiation states the presumption that the difference between claims is significant." Tandon Corp. v. U.S. Int'l Trade Comm'n, 831 F.2d 1017, 1023 (Fed. Cir. 1987).

Andersen argues that because the Group I patents claim pellets, linear extrudates, and composites (or composite compositions), the third category must be assumed to be different from the first two, and thus the composite composition claims must not be limited to pellets and linear extrudates. That inference would be a plausible one in the absence of evidence to the contrary, but here there is powerful evidence to the contrary, as we have discussed. In such cases, we have held that "the written description and prosecution history overcome any presumption arising from the doctrine of claim differentiation." Kraft Foods, Inc. v. Int'l Trading Co., 203 F.3d 1362, 1368 (Fed. Cir. 2000); see also Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1480 (Fed. Cir. 1998) ("[T]he doctrine of claim differentiation can not broaden claims beyond their correct scope, determined in light of the specification and the prosecution

history and any relevant extrinsic evidence. . . . [C]laims that are written in different words may ultimately cover substantially the same subject matter.”).

A further reason for not applying the doctrine of claim differentiation in this case is that the Group I claims are not otherwise identical but for the references to pellets, linear extrudates, and composite compositions, and thus the district court’s construction does not make the composite composition claims redundant. Instead, there are numerous other differences varying the scope of the claimed subject matter. For example, in the ’611, ’607, and ’334 patents, the pellet and linear extrudate claims all require that the composition consist of “less than about 8 wt % water,” while the composite composition claims require “less than about 10 wt % water.” The composite composition claims also include an additional limitation with regard to the amount of the impurities in the mixture, a limitation that is not found in the pellet and linear extrudate claims. Moreover, although Andersen argues that the district court’s claim construction would render the ’612 patent superfluous, that is not so, as the composite composition claims of each of the other Group I patents contain limitations not found in the ’612 patent claims.

Even though the “composite composition” claims, as construed by the district court, cover substantially the same subject matter that is covered by the “pellet” and “linear extrudate” claims, overlapping patent claims are not unusual, and the overlap does not require us to construe the “composite composition” claims to cover subject matter that differs from the subject matter covered by the other two sets of claims. Under these circumstances, the doctrine of claim differentiation does not require rejection of the district court’s construction of the claims.

Andersen also argues that the district court's claim construction is contrary to a 1996 restriction requirement issued with respect to the application that led to the '607 patent, in which the patent examiner found the "pellet and composite" claims to be patentably distinct from the "composition" claims. That distinction, which was based on the examiner's perception that the two groups of claims "are related as mutually exclusive species in intermediate-final product relationship," is not one that is pressed by Andersen, and it is unclear how the difference between "composite" and "composition," even if one could be discerned, furthers Andersen's argument. The argument based on the restriction requirement therefore does not support Andersen's position.

In sum, a review of the text and the prosecution history of the Group I patents leads us to agree with the district court that the "composite compositions" of those patents must be in the form of either pellets or the linear extrudate from which pellets may be cut.

B

The two Group II patents are U.S. Patent Nos. 5,486,533 ("the '553 patent") and 5,539,027 ("the '027 patent"). While the Group I patents claim intermediate composites capable of being extruded into structural members, the Group II patents claim the extruded structural members themselves. As with the Group I patents, the parties agree that the disputed term (in this case, "composite structural member") has the same meaning in both Group II patents. A representative claim is claim 1 from the '027 patent:

1. A wood-thermoplastic polymer composite structural member, suitable for use as a replacement for a wood structural member, which

thermoplastic composite structural member comprises an extrudate having a Young's modulus of greater than 500,000, and a coefficient of thermal expansion less than 3×10^{-5} in/in-° F. and which composite member comprises a continuous organic phase comprising polyvinyl chloride and, dispersed in the continuous phase, 30-50 wt-% of a wood fiber having an aspect ratio of at least about 2 to provide structural properties to the composite.

Fiber urged the district court to construe the term "composite structural member" consistently with the term "composite composition" in the Group I patent claims, to mean an extrudate made from a composite composition that is first formed into a solid pellet or a linear extrudate from which the pellet can be made, and is then re-extruded to form the member. The district court disagreed. The court concluded that the Group II patents are limited to a product, not a product made by a particular process, and that the specification and prosecution history of the Group II patents do not limit the claims in the manner urged by Fiber. Accordingly, the court construed the term "composite structural member" as "a polymer and wood article having load bearing capacity, which can be obtained through a direct extrusion process or made from a composite material without a particular form."

As the district court correctly noted, the Group II claims do not contain an explicit process-based limitation. We therefore look to the specification and the prosecution history of the Group II patents to determine whether the claim language should be construed as containing any such limitation, as Fiber contends.

1

The common specification of the two Group II patents incorporates much of the same material that is found in the common specification of the Group I patents. Like the Group I specification, the Group II specification refers to pelletization as part of the

process of making the composite composition from which the claimed composite structural members are constructed. Andersen asserts that nothing in the specification indicates that the structural members are defined by reference to the process by which they are made, but a close reading of the specification suggests otherwise.²

According to Andersen, the novelty of the inventions of the Group II patents lies in the physical properties of those inventions. The specification, however, indicates that the claimed physical properties of the composite structural members are attributable to the process that is used to make them, a process that includes pelletization.

As an initial matter, the specification states that

the successful manufacture and physical properties of the polyvinyl chloride/wood fiber composite requires intimate mixing and intimate contact between the polymeric material and the fiber. During the mixing of the polymer with wood fiber, the product attains control over moisture content, fiber alignment and materials proportions that achieves the manufacture of the superior wood replacement composite.

'553 patent, col. 2, ll. 59-67; '027 patent, col. 3, ll. 3-11. The specification then states that the "primary requirement" for the thermoplastic composite material is that it "retain sufficient thermoplastic properties to permit melt blending with wood fiber, permit

² Andersen's first argument with respect to the Group II claims is that Fiber waived its right to challenge the construction of those claims because it did not object to the trial court's jury instructions on that ground. There is no merit to that contention. The district court had previously granted summary judgment of infringement as to the Group II claims based on a claim construction that Fiber vigorously contested. Accordingly, the trial proceedings as to the Group II claims were limited to the issues of willful infringement and validity. The district court's claim construction was therefore law of the case for purposes of the trial. Because Fiber's position at trial was that the Group II claims were invalid if construed according to the district court's construction, it would have been pointless (and futile) for Fiber's counsel to remind the district court at trial that Fiber adhered to its position that the court's construction of the Group II claims was incorrect and that summary judgment should not have been granted to Andersen on those claims.

formation of pellets, and to permit the composition material or pellet to be extruded or injection molded in a thermoplastic process forming the rigid structural member.” ’027 patent, col. 4, ll. 1-7; ’553 patent, col. 4, ll. 1-7.

Referring to the process of “composition and pellet manufacture,” the specification states that “[i]n the manufacture of the composition and pellet of the invention, the manufacture and procedure requires two important steps. A first blending step and a second pelletizing step.” ’553 patent, col. 5, ll. 63-67; ’027 patent, col. 5, ll. 64-67. Those steps, according to the specification, are necessary to obtain the “intimate mixing” that the specification identifies as critical to the strength of the composite and, ultimately, the claimed structural members. See ’553 patent, col. 6, ll. 1-22; ’027 patent, col. 6, ll. 1-22. In the pelletizing step, the specification explains, the blended materials are introduced into an extruder that has orifices and a cross-sectional shape “leading to the production of a regular pellet,” and a rotational knife that results “in the desired pellet length.” ’553 patent, col. 7, ll. 7-13; ’027 patent, col. 7, ll. 7-13. The “pellet materials of the invention” are then “introduced into an extruder and extruded into the structural members of the invention.” ’553 patent, col. 7, ll. 14-16; ’027 patent, col. 7, ll. 14-16.

Andersen contends, and the district court ruled, that the specification describes a preferred embodiment of the materials used to make the structural members, not an essential step in the manufacture of the structural members claimed in the Group II inventions. The specification, however, uses language of requirement, not preference, when it states that the manufacture of the composition and pellet of the invention “requires two important steps,” one of which is the pelletizing step. And the

specification attributes the “superior properties of the structural members” largely to “the nature of the pellet set forth [in a table listing ‘pelletizer results’].” ’553 patent, col. 10, ll. 31-34; ’027 patent, col. 10, ll. 26-29. The specification continues:

We believe the Table clearly shows that the polyvinyl chloride and wood fiber can be combined at various proportions under a variety of temperature conditions to produce a regular pellet. The pellet then can be used in further extrusion processes to form a useful extruded structural member useful in the manufacture of environmentally sensitive windows and doors.

’553 patent, col. 10, ll. 35-42; ’027 patent, col. 10, ll. 30-37. Although the specification refers to the properties of the “preferred pellet of the invention” described in the table of pelletizer results, ’553 patent, col. 9, ll. 44-45; ’027 patent, col. 9, ll. 39-40, the same language is used in the Group I specification to describe the same results. We interpret the language the same way in both specifications—as a reference to the types of pellets having the most advantageous properties, not as a statement that the pelletizing step is merely a preferred method of producing the composite composition. Like the Group I specification, the Group II specification thus supports Fiber’s contention that the pelletizing step is not just one possible method of manufacturing the products claimed in the Group II patents, but is an essential step in the process and thus a necessary limitation of the claims.

It is true that we have warned against importing limitations from the specification into the claims absent a clear disclaimer of claim scope. See Gillette Co. v. Energizer Holdings, Inc., 405 F.3d 1367, 1375 (Fed. Cir. 2005). We have also recognized the difficulty faced by district courts in trying to walk that tightrope. See Phillips, 415 F.3d at 1323 (“the distinction between using the specification to interpret the meaning of a claim and importing limitations from the specification into the claim can be a difficult one to

apply in practice”). Here, if the only intrinsic evidence of restriction were derived from the specification, the issue of claim construction would be a close one because the common specification of the Group II patents does not define and limit the invention as explicitly as does the specification of the Group I patents. However, we conclude that the prosecution history of the Group II patents definitively resolves the question with a clear disavowal and confirms the role of pelletization in the production of the claimed structural members.

2

During the prosecution of the application that ultimately led to the issuance of the two Group II patents, the examiner rejected claims akin to the Group II claims based on several prior art references. In response to the examiner’s citation of a method patent to Miani, the applicants argued that the composite of Miani is “directly extruded and kept hot during the entire operation. Post extrusion milling is also required to obtain a final useful shape. This type of composite is not the composite taught in the present invention.” In contrast, the applicants stated, “the presently claimed composite is prepared by mixing the melted polymer and wood pulp, forming pelletized material, cooled, then extruded. This affords a smooth structural member without any evidence of polyvinyl chloride degradation.”

That statement clearly identifies “the presently claimed composite,” i.e., the composite that is used to make the claimed structural members, as being prepared through a process that includes “forming pelletized material.” By distinguishing Miani in that manner, the applicants clearly disclaimed structural members made through a direct extrusion process. See N. Am. Container v. Plastipak Packaging, Inc., 415 F.3d

1335, 1345 (Fed. Cir. 2005) (to overcome an obviousness rejection, applicant distinguished his invention based on prior art disclosing “slightly concave” inner walls; the “inescapable consequence of such an argument is that the scope of applicant’s claims cannot cover inner walls that are ‘slightly concave’”); Seachange Int’l, Inc. v. C-Cor Inc., 413 F.3d 1361, 1373 (Fed. Cir. 2005) (“Where an applicant argues that a claim possesses a feature that the prior art does not possess in order to overcome a prior art rejection, the argument may serve to narrow the scope of otherwise broad claim language.”); Rheox, Inc. v. Entact, Inc., 276 F.3d 1319, 1325 (Fed. Cir. 2002) (“Explicit arguments made during prosecution to overcome prior art can lead to narrow claim interpretations”). The prosecution history thus provides strong support for Fiber’s argument that the Group II patent claims should be narrowly construed as limited to products made by the process described in the specification, rather than covering all composite structural members, regardless of the process by which they were produced.

Andersen has not offered a plausible explanation for the applicants’ statement consistent with a claim construction that does not require pelletization. In its brief, Andersen argues that the quoted portion of the prosecution history does not constitute a disclaimer of claim scope because the applicants distinguished the Miani reference on other grounds as well. While it is true that the applicants invoked several grounds for distinguishing Miani, that does not undercut the force of the applicants’ statement that, unlike the composite of Miani, the composite used to make the applicants’ claimed structural members is made from a process that includes a pelletization step.

An applicant’s invocation of multiple grounds for distinguishing a prior art reference does not immunize each of them from being used to construe the claim

language. Rather, as we have made clear, an applicant's argument that a prior art reference is distinguishable on a particular ground can serve as a disclaimer of claim scope even if the applicant distinguishes the reference on other grounds as well. See Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1347 (Fed. Cir. 1998) ("While it is true that the applicants went on to specifically distinguish each claim, or group of claims . . . from [the prior art reference] on more narrow grounds, that does not eliminate global comments made to distinguish the applicants' 'claimed invention' from the prior art."); Gentry Gallery, Inc. v. Berklene Corp., 134 F.3d 1473, 1477 n.* (Fed. Cir. 1998) (when applicant distinguishes a reference on multiple grounds, "any of those grounds may indicate the proper construction of particular claim terms").

At oral argument, Andersen responded to questions about that portion of the prosecution history by focusing on an amendment made to the claims after the examiner cited Miani. In that amendment, the applicants added the words "having an aspect ratio of at least about 2" to the pertinent claims. Andersen's argument based on the amendment, however, is unpersuasive. The applicants invoked the new language to distinguish two other prior art references cited by the examiner, patents to Fujita and Hopperdietzel ("Fujita teaches a mixture of a polyvinyl chloride and wood flour not a fiber with an aspect ratio as claimed"; the wood fibers of the invention "commonly have an aspect ratio of at least about 2, much larger than the Hopperdietzel fibers"). The applicants never invoked the "aspect ratio" amendment to distinguish Miani, but relied on the process distinction, including the pelletization step, to distinguish that reference.

A further reason for construing the Group II patents narrowly is that the two groups of patents trace their origins to closely parallel applications filed on the same day in 1992. One of the applications was to an “Advanced Polymer Wood Composite,” while the other was to “Advanced Polymer/Wood Composite Structural Members.” A comparison of the two applications makes clear that the composite referenced in each application was the same. While it is, of course, possible for applications that begin life as siblings to follow different courses as a result of later events such as amendments and disclaimers, there is no evidence of any such events in this instance that would suggest giving the two sets of claims a strikingly different scope. To the contrary, the Group I specification makes it clear that the claimed composite composition would be “used in the form of a linear extrudate or thermoplastic pellet to manufacture structural members,” ’607 patent, abstract, i.e., the structural members claimed in the Group II patents. As noted above, the Group I specification states that the “successful manufacture” of those structural members “requires the preliminary manufacture of the polyvinyl chloride wood fiber composite in the form of a pellet.” Id., col. 3, ll. 1-4. Moreover, the portions of the two specifications that deal with the manufacture of the pelletized composite that is used to make the structural members are identical. Read together, the specifications thus make clear that the inventors regarded the pelletization process as an essential step in producing the ultimate products—the structural members that were claimed in the Group II patents.

It is generally true, as Andersen argues, that product claims are not limited to the methods of manufacture disclosed in the specification and that “[t]he method of

manufacture, even when cited as advantageous, does not of itself convert product claims into claims limited to a particular process. . . . A novel product that meets the criteria of patentability is not limited to the process by which it was made.” Vanguard Prods. Corp. v. Parker Hannifin Corp., 234 F.3d 1370, 1372-73 (Fed. Cir. 2000). However, process steps can be treated as part of a product claim if the patentee has made clear that the process steps are an essential part of the claimed invention. For example, in Southwall Technologies, Inc. v. Cardinal IG Co., 54 F.3d 1570 (Fed. Cir. 1995), this court held that a claim to a sputter-deposited dielectric layer had to be read as limited to a dielectric prepared by a particular process. Because the prosecution history demonstrated that the applicant had defined its invention restrictively, as limited to a dielectric layer prepared by a one-step process, the court held that the claim language, even though reciting a product, had to be interpreted as excluding a sputter-deposited dielectric layer formed by a two-step process. Id. at 1576. In like manner, we construe the asserted claims of the Group II patents to be limited to a composite structural member in which the preparation of the composite composition includes an intermediate step of pelletization or linear extrusion. We therefore reverse the summary judgment of infringement of the Group II patents. Because we reverse as to infringement of the Group II patents, we do not address Andersen’s arguments that the infringement of those patents should have been held to be willful, and that the district court should have issued an injunction against further infringement of the Group II claims.

II

After the district court issued its construction of “composite composition” as excluding structural members, Andersen modified its theory of infringement to allege that Fiber’s “repro”—rejected railing parts that are used as an ingredient in the manufacture of new parts—infringed the Group I patents. There was some confusion as to whether repro referred to the rejected railing parts themselves or to the substance made by regrinding those rejected parts. Ultimately, however, the district court concluded that it did not matter, as neither satisfied the definition of “composite composition” as limited to pellets or linear extrudates.

Andersen now argues that, even under the district court’s claim construction, the repro infringes the Group I patents. We disagree. Based on the evidence before it at the summary judgment proceedings, the district court properly ruled as a matter of law that repro is neither a pellet nor a linear extrudate.

Fiber’s expert asserted that repro was either “small chunks” or “granular material,” while Andersen’s expert stated that it was “chip-like” or “pellet-like.” The district court concluded that no rational trier of fact could find that repro is linear, a term that the court defined as “following a straight course,” or “being or going in a straight direction.” The court therefore granted summary judgment of noninfringement.

Andersen concedes that repro does not consist of pellets. Instead, it contends that repro is in the form of a linear extrudate. It bases that argument principally on the statement of its expert that repro is “linear.” The expert’s opinion on that issue, however, was based on his conclusion that repro could be regarded as “linear” because it “has a length to it.” Yet that definition is plainly overbroad, as every physical object

has some “length.” Andersen’s reliance on a single statement by Fiber’s expert that repro is “linear” is similarly flawed. From the context of that statement, it is clear that Fiber’s expert was referring to Andersen’s idiosyncratic definition of “linear,” which bears no relation to the meaning of “linear extrudate” as used in the claims. Using Andersen’s definition, the expert acknowledged that repro could be regarded as linear because it “has some length.” Under the narrower definition of “linear” that the trial court adopted, and with which we agree, the court properly concluded that a jury could not find that repro is a linear extrudate. We therefore uphold the court’s entry of summary judgment of noninfringement on the Group I patent claims.

III

At trial, the jury found by special verdict that the Group II patents are not invalid for failure to comply with the written description and enablement requirements. On cross-appeal, Fiber argues that the district court improperly denied its motions for JMOL on those issues. Fiber’s arguments fall short of satisfying the heavy burden required to overturn the jury’s verdicts. See, e.g., Cordis Corp. v. Medtronic AVE, Inc., 339 F.3d 1352, 1364 (Fed. Cir. 2003).

The Group II patents claim structural members with a particular level of tensile strength—a Young’s modulus rating of greater than 500,000 (in the case of claim 22 of the ’553 patent, greater than 750,000). Michael Deaner, one of the inventors, testified at trial that in the experiments leading up to the invention, the inventors did not obtain results with a modulus value of greater than 1.2 million. Fiber thus argues that, without that upper limit, the patents necessarily cover more than they enable and more than the inventors actually invented. Fiber makes essentially the same argument with regard to

the coefficient of thermal expansion, although with respect to that limitation, the patents recite an upper limit but not a lower limit.

That assertion is contrary to our case law. As we have said,

[o]pen-ended claims are not inherently improper; as for all claims their appropriateness depends on the particular facts of the invention, the disclosure, and the prior art. They may be supported if there is an inherent, albeit not precisely known, upper limit and the specification enables one of skill in the art to approach that limit.

Scripps Clinic & Research Found. v. Genentech, Inc., 927 F.2d 1565, 1572 (Fed. Cir. 1991). Mr. Deaner testified that a person of skill in the art would recognize that the upper limit of the Young's modulus of the structural member would lie somewhere between the Young's modulus of the wood fiber and that of the polymer used in the composition, and that a person of skill in the art would be fully enabled to practice the invention based on the specification's disclosure. The jury was free to credit that testimony in reaching its conclusion that the invention was adequately described and enabled. We therefore uphold the jury's verdicts on the issues of enablement and written description.³

In summary, we affirm the judgment of the district court in all respects except with regard to the infringement of the Group II patents. As to that issue, we reverse the grant of summary judgment of infringement and remand to the district court for any further proceedings that may be necessary.

Each party shall bear its own costs for this appeal and cross-appeal.

³ As part of its cross-appeal, Fiber argues that if the district court's construction of the Group II patent claims is correct, those claims are anticipated. Because we have reversed the district court's construction of those claims, we do not address that aspect of Fiber's cross-appeal, which Fiber characterizes as conditional.

AFFIRMED IN PART, REVERSED IN PART, and REMANDED.