United States District Court,
W.D. Wisconsin.

THE FIRST YEARS, INC. and Learning Curve Brands, Inc,
Plaintiffs.
v.
MUNCHKIN, INC,
Defendant.

No. 07-cv-558-bbc

April 15, 2008.

Background: Patent owner filed action against competitor alleging infringement of "sippy cup" patents. Court set forth to construe disputed claims.

Holdings: The District Court, Barbara B. Crabb, J., held that:
(1) term, "size," meant physical dimensions;
(2) phrase, "quasi-static conditions," meant nearly steady internal and external pressure and temperature;
(3) phrase, "fresh water," was not amenable to construction;
(4) expert who had doctoral degree related to mechanical engineering and extensive experience in complex fluid flow, but did not have experience in polymer processing, could offer testimony on general issues related to fluid flow and surface tension;
(5) phrase, "natural state," could be considered to be insolubly ambiguous;
(6) phrase, "interlocking features," did not require that first and second lip remain in contact when lid and cup were fully engaged;
(7) phrase, "nominal radial interference," did not permit first and second lips to project in same direction or require ongoing contact between first and second lip; and
(8) radial projection of first lip did not need to project outwardly in direction that was perpendicular to longitudinal axis of lid, and radial projection of second lip did not need to project inwardly in direction that was perpendicular to longitudinal axis of cup body.

Ordered accordingly.

6,976,604, 7,185,784. Construed.

Thomas Patrick Heneghan, Wendy M. Ward, Michael Best & Friedrich LLP, Madison, WI, for Plaintiffs.

James Cole, Jaime Hochhausen, Josephine Benkers, Quarles & Brady, LLP, Madison, WI, John L. Knoble, Tod A. Kupstas, Knoble Yoshida & Dunleavy, LLC, Philadelphia, PA, for Defendant.

OPINION and ORDER

BARBARA B. CRABB**, District Judge.**

This civil case for patent infringement is before the court for construction of certain claim terms in two of plaintiffs' patents, United States Patent No. 6,976,604 (the '604 patent), entitled "restricting flow in drinking containers," and U.S. Patent No. 7,185,784 (the '784 patent), entitled "drinking containers." A claims construction hearing was held on March 7, 2008. The parties dispute the meaning of a handful of terms included in each patent.

From the parties' arguments at the hearing and their prehearing briefs and from the patent claims, patent specification and prosecution history, I conclude that the jury would benefit from having a judicial construction of the following disputed terms, which should have the following construction:

-> the term "size" means "physical dimensions."

-> the term "quasi-static conditions" means "nearly steady internal and external pressure and temperature."

Although the parties requested construction of several other terms, their request will be denied. First, the following disputed terms will not be construed because the parties failed to show that they would benefit from their proposed constructions: "interlocking features," "lips," "a first lip projecting radially outward from the lid," "a second lip projecting radially inward from the outer surface of the rim of the main body" and "nominal radial interference between the first and second lips." Second, the terms "fresh water" and "natural state surface energy" will not be construed because they are too indefinite to construe.

OPINION

[1] [2] [3] [4] The construction of the claims at issue in a patent infringement case is a legal determination to be made by the court. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed.Cir.1996); Markman v. Westview Instruments, 52 F.3d 967, 979 (Fed.Cir.1995) (en banc), *aff'd,* 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). In interpreting an asserted claim, the court should look first to the so-called intrinsic evidence of record: the claims themselves, the patent specification and the prosecution history. Teleflex, Inc. v. Ficosa North America Corp., 299 F.3d 1313, 1325 (Fed.Cir.2002). Construction of the disputed terms begins with the language of the claims. Generally, claim terms are given their "ordinary and customary" meaning, which is the meaning the term would have to a person of ordinary skill in the art as of the filing date of the patent application. Phillips v. AWH Corp., 415 F.3d 1303, 1313 (Fed.Cir.2005); Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1342 (Fed.Cir.2001). In addition to considering the ordinary meaning of a claim term, the court must consider the context of the surrounding words of the claim when construing the term. ACTV, Inc. v. Walt Disney Co., 346 F.3d 1082, 1088 (Fed.Cir.2003).

[5] Although in some cases the "ordinary and customary" meaning of claim language may be readily apparent even to lay judges, in many instances, a court must proceed beyond the bare language of the claims and examine the patent specification. Phillips, 415 F.3d at 1314-15. The specification has been called "the single best guide to the meaning of a disputed term." Vitronics, 90 F.3d at 1582. It is in the specification that the patentee provides a written description of the invention that allows a person of ordinary skill in the art to make and use the invention, Markman, 52 F.3d at 979, and at times even "set[s] forth an explicit definition for a claim term that could differ in scope from that which would be afforded by its ordinary meaning."

Rexnord, 274 F.3d at 1342; Vitronics, 90 F.3d at 1582. The patent specification may be used to give meaning to claim terms, but it should not be used to broaden or narrow the invention that is laid out specifically in the patent's claims. E.I. du Pont de Nemours & Co. v. Phillips Petroleum Co., 849 F.2d 1430, 1433 (Fed.Cir.1988); *see also* Vitronics, 90 F.3d at 1582 (when term is not specifically defined in claims, it is necessary to review specification to determine whether inventor uses term inconsistently with its ordinary meaning).

[6] [7] After considering the claim language and the specification, a court may consider the final piece of intrinsic evidence, the patent's prosecution history. Vitronics, 90 F.3d at 1582. "[S]tatements made during the prosecution of a patent may affect the scope of the invention." Rexnord, 274 F.3d at 1343. Generally, the prosecution history is relevant if a particular interpretation of the claim was considered and specifically disclaimed during the prosecution of the patent. Warner-Jenkinson Co., Inc. v. Hilton Davis Chemical Co., 520 U.S. 17, 30, 117 S.Ct. 1040, 137 L.Ed.2d 146 (1997); Vitronics, 90 F.3d at 1582-83.

[8] [9] Finally, a court may consult extrinsic evidence, such as dictionaries, treatises and expert testimony for background information and to "shed useful light on relevant art." Phillips, 415 F.3d at 1317 (internal citations omitted). In general this type of evidence is less reliable than intrinsic evidence in determining the meaning of claim terms and is "unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence." Id. at 1318-19.

A. ***The*** '604 Patent

The '604 patent relates to restricting flow in children's spill-resistant drinking containers, commonly known as "sippy cups." To prevent leakage, some sippy cups are equipped with valves that prevent liquid from flowing until suction is applied. Traditionally, such valves involve a tradeoff between flow rate during drinking and leak rate when the cup is not in use. The invention disclosed in the '604 patent addresses this problem by restricting flow rate without using a valve. Instead, the sippy cup is equipped with holes small enough to restrict leak rate but large enough to allow acceptable flow rate for drinking.

The meaning of the following terms used in the '604 patent is disputed: "size," "quasi-static conditions," "fresh water" and "natural state surface energy." The terms "quasi-static conditions," "size" and "fresh water" appear in claim 1, which discloses:

1. A drinking container comprising

a main body defining an interior cavity accessible through an opening at an upper end of the main body; and

a removable lid secured to the main body at its upper end to cover the opening and enclose, together with the main body, the interior cavity to hold a liquid;

the lid having an extended drinking spout sized to be received within a human mouth and defining multiple unrestricted holes providing open hydraulic communication between exterior surfaces of the container and the interior cavity, for dispensing liquid disposed proximate inner ends of the holes in response to a vacuum applied at outer ends of the holes;

the holes having a **size** selected to permit less than 3 drops of leakage of **fresh water** from the interior

cavity through the holes over a 10 second interval under **quasi-static conditions** with a static head of 2.0 inches (51 millimeters) of **fresh water** at the inner ends of the holes and no vacuum applied to the spout with the container inverted, and to dispense an aggregate of at least 1.3 gram of **fresh water** from the spout over a 10 second interval with a static vacuum of 0.27 Bar below atmospheric pressure applied at the outer ends of the holes and a static head of 2.0 inches (51 millimeters) of **fresh water** at the inner ends of the holes with the container inverted.

"Size" and "fresh water" appear also in claims 33 and 58:

33. The drinking container of claim 32, wherein the holes are of a **size** selected to cause **fresh water** in the interior cavity to form a stable meniscus at the holes under a static pressure head of 2.0 inches (51 millimeters) of **fresh water,** with the container inverted and atmospheric pressure applied to the outer ends of the holes.

58. The lid of claim 57 wherein the holes are of a **size** selected to cause **fresh water** at the inner ends of the holes to form a stable meniscus at the holes under a static pressure head of 2.0 inches (51 millimeters) of **fresh water,** with the lid inverted such that the spout extends downward and atmospheric pressure applied to the outer ends of the holes.

The term "natural state surface energy" appears in claims 31, 56 and 78:

31. The drinking container of claim 1, wherein lid material defining the holes has a **natural state surface energy** of less than about 35 dynes per centimeter.

56. The drinking container of claim 32, wherein lid material defining the holes has a **natural state surface energy** of less than about 35 dynes per centimeter.

78. The drinking container of claim 57, wherein lid material defining the holes has a **natural state surface energy** of less than about 35 dynes per centimeter.

1. " ***Size*** "

Plaintiffs' construction: physical dimensions

Defendant's construction: diameter as measured within a plane that is transverse to flow path

[10] The parties' dispute regarding this term relates to which dimensions of a hole may be measured to determine the hole "size" in claims 1, 33 and 58. Defendant contends that "size" should be limited to a two-dimensional measurement of the transverse diameter of a hole; plaintiffs take the position that all physical dimensions of a hole may be measured, or, as plaintiffs indicated at the claim construction hearing, that no construction of "size" is necessary. Transcript, dkt. # 36, at 9, ln. 4.

In claims 1, 33 and 58, the hole "size" is "selected" to bring about certain results: "size selected to permit less than 3 drops of leakage ..." (claim 1); "size selected to cause fresh water at the inner ends of the holes to form a stable meniscus ..." (claim 33); "size selected to cause fresh water at the inner ends of the holes to form a stable meniscus ..." (claim 58). Thus, hole "size" is defined in terms of its ability to cause resistance to leakage or the formation of a stable meniscus under the conditions listed in the claims.

Defendant cites several passages within the specification for its position that the only dimensions of a hole that were intended to bring about the listed results are the transverse diameter of the hole. Although the passages emphasize that the transverse diameter is expected to have an effect relevant to the things a hole size is "selected" to do, none of the passages excludes the possibility that other dimensions of the hole may be important as well. ' 604 pat., col. 3, lns. 7-11 ("The holes each have a major lateral extent perpendicular to a flow path along the hole, of less than 0.025 inch"); '604 pat., col. 7, lns. 25-35 ("[r]esistance to leakage will also depend on fluid viscosity and lateral hole dimensions .... circular holes 34a of diameter less than about 0.025 inch ... acceptably resist leakage."). Instead, the specification anticipates that hole dimensions other than the transverse diameter may have an effect on resistance to leakage and forming a meniscus: "frustoconical holes may also be employed.... It is believed that the *inward slope* of [frustoconical] hole wall 76 aids in the development and support of a stable fluid meniscus," '604 pat., col. 9, lns. 15-24 (emphasis added), and that the "meniscus of fluid [that] develop[s] across the holes ... holds back the static weight of the liquid ... due to surface tension in the meniscus." ' 604 pat., col. 5, lns. 16-18.

Defendant's attempt to limit the hole size to the transverse diameter is not supported by the specification and will be rejected. Plaintiffs' construction recognizes the possibility that any physical dimension may be relevant to determining whether a hole size causes resistance to leakage or the formation of a stable meniscus as required by the claims. Whether this is true or not is a question for a later stage of this litigation. For now, plaintiffs' construction will be adopted.

Court's construction: physical dimensions

2. " *Quasi-static conditions* "

Plaintiffs' construction: a static head of 2.0 inches of fresh water at the inner ends of the holes and no vacuum applied to the spout from the outer ends of the holes after the container is inverted and reaches nearly steady state conditions

Defendant's construction: environmental conditions that are essentially constant for the indicated duration

[11] Claim 1 discloses a container with "holes having a size selected to permit less than 3 drops of leakage of fresh water ... over a 10 second interval under quasi-static conditions ..." The parties agree that "quasi-static" could be defined as "nearly steady." Tr., dkt. # 36, at 70, lns. 14-19. However, they disagree about which conditions must remain "nearly steady" during the three-drop test. Plaintiffs contend that the only conditions that must remain nearly steady are "a static head" and "no vacuum applied to the spout ..." Defendant contends that environmental conditions in general should remain nearly steady.

Plaintiffs' proposed construction simply repeats the surrounding claim language, adding only the phrase "from the outer ends of the holes." To construe the term in this way would make it redundant and therefore unnecessary. Plaintiffs' true concern is that the term should be limited to the conditions stated in the claim, with a minor tweak. In essence, plaintiffs ask the court to construe the phrase "under quasi-static conditions *with* a static head ... and no vacuum applied" to mean "under the quasi-static conditions *limited to* a static head ... and no vacuum applied to the spout [from the outer ends of the holes]." The first problem with plaintiffs' construction is that it renders superfluous the term "quasi-static conditions." Merck & Co. v. Teva Pharma. USA, Inc., 395 F.3d 1364, 1372 (Fed.Cir.2005) (claim construction should not render claim terms superfluous). If the conditions listed are the only conditions that must be quasi-static, the separate term is

unnecessary. The term "quasi-static conditions" should not be construed as simply another way of describing the conditions listed, but rather as a separate limitation to the claim. Therefore, plaintiffs' construction is too narrow.

On the other hand, defendant's initial proposal that all "environmental conditions" be considered "quasi-static conditions" is too broad. At the claim construction hearing, defendant agreed to a narrower construction, explaining that their principal concern is that the internal and external pressure of the cup should remain nearly steady. Tr., dkt. # 36, at 69, lns. 19-25. The specification supports such a construction, recognizing that a "sub-atmospheric" pressure applied to the outer end of the hole can affect water flow. '604 pat., col. 7, lns. 41-45. The abstract says that the holes allow flow "when suction is applied" and claim 1 itself includes limitations that reflect the effect of a vacuum and atmospheric pressure on water flow. In addition, both plaintiffs and defendant agree that the three-drop test in claim 1 should be done at stable temperatures. Tr., dkt. # 36, at 12, lns. 7-13; Dft.'s Resp. Br., dkt. # 28, at 7. Because it would be appropriate to require that the test disclosed in claim 1 be performed at nearly steady pressure and temperature, I construe the term "quasi-static conditions" to mean "nearly steady internal and external pressure and temperature"

Court's construction: "nearly steady internal and external pressure and temperature"

3. ***Terms that defendant contends are indefinite***

The last two disputed terms of the '604 patent are "fresh water" and "natural state surface energy." Defendant contends that both of the terms are too indefinite to be construed. Plaintiffs contend that the terms can be construed and offers constructions for each term.

[12] [13] The standard for indefiniteness is high. "If the meaning of the claim is discernible, even though the task may be formidable and the conclusion may be one over which reasonable persons will disagree," the claim is sufficiently clear to avoid indefiniteness. Exxon Research and Engineering Co. v. United States, 265 F.3d 1371, 1375 (Fed.Cir.2001). A claim is indefinite only if the "claim is insolubly ambiguous, and no narrowing construction can properly be adopted." Id.

[14] [15] The question of definiteness is tied to the question of validity. Honeywell International, Inc. v. International Trade Commission, 341 F.3d 1332, 1338-42 (Fed.Cir.2003) ("If the court determines that a claim is not 'amenable to construction,' then the claim is invalid as indefinite under 35 U.S.C. s. 112, para. 2."). It is for this reason that "close questions of indefiniteness" must be resolved in favor of the patent holder and claim language should be narrowed where possible to avoid indefiniteness. Exxon, 265 F.3d at 1375, 1380 ("we protect the inventive contribution of patentees, even when the drafting of their patents has been less than ideal."). However, the presumption of validity does not allow a court to "rewrite" a claim to preserve validity. Pfizer, Inc. v. Ranbaxy Laboratories Ltd., 457 F.3d 1284, 1292 (Fed.Cir.2006) (citations omitted). "[I]f the only construction that is consistent with the claim's language and the written description renders the claim invalid, then ... the claim is simply invalid." Rhine v. Casio, Inc., 183 F.3d 1342, 1345 (Fed.Cir.1999).

[16] [17] [18] Defendant has requested this court simply to "decline to provide a construction" for the terms it believes to be indefinite, or in the alternative, rule invalid those claims in which the indefinite terms appear. Neither alternative is appropriate. Determinations of definiteness arise from the court's role as interpreter of patent claims and are therefore questions of law. Atmel Corp. v. Information Storage Devices,

Inc., 198 F.3d 1374, 1378 (Fed.Cir.1999). At the stage of claim construction, the court may do more than decline to construe terms that appear indefinite; it may determine whether a claim is "amenable to construction" as a matter of law. Honeywell, 341 F.3d at 1338. This is not the same as a ruling of invalidity; however, such a conclusion is an automatic ground for a finding of invalidity upon a later motion for summary judgment. Id. General principles of claim construction apply to determinations of definiteness. Datamize, LLC v. Plumtree Software, Inc., 417 F.3d 1342, 1347-48 (Fed.Cir.2005).

a. "Fresh water"

Plaintiffs' construction: water suitable for drinking which does not contain appreciable levels of salts or dissolved solids

Defendant's construction: term is not definite enough to be construed

Defendant's concern with the term "fresh water" is that it is a critical element of certain tests designed to lay out the scope of certain claims, but the term itself has no discernible boundary.

1) Cases on indefiniteness and untestability

[19] A claim may be "insolubly ambiguous" and therefore indefinite if a claim that requires testing fails to give sufficient guidance for performance of any critical part of the test. Honeywell, 341 F.3d at 1340-42; *see also* Morton International, Inc. v. Cardinal Chemical Co., 5 F.3d 1464, 1470 (Fed.Cir.1993) (claim indefinite because claimed compound could not be identified by testing). In Honeywell, the Court of Appeals for the Federal Circuit considered an appeal from the International Trade Commission in which the claims at issue required yarn to demonstrate a specified "melting point elevation" at different stages of the production process. Id. at 1339. The Commission had found that the choice of sample preparation method was critical to discerning whether a particular process infringed the claims. Id. Although the specification defined the term "melting point elevation," there were four possible sample preparation methods that could be used to determine the "melting point elevation" and "neither the claims, the written description, nor the prosecution history" described any of the methods. Id.

The court of appeals noted that "without any reference to a sample preparation method, there are at least two possible constructions of the term" and concluded that "the intrinsic record does not compel a narrowing of the claim language to any one of the possible definitions." Id. The court turned next to the extrinsic evidence and compared the opposing expert testimony. The plaintiffs' expert asserted that one of ordinary skill in the art would conclude that one of the four methods, the "ball method," was the only proper method of measurement and that the other three were flawed; at the same time, the Commission cited articles describing the use of some of the other methods for preparing yarn samples. Id. at 1340.

The court considered three possible constructions: testing by plaintiffs' preferred method, by "any one" of the possible methods or by "all methods." Id. at 1340-42. "After reviewing the entire record regarding claim construction," the court concluded that "the claims are insolubly ambiguous, and hence indefinite, with respect to a required sample preparation method" because "with respect to each proffered construction, the claims, the written description, and the prosecution history fail to give us, as the interpreter of the claim term, any guidance as to what one of ordinary skill in the art would interpret the claim to require." Id. at 1340.

The reasoning in Honeywell does not apply simply because a test would involve a range of possibilities, so

long as the test can be "calculated or measured." Marley Mouldings Ltd. v. Mikron Industries, Inc., 417 F.3d 1356, 1360 (Fed.Cir.2005). In Marley, the disputed claim disclosed an "extrudable material" that required a range of 15-140 parts of wood flour by volume in relation to other parts of materials. Id. at 1357-58. The parties agreed upon the minimum volume of wood flour needed for infringement and their experts calculated volume using the weight and bulk density of each product, but the experts used different bulk density values to arrive at different volume calculations. (Defendant's expert used average bulk density for wood flour and the other materials and plaintiffs' expert used minimum bulk density for wood flour and the maximum values of the other materials). Id. at 1360. Citing Honeywell, the district court held the claims indefinite because the patent did not state which approach to use. Id. The Court of Appeals for the Federal Circuit reversed, explaining that, unlike in Honeywell, where persons of ordinary skill in the art understood that melting point determinations varied significantly with the method used, persons of experience in the field of the patent asserted in Marley "would understand how to measure parts by volume, and how to convert weight into volume from bulk density data." Id. The court indicated that the parties' differing measurements were related to whether a given sample of wood flour had been shaken to change its compactness and explained that that question related to infringement, not invalidity. Id.

2) The "fresh water" tests

[20] Claims 1, 33 and 58 describe tests that require the use of "fresh water": "the holes having a size selected to permit less than three drops of leakage of fresh water"(claim 1); "the holes are of a size selected to cause fresh water ... to form a stable meniscus" (claim 33); and "the holes are of a size selected to cause fresh water ... to form a stable meniscus" (claim 58). To determine the metes and bounds of claims 1, 33 and 58, a person of ordinary skill in the art must determine whether "fresh water" either drips less than three times (claim 1) or forms a stable meniscus (claims 33 and 58) under certain conditions. Under Honeywell, because "fresh water" is used in the context of a test that describes the scope of the claim, the term is indefinite if it cannot be determined with enough specificity to properly perform the tests described in claims 1, 33 and 58. Honeywell, 341 F.3d at 1340-42. Of course, if even a range of "fresh water" can be established, the term would be "measurable" and therefore sufficiently definite to construe. Marley, 417 F.3d at 1360.

With nothing in the claim language, specification or prosecution history to provide guidance on the meaning of "fresh water," the parties rely on expert testimony to lay out their positions. Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 631 (Fed.Cir.1987) (court may consider expert testimony in context of claim construction). As an initial matter, plaintiffs contend that defendant's expert fails to meet the level of a "person of ordinary skill in the art" because he does not have specialized experience in the field of polymer processing, which plaintiffs believe is necessary to evaluate a preferred embodiment of the '604 patent. I am skeptical that the term should be defined narrowly to require specialized experience related to a preferred embodiment, Stratoflex, Inc. v. Aeroquip Corp., 713 F.2d 1530, 1538 (Fed.Cir.1983) (noting that plaintiff's attempt to define level of ordinary skill in terms of experience with specialized materials was "but another effort to limit the prior art" and avoid inclusion of art of production of other materials). However, at this stage, I rely on the experts' testimony for the sole purpose of explaining scientific principles underlying the parties' dispute, not for evidence on the meaning of claim terms to a person of ordinary skill in the art. Phillips, 415 F.3d at 1318 (among other things, expert testimony can be useful to provide background on relevant scientific principles and technology). Therefore, the only question to address is whether the experts' testimony is admissible.

a) expert testimony

[21] [22] Before an expert's testimony will be allowed, it must be clear that he is a true "expert" within the meaning of Rule 702. In making this determination, the court must determine whether the expert is proposing to testify to scientific knowledge that will assist the trier of fact to understand or determine a fact in issue. Daubert v. Merrell Dow Pharmaceuticals, Inc., 509 U.S. 579, 592-593, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993). "This entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and of whether that reasoning or methodology properly can be applied to the facts in issue." Id.

Daubert requires the court to assess the qualifications of a proposed expert and the methods he proposes to use in formulating his opinions. However, neither Daubert nor Rule 704 imposes a rigid set of qualifications an expert must possess in order to qualify as a witness. The rule provides specifically that an expert may be qualified as a result of his "knowledge, skill, experience, training, or education." Fed.R.Evid. 702 (emphasis added). Both parties' experts have doctoral degrees related to mechanical engineering and extensive experience in complex fluid flow. There is no reason to believe that experience in polymer processing is necessary to provide expert testimony on general issues related to fluid flow and surface tension. Therefore, both parties' experts may offer expert opinions on those issues.

b) the meaning of fresh water

I now turn to the parties dispute regarding "fresh water." First, I conclude that setting an allowable range of solid content for the term "fresh water" is critical to performing the test for resistance to leakage described in claim 1, and the tests for formation of a meniscus described in claims 33 and 58. Plaintiffs concede implicitly that "fresh water" is not the same as "pure water." As defendant's expert explains and plaintiffs do not dispute, the amounts of different solids found in impure water can have an effect on surface tension. Tr., dkt. # 36, at 101, ln. 9-102, ln. 2. In the context of the ' 604 patent, the inventors believed that the surface tension at the holes was critical to resistance to leakage and the formation of a meniscus: "we theorize that such small holes each sufficiently resist leakage because they are small enough to enable a meniscus of fluid to develop across the holes that holds back the static weight of the liquid in the cup due to surface tension in the meniscus." '604 pat., col. 5, lns. 16-18.

In their first attempt to pinpoint a definition for the term "fresh water," plaintiffs offer the terms "drinking water" or "tap water" (somewhat interchangeably), contending that a person of ordinary skill in the art could perform the fresh water tests by using tap water or drinking water. Defendant appears to agree that a term such as "drinking water" or "tap water" is synonymous with "fresh water." Tr., dkt. # 36, at 124, lns. 18-21. However, defendant disagrees that the scope of the claims could be determined by testing with tap or drinking water because the variations in solid content in "drinking water" or "tap water" from different sources would have a significant effect on the tests. According to defendant's expert, the possible range of solid content in "tap water" varies enough to affect testing and could alter surface tension as much as 10-15%, enough to cause more or fewer drops to fall during the test described in claim 1. Tr., dkt. # 36, at 102, lns. 3-16. In addition, defendant's expert explains that a study among only four municipalities showed wide ranges of concentrations of various minerals and chemical impurities that have an impact on surface tension. Shedd Aff., dkt. # 29, at para. 31.

[23] Although plaintiffs' expert concedes that mineral content varies "from town to town," he denies that the variance would have a "material effect" on the results of the fresh water test described in claim 1. Tr., dkt. # 36, at 42, lns. 13-19. However, unlike defendant's expert, plaintiffs' expert does not bother to explain why. An opinion without foundation is inadmissible. General Electric Co. v. Joiner, 522 U.S. 136, 146, 118 S.Ct.

512, 139 L.Ed.2d 508 (1997) ("nothing in either Daubert or the Federal Rules of Evidence requires a district court to admit opinion evidence that is connected to existing data only by the ipse dixit of the expert"). Therefore, I accept defendant's expert's opinion and conclude that the terms "tap water" and "drinking water" fail to fix a range of solid content in "fresh water" that would enable a person of ordinary skill in the art to properly perform the tests described in claims 1, 33 and 58.

In a closer attempt to provide a fixed range to "fresh water," plaintiffs identify eight different sources defining "fresh water" in terms of ranges of solid or salt content. The first problem with these definitions is that they appear inconsistent. At least one definition defines the term as containing less than 500 *or* 1,000 milligrams per liter of total dissolved solids, *depending on location;* other definitions define "fresh water" as having less than 1,000 parts per million of dissolved solids, or less than 1,000 milligrams per liter; other definitions require less than 0.5 parts per thousand dissolved salts; one definition requires less than 2,000 parts per million dissolved salts. Although plaintiffs assert that the definitions are "all consistent with each other," it does not appear that way, and plaintiffs have done nothing to explain the apparent variance among definitions or argue for an acceptable range in light of the definitions. Moreover, plaintiffs have offered no basis for believing that any of these general definitions of "fresh water" apply in the context of fluid flow and surface tension. It would be inappropriate to adopt some variation or combination of plaintiffs' proffered definitions without any basis for believing that such definitions would be appropriate in the context of the claim. Therefore, plaintiffs' proposal to define "fresh water" on the basis of these extrinsic definitions must be rejected.

Because determining the allowable range of solid content in fresh water is critical to determining how to perform the fresh water tests in claims 1, 33 and 58, and because there is insufficient guidance in the patent claims, specification and prosecution history to determine that allowable range, the term "fresh water" is not amenable to construction.

b. "Natural state surface energy"

Plaintiffs' construction: the measurement of the wetting angle of a liquid drop on a surface in a gas filled environment (the standard test for such measurement is ASTM D2578)

Defendant's construction: term is not definite enough to be construed

[24] With respect to "natural state surface energy," defendant's concerns are twofold: a person of ordinary skill in the art would not understand what "natural state" refers to and would not understand the ASTM D2578 to be the standard test for all "natural state surface energy" tests.

Plaintiffs fail to provide an acceptable definition for "natural state" and none is apparent in the intrinsic evidence. Plaintiffs concede that the term "natural state surface energy" is not defined in the intrinsic evidence, but assert that it does have a definite meaning, citing their expert's declaration. Plaintiffs' expert declared that the phrase "natural state surface energy" would be understood by a person of ordinary skill in the art; however he did not explain what the phrase "natural state" means. Osswald Aff., dkt. # 20, para. 6. At the claim construction hearing, plaintiffs' expert defined "natural state" to mean "without any additives" or "modifiers." Tr., dkt. # 36, at 40, lns. 1-9. When pressed in cross-examination, he admitted that his original definition of "natural state surface energy" was a definition of "surface energy" and that his opinion of what "natural state" means was simply "a logical term," not an "engineering term." Tr., dkt. # 36, at 48-50.

Plaintiffs' expert concedes that he does not have an opinion as to what "natural state" would mean outside the context of "polymer containers." Tr., dkt. # 36, at 50, ln. 24-51, ln. 3. A polymer container is merely a preferred embodiment of the '604 patent. The specification states, "Preferably, the membrane [through which the holes are defined] comprises ... [or] consists of a semi-rigid material.... Molded polypropylene is a presently *preferred* semi-rigid material." '604 pat., col. 1 ln. 66-col. 2 ln. 5. Thus, the definition of "naturalstate surface energy" must be broad enough to encompass testing materials not made of polypropylene.

Without any guidance as to what the phrase "natural state" could mean within the intrinsic evidence, the court is left with plaintiffs' attempt to explain its meaning, which falls short. It follows that, because plaintiffs' original construction of "natural state surface energy" would ignore the phrase "natural state," it must be rejected. Bicon v. Straumann, 441 F.3d 945, 950 (Fed.Cir.2006) (claims interpreted "with an eye toward giving effect to all terms in the claim"). Moreover, because plaintiffs have had an opportunity to articulate what "natural state" could mean in the context of the '604 patent and have failed to offer a reasonable explanation, I can only conclude that this is because the term has no discernible meaning and is therefore "insolubly ambiguous."

B. *The* '784 Patent

[25] The '784 patent is a continuation in part of the '604 patent and includes as one aspect of the invention an improved sealing connection between the lid and cup body of children's drinking cups. The meaning of the following terms of the '784 patent is disputed: "interlocking features," "lips," "a first lip projecting radially outward from the lid," "a second lip projecting radially inward from the outer surface of the rim of the main body" and "nominal radial interference between the first and second lips." All five terms are found in independent claim 1, which discloses:

1. A drinking container comprising

a main body defining an interior cavity accessible through a cavity opening at an upper end of the main body, the body having a rim about its opening, the rim having a domed upper surface and inner and outer walls defining a recess there between, the outer wall of the rim having a lower, distal edge spaced apart from the inner wall to define a recess opening; and

a removable lid secured to the main body at its upper end to cover the cavity opening and enclose, together with the main body, the interior cavity to hold a liquid, the lid defining a groove about its edge sized to receive and snap over the rim of the main body and form a seal;

the lid having an extended drinking spout sized to be received within a human mouth and defining at least one hole providing hydraulic communication between exterior surfaces of the container and the interior cavity, for dispensing liquid disposed proximate an, inner end of the hole in response to a vacuum applied at an outer end of the hole; wherein

the groove about the lid has an inner surface, and the rim of the main body has an outer surface, that each define semi-circular arcs of similar radii and have **interlocking features** on an inboard side, the **interlocking features** including

a **first lip projecting radially outward from the lid** into the groove and

a **second lip projecting radially inward from the outer surface of the rim of the main body** to produce a **nominal radial interference between the first and second lips** as the lid and main body are engaged.

1. "*Interlocking features" and "nominal radial interference between the first and second lips*"

The parties' disputes regarding the terms "interlocking features" and "nominal radial interference between the first and second lips" relate primarily to whether the first and second lip remain in contact when the lid and cup are fully engaged. According to plaintiffs, the term "interlockingfeatures" requires only interference between the first and second lips as the lid and cup are being engaged and that the lips "deform" one another as the lid and cup are being joined. Defendant contends that the lid and cup body must be locked "securely" to be "interlocking" and that the lips must remain in end-to-end contact while the lid and cup body are fully engaged.

a. "Interlocking features"

Plaintiffs' construction: the first and second lip are positioned to provide an interference fit when the lid and cup body are engaged

Defendant's construction: features that facilitate a secure locking relationship

[26] [27] Plaintiffs contend that "interlocking features" should be limited to the positioning of the first and second lip to provide an "interference fit." The interference fit is described in claim 1: "interlocking features includ[e] a first lip projecting radially outward ... and a second lip projecting radially inward ... to produce a nominal radial interference." The problem with plaintiffs' position is that claim 1 describes the interlocking features as "including" the interference fit. The word "includes" is a patent law term of art meaning "comprising"; it is an "open ended" term allowing other elements to be included in the meaning of a term. SanDisk Corp. v. Memorex Products, Inc., 415 F.3d 1278, 1284 (Fed.Cir.2005) ("includes" means "comprising"); Medichem S.A. v. Rolabo, S.L., 353 F.3d 928, 933 (Fed.Cir.2003) ("comprising" is "open ended" term). That the interlocking features "include" the interference fit between the first and second lips means that the term "interlocking features" is not necessarily limited to that interference fit. Therefore, it would be improper to adopt plaintiffs' limiting construction of the term.

Defendant contends that the claim's use of the term "interlocking features" should be construed to require the lid and cup body to form a "secure interlocking relationship." The specification offers some basis for defendant's proposed construction. The summary describes "one aspect of the invention" as "a drinking container with an improved sealing connection between lid and body" and containing "[a] removable lid [that] is *secured* to the main body" and which "defines a groove about its edge sized to receive and snap over the rim of the main body and form a seal." '784 pat., col. 1, lns. 46-56 (emphasis added). In addition, Figures 4 and 5 are described in the specification as having "contours" selected to "provide a slight snap fit of the lid onto the cup body, to provide a secure seal." '784 pat., col. 3, lns. 40-43. However, defendant's proposed construction does not explain what makes an interlocking relationship "secure" and will therefore be rejected.

At the claim construction hearing, the parties' underlying dispute became clear. Plaintiffs believe that the "lips" do not need to remain in contact to be considered "interlocking features." Tr., dkt. # 36, at 34, ln. 4-35 ln. 3. Defendant believes that the interlocking features must "touch" and "constrain" each other. Tr., dkt. #

36, at 79, lns. 11-25.

[28] Although it would make sense that the interlocking features described in claim 1 would remain in contact to create a seal and avoid leakage, and some intrinsic evidence suggests that the invention must create a seal, the intrinsic evidence demonstrates that the "interlocking features" disclosed in claim 1 do not require lip-to-lip contact when the lid and cup are fully engaged. Claim 1 requires no more than that an interference fit occur between the lips " *as* the lid and main body are engaged."Claim 5 discloses a "snap ridge" positioned to snap below the cup " *when* the main body and lid are *fully* engaged." The same distinction is made in the summary to the specification. '784 pat., col. 1, ln. 66-col. 2, ln. 17. "[I]n the absence of evidence to the contrary" it is generally presumed that different terms and phrases have different meanings. CAE Screenplates Inc. v. Heinrich Fiedler GmbH & Co. KG, 224 F.3d 1308, 1317 (Fed.Cir.2000). There is no reason to think that the language in claim 1 was intended to be synonymous with the language in claim 5; it must be less restrictive. Moreover, the notion that the lips may slide past each other is perfectly compatible with an invention designed to provide a secure seal; the seal may be created by other interlocking features. Therefore, even if defendant's proposed construction were altered to replace "secure" with a more specific phrase requiring ongoing contact between the lips, it would be incorrect to adopt the construction.

I conclude that both proposed constructions are flawed and will decline to adopt either construction. However, getting to the heart of the parties' dispute, I conclude that "interlocking features" do not require that the first and second lip remain in contact when the lid and cup are fully engaged.

b. "Nominal radial interference between the first and second lips"

Plaintiffs' construction: the average interference about the radius, where "interference" means the first and second lips come into contact and deform one another when the lid and cup body are engaged

Defendant's construction: the first and second lips are juxtaposed so that a radius of the first lip is in end to end contact and aligned with a radius of the second lip when the lid and the main body are engaged

[29] For this term, plaintiffs contend that the term "nominal radial interference" means the average amount the radii of the lips "deform" as they pass by one another; defendant contends that the term requires the lips to remain juxtaposed in end-to-end contact.

Defendant's construction suffers from two defects. First, to the extent defendant's construction would require ongoing contact between the first and second lip, it must be rejected for the same reason the term "interlocking features" does not require ongoing contact. Second, "nominal radial interference" should be defined in such a way as to be *measurable*. The specification describes a "nominal maximal radial interference ... of about 0.016 inch." '784 pat., col. 3, lns. 49-59. Thus, to make sense, defendant's construction would have to refer to a measurement, not a description.

Plaintiffs' construction suffers from more serious defects. First, as plaintiffs admit, the use of the word "deformed" to describe the "nominal radial interference" is confusing. Tr., dkt. # 36, at 31, ln. 7. Second, plaintiffs' construction suggests that the projecting lips could "overlap" one another, with the inner lip pushing outwardly on a smaller-sized outer lip pointed in the same direction. Plaintiffs' expert confirmed this understanding of the term at the claim construction hearing, explaining that nominal radial interference is "the average difference between an inner and an outer part; so the engaged two parts, the radius of the outer

part is a little bit smaller than the outer radius of the inner part. So it has to open up." Tr., dkt. # 36, at 44, lns. 12-15. The claim language does not allow a construction of the term "nominal radial interference" that would allow the first and second lips to project in the same direction. Claim 1 discloses a first and second lip that project in opposite directions: "a first lip projecting radially outward from the lid into the groove and a second lip projecting radially inward from the outer surface of the rim of the main body." Therefore, plaintiffs' attempt to define the term "nominal radial interference" to allow one lip to "open up" or deform another lip must be rejected.

Because neither party has offered a proper construction, and because no clear definition of the term appears from the intrinsic evidence, I decline to construe the term "nominal radial interference." However, I conclude that the term does not permit the first and second lips to project in the same direction or require ongoing contact between the first and second lip.

2. "*Lips,*" "*a first lip projecting radially outward from the lid*" *and* "*a second lip projecting radially inward from the outer surface of the rim of the main body*"

The next set of disputed terms relates to the interlocking lips. Defendant proposes two limitations: that the "lips" have discrete edges and that the lips project at perpendicular angles from the respective lid and cup body. Plaintiffs contend that none of these limitations are permissible.

a. "Lips"

Plaintiffs' construction: no independent construction required

Defendant's constructions: projection or projections each having a discrete edge

[30] Defendant contends that a "lip" must have a discrete edge. The only intrinsic evidence for defendant's proposed limitation is found in Figures 4 and 5, which show lips with "discrete edges." There is no mention of a discrete edge within the claim or the specification. The Court of Appeals for the Federal Circuit has "repeatedly warned" against limiting the scope of a claim on the basis of a specific embodiment. Phillips, 415 F.3d at 1323 (citations omitted). An embodiment may serve to limit a claim only if it is clear that the patentee intends the claims and embodiments to be strictly coextensive, id., or the examples used make it clear that a limitation was intended. On Demand Machine Corp. v. Ingram Industries, Inc., 442 F.3d 1331, 1339-40 (Fed.Cir.2006) (limitation warranted because specification used the term "customer" repeatedly in specialized context); Nystrom v. TREX Co., Inc., 424 F.3d 1136, 1144-45 (Fed.Cir.2005) (limitation warranted because written description and prosecution history consistently used the term board to refer to wood decking materials cut from a log). Even though Figures 4 and 5 are the only examples given for the lips, there is no reason to believe that the discrete edges simply drawn into the figures without discussion in the specification were intended to demonstrate a claim limitation. Therefore, defendant's construction will be rejected and no independent construction of "lips" will be provided.

b. "A first lip projecting radially outward from the lid" and "a second lip projecting radially inward from the outer surface of the rim of the main body"

[31] These two terms are nearly identical and the parties' constructions of both rise and fall together. Therefore, they will be addressed together.

Plaintiffs' constructions:

-> " *A first lip projecting radially outward from the lid* ": a projection extending laterally into the groove from a vertical tangent to the inner edge of the upper, inner surface of the groove
-> " *A second lip projecting radially inward from the outer surface of the rim of the main body* ": a projection extending inwardly toward the centerline of the cup body from a vertical tangent to the inner edge of the upper, outer surface of the ridge

Defendant's constructions:

-> " *A first lip projecting radially outward from the lid* ": when viewed in longitudinal cross section, the central axis of the first lip projects outwardly from the lid in the direction that is perpendicular to the longitudinal axis of the lid
-> " *A second lip projecting radially inward from the outer surface of the rim of the main body* ": when viewed in longitudinal cross section, the central axis of the second lip projects inwardly from the outer surface of the rim of the main body in the direction that is perpendicular to the longitudinal axis of the cup

A single dispute underlies the parties' different constructions. Defendant contends that the "central axes" of the lips must project at perpendicular angles from the longitudinal axes of the lid and cup respectively, and plaintiffs contend that the lips may project in any "lateral" direction away from the longitudinal axes.

Plaintiffs first point out that the terms "perpendicular" and "central axis" do not appear in the intrinsic evidence. However, claim 1 specifies that the lips must project "radially inward" and "radially outward," not simply "inward" and "outward." A radial (and therefore circular or semi-circular) projection must have a "central axis." Thus, the only question remaining is whether the radial projections must be perpendicular to the respective cup and lid vertical axes or if they may extend at a different angle. The claim language discloses only radial projections "from the lid" and "from the ... main body," giving no indication that a semicircle must extend from a longitudinal axis of the lid or cup body. The language of claim 1 is compatible with a radial projection from a platform on the lid or cup body that is not perpendicular to the longitudinal axis of the lid or cup body. Although the specification describes the lips in Figures 4 and 5 as protruding laterally from *vertical tangents* of the lid and cup body, these are merely embodiments of the invention. '748 pat., col. 3, lns. 49-52, 53-56. There is no reason to believe that the invention gave special significance to the perpendicularity of the lip projections shown in Figures 4 and 5; therefore, it would be inappropriate to limit the claim on that basis. Phillips, 415 F.3d at 1323. In sum, nothing in the patent suggests that the "radial" projections disclosed in claim 1 must be perpendicular to the respective longitudinal axes of the cup and lid; therefore, I decline to adopt defendant's construction.

Plaintiffs' construction will be rejected as well. As defendant points out, projecting "laterally" from a vertical tangent may be synonymous with projecting at a perpendicular angle from that tangent, unless lateral is understood loosely to mean "at any angle away from" the vertical tangent. Because plaintiffs' construction could be confusing and does little to unpack the meaning of the claim, I decline to adopt it as well.

I conclude that plaintiffs' and defendant's proposed constructions for the two terms at issue in this section are flawed. I decline to adopt either parties' constructions. At the same time, to address the parties' principal concern, I conclude that the radial projection of the first lip does not need to project outwardly in a direction that is perpendicular to the longitudinal axis of the lid and the radial projectionof the second lip does not need to project inwardly in a direction that is perpendicular to the longitudinal axis of the cup body.

ORDER

IT IS ORDERED that the terms disputed by plaintiffs The First Years, Inc. and Learning Curve Brands, Inc. and defendant Munchkin, Inc. in U.S. Patent Nos. 6,976,604 and 7,185,784 are construed as follows:

-> the term "size" means "physical dimensions";

-> the term "quasi-static conditions" means "nearly steady internal and external pressure and temperature."

The following terms are not construed:

-> "fresh water";

-> "natural state surface energy";

-> "interlocking features";

-> "lips";

-> "a first lip projecting radially outward from the lid";

-> "a second lip projecting radially inward from the outer surface of the rim of the main body"; and

-> "nominal radial interference."

W.D.Wis.,2008.
The First Years, Inc. v. Munchkin, Inc.

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