United States District Court,
S.D. California.

KOITO MANUFACTURING CO., LTD, and NORTH AMERICAN LIGHTING,
INC. Plaintiffs.
v.
TURN-KEY-TECH, L.L.C. and Jens Ole Sorensen,
Defendants.

No. 02-CV-0273 H(JFS)

Nov. 14, 2002.

Action was brought for declaration of non-infringement of patent for cross-lamination injection molding technique. Construing claims, the District Court, Huff, Chief Judge, held that: (1) plastic flows of different layers had to be in distinctly different directions, but did not have to be at right angles to each other; (2) "flow channel" was portion of mold cavity that was significantly thicker and wider than adjacent mold cavity thickness; and (3) "layer-defining-mold-cavity-section" did not have to coextensive with portion of mold cavity not used as flow channel.

Claims construed.

"Layer-defining-mold-cavity-section," called for in patent for cross-lamination injection molding technique, meant section of mold cavity that defined and formed layer of cross-laminated section of product; section did not have to coextensive with portion of mold cavity not used as flow channel.

Frank L. Bernstein, Sughrue Mion LLC, Menlo Park, CA, William H. Mandir, Sughrue Mion, LLC, Washington, DC, for Plaintiff Koito Manufacturing.

Sandeep Seth, Seth & Zelkind, San Diego, CA, for Defendants Turn-Key-Tech, L.L.C. and Jens Ole Sorensen.

ORDER CONSTRUING CLAIMS

HUFF**, Chief Judge.**

In this patent infringement case, Koito Manufacturing Co., Ltd. and North American Lighting, Inc. (collectively, "Koito") filed a complaint for a declaratory judgment of non-infringement, invalidity, and unenforceability of U.S. Patent No. 5,045,268 (the '268 patent), against Turn-Key-Tech, LLC and Jens Ole Sorensen (collectively, "Turn-Key"). On March 28, 2002, Turn-Key filed an answer to the complaint in which it counterclaimed for patent infringement. On April 17, 2002, Koito filed an answer to the counterclaim. On October 15, 2002, Turn-Key filed an opening brief supporting its construction of the

disputed terms of the '268 patent. On October 28, 2002, Koito filed its responsive brief, and on November 4, 2002, Turn-Key filed its reply. On November 12, 2002, the court held a hearing in accordance with Markman v. Westview Instruments Inc., 517 U.S. 370, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996), to construe the disputed claims of the '268 patent. The parties seek construction of numerous limitations in claims 1 and 21, which are the two independent claims of the '268 patent. The disputed terms include "cross-laminated section," "predetermined general direction," first- and second "direction-flow-record," "positively different," "flow channel," and "layer-defining-mold-cavity-section." This is the court's construction of the disputed claims.

I. BACKGROUND

The court draws the following facts from the complaint, the '268 patent, its prosecution history, and the submissions of the parties.

A. Background of the Technology

This case involves injection molding technology, which can be used to manufacture items ranging from plastic cups to cassette tapes to automobile tail-lights. In an injection molding process, liquid plastic is injected into a mold cavity in the shape of the desired product. The mold cavity is simply the space between two mold sections into which the liquid plastic flows. Like the interior of a waffle iron, the walls of the mold cavity determine the shape of the final product. Upon cooling, the plastic solidifies into the desired shape and is ejected from the mold. Injection molding processes generally include the following steps: (1) plasticizing the plastic material into a fluid; (2) injecting at high pressure a controlled volume of the fluid plastic into the mold cavity; (3) maintaining the system under pressure for a specified period of time; (4) solidifying the plastic in the mold; and finally (4) opening the mold and ejecting the finished product.

Products created through injection molding possess a grain running in the direction that the fluid flowed in the mold cavity. Like a wood plank, injection molded products possess more strength across than with the grain. Thus, they break more easily along the grain. This weakness can be problematic in certain applications where strong plastic layers (or strong portions of layers) are desired. Jens Sorensen, the inventor of the '268 patent, sought to solve the along-the-grain weakness problem. As more fully described below, he developed a solution using cross-lamination, which involves overlapping one or more layers with different flow directions to create a cross-laminated section with increased strength.

B. The '268 Patent

The '268 patent, directed towards cross-lamination injection molding, issued on September 3, 1991. Jens Sorensen is the named inventor, and Turn-Key is the exclusive licensee of the '268 patent. The '268 patent describes a method of strengthening injection-molded plastics in select locations *via* cross-lamination. The technique allows designers to create a product with two overlapping layers in the area needing to be strengthened; the layers are created from plastic that flowed in different directions through the mold cavity so that the layers have different grains. The two layers, which are bonded together, act in concert to strengthen the cross-laminated area.

The '268 patent teaches and claims the cross-lamination injection molding process described above. Independent claim 1 of the '268 patent FN1 recites:

FN1. The Patent and Trademark Office (PTO) issued a Certificate of Correction on September 3, 1991,

correcting certain clerical errors in the '268 patent. Citations to the '268 patent are to the text as amended by the Certificate of Correction.

A method of injection molding a plastic product, with a *cross-laminated section* that includes a first plastic layer and a second plastic layer, in a mold system comprising a first mold cavity with a first-layer-defining-mold-cavity-section and a second mold cavity with a second-layer-defining-mold-cavity-section with a second-cavity-section-wall, the method comprising the steps of:
(a) injecting a quantity of first plastic into the first mold cavity so that the first plastic flows in the first-layer-defining-mold-cavity-section in a first *predetermined general direction,*

(b) solidifying at least partly the flowed first plastic in the first-layer-defining-mold-cavity-section to thereby form said first plastic layer having a *first-direction-flow-record,*

(c) adjusting the mold system to thereby provide the second mold cavity with the second-cavity-section-wall including said first plastic layer,

(d) injecting a quantity of second plastic into the second mold cavity so that the second plastic flows in the second-layer-defining-mold-cavity-section in a *second predetermined general direction,* whereby the second plastic in the second-layer-defining-mold-cavity-section fuses with said first plastic layer,

(e) solidifying the flowed second plastic in the second-layer-defining-mold-cavity-section to thereby form said second plastic layer, so that the second plastic layer has a *second-direction-flow-record* which is *positively different* from said *first-direction-flow-record,* to thereby form said plastic product with said *cross-laminated section* that includes both the first plastic layer and the second plastic layer, and

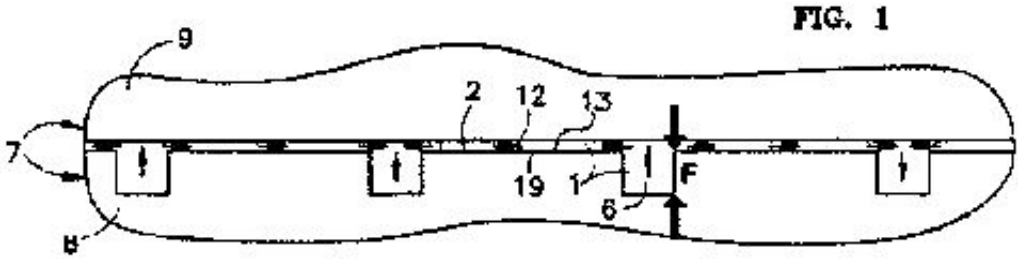
(f) adjusting the mold system to thereby eject the product, wherein the first mold cavity comprises a *first-cavity-flow-channel* which is located adjacent the first-layer-defining-mold-cavity-section, with a *flow channel* being defined as a portion of a mold cavity which is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic, and wherein step (a) comprises the step of:

(g) directing the first plastic into the first-layer-defining-mold-cavity-section via the *first-cavity-flow-channel,* so that the first plastic flows in the *first-cavity-flow-channel* in a direction which is *positively different* from said first *predetermined general direction*.

'268 Patent, col. 8, ll. 11-61 (emphases added). The emphases indicate the claim terms in dispute.
Independent claim 21 is identical to claim 1, except that steps (f)-(g) recite:
(f) adjusting the mold system to thereby eject the product, wherein the second mold cavity comprises a *second-cavity-flow-channel* which is located adjacent said second-layer-defining-mold-cavity-section, with a *flow channel* being defined as a portion of a mold cavity which is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic, and wherein step (d) comprises the step of:

(g) directing second plastic into the second-layer-defining-mold-cavity-section via the *second-cavity-flow-channel,* so that the second plastic flows in the *second-cavity-flow-channel* in a direction which is *positively different* from said second *predetermined general direction*.

Id. col. 11, lines 20-35 (emphases added).
Figure 1 of the '268 patent, shown below, illustrates a sectional view of a mold cavity containing a flow channel according to one of the preferred embodiments of the invention.



Mold system 7 includes two complementary mold sections 8 and 9, one of which contains a gate that allows for injection of the liquid plastic. Mold cavity 1 is the space formed between the interior walls of complementary mold sections 8 and 9. Mold cavity 1 contains a cavity flow channel 6 through which the liquid plastic passes. Because the flow channel is wide relative to the adjacent cavity area, the liquid plastic passes more easily through flow channel 6 than it does through the adjacent cavity area. Because the liquid plastic follows the path of least resistance through the mold, it travels through the flow channel before passing into the rest of the mold cavity. In addition, when the plastic flows from the flow channel into the cavity, the direction of flow alters in a predictable way. The degree of change in the flow path depends upon the relative cavity thicknesses within the mold cavity. Thus, the liquid plastic flows into the layer-defining-mold-cavity-section in a predetermined direction.

After the plastic flows into the cavity and is allowed to solidify, at least partially, into the first plastic layer 13, the mold system is adjusted as shown below in Figure 2. Mold section 9 and the first plastic layer 13, together with new mold section 11, form mold system 10.FN2 This mold system has a new mold cavity 3. Plastic is injected and flows into layer-defining-mold-cavity-section 4 in a predetermined direction that is different from that used to form plastic layer 13.FN3 The second plastic solidifies and fuses with the appropriate part of plastic layer 13 to form the desired cross-laminated section.

FN2. In other embodiments, the first plastic layer is completely removed from the mold and transferred to an entirely new mold to form the second, overlapping plastic layer.

FN3. The patent teaches that the second mold cavity may (but need not) contain a second flow channel either instead of, or in addition to, the flow channel in the first mold cavity.

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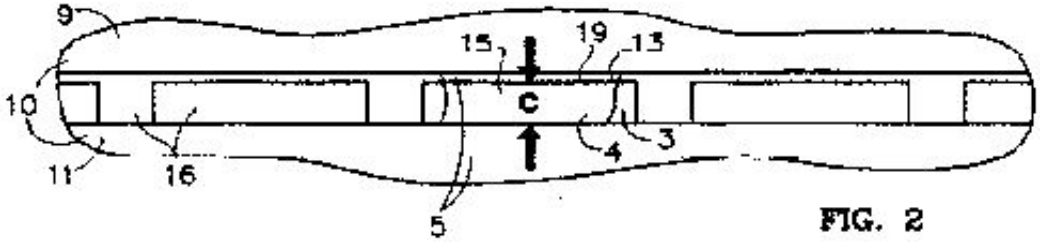

FIG. 2

II. DISCUSSION

A. Basic Principles of Claim Construction

[1] [2] The court construes the claim terms of a patent as a matter of law. Markman v. Westview Instruments, Inc., 517 U.S. 370, 391, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). Interpretation of claim terms begins with the language of the claims, the words of which are generally to be given their customary meaning as understood by one of ordinary skill in the pertinent art. Rexnord Corp. v. Laitram Corp., 274 F.3d 1336, 1341-42 (Fed.Cir.2001). "[A] court must presume that the terms in the claim mean what they say, and, unless otherwise compelled, give full effect to the ordinary and accustomed meaning of claim terms." Johnson Worldwide Associates, Inc., v. Zebco Corp., 175 F.3d 985, 989 (Fed.Cir.1999). The Federal Circuit has explained that dictionaries are of special use in determining the customary meaning of claim terms. "As resources and references to inform and aid courts and judges in the understanding of technology and terminology, it is entirely proper for both trial and appellate judges to consult these materials at any stage of a litigation, regardless of whether they have been offered by a party in evidence or not. Thus, categorizing them as 'extrinsic evidence' or even a 'special form of extrinsic evidence' is misplaced and does not inform the analysis." Texas Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1203 (Fed.Cir.2002). The court should consult the intrinsic record, which includes both the specification and the prosecution history, if in evidence, in order to determine which of the various dictionary meanings is most consistent with the inventor's use of the words. *Id.*

[3] [4] After determining the plain meaning of a term to one of ordinary skill in the art, the court examines the specification "to confirm that the patentee's use of the disputed terms is consistent with the meaning given to it by the court." Rexnord, 274 F.3d at 1342. A patentee can choose to be his or her own lexicographer "by clearly setting forth an explicit definition for a claim term that could differ in scope from that which would be afforded by its ordinary meaning," and such a definition trumps the ordinary understanding of the claim term. *Id.* The court should also verify that the preferred embodiment falls within the scope of the construed term, "because a claim construction that would exclude the preferred embodiment 'is rarely, if ever, correct and would require highly persuasive evidentiary support.' " *Id.* (quoting Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1583 (Fed.Cir.1996)). Furthermore, the court should determine whether the written description and drawings indicate that the patentee has disclaimed subject matter or limited the claim scope. *Id.* Finally, "[a]fter examining the written description and the drawings, the same confirmatory measure must be taken with the prosecution history, since statements made during the prosecution of a patent may affect the scope of the invention." *Id.*

[5] Extrinsic evidence, such as expert testimony, plays an extremely limited role in claim construction. The court can consider extrinsic evidence to construe the claims "[o]nly when the claim language remains genuinely ambiguous after consideration of the intrinsic evidence ...." Extrinsic evidence may not be used to

contradict a clear meaning provided by the intrinsic evidence. Interactive Gift Express, Inc. v. Compuserve Inc., 256 F.3d 1323, 1332 (Fed.Cir.2001); Vitronics, 90 F.3d at 1583.

B. Positively different

[6] [7] The parties dispute the meaning of "positively different," which is used in claim 1 to describe two different directional relationships: (1) "the second plastic layer has a second-direction-flow-record which is positively different from said first-direction flow record" '268 Patent, col. 8, lines 39-42, and (2) "the first plastic flows in the first-cavity-flow-channel in a direction which is positively different from said first predetermined general direction." Id. col. 8, lines 58-61. Claim 21 uses "positively different" in the same way as claim 1, except that in instance (2) the claim refers to the second plastic flow in the second-cavity-flow-channel as being "positively different" from the second predetermined general direction. Id. col. 11, lines 32-35. Ordinarily, a term appearing multiple times should be interpreted consistently, *see* Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1345 (Fed.Cir.1998), and therefore the court will construe "positively different" in a fashion that embraces all of the uses of the term in claims 1 and 21.

The parties agree that "positively different" has no specialized meaning to persons of ordinary skill in the injection molding art. Thus, the ordinary meaning of "positively different" controls, absent some indication that the inventor used the term in a fashion other than according to its ordinary meaning. Karlin Tech., Inc. v. Surgical Dynamics, Inc., 177 F.3d 968, 971 (Fed.Cir.1999). The claim language itself does not provide a definition of "positively different," and therefore the court will turn to the dictionary to ascertain the customary meaning of the phrase. The dictionary defines "positively" as "definitely" or "expressly," *Oxford English Dictionary* (2nd Edition 1989), or "extremely, obviously, notably, certainly." *Webster's Third New International Dictionary* 1770 (emphasis omitted). Different means "[h]aving characters or qualities which diverge from one another; having unlike or distinguishing attributes; not of the same kind; not alike; of other nature, form, or quality." *Oxford English Dictionary* (2nd Edition 1989). Of these definitions of "different," "not alike" is most consistent with the use of the word "different" in the '268 patent, and therefore the court will adopt that meaning. *See* Inverness Med. Switzerland GmbH v. Warner Lambert Co., 309 F.3d 1373, 1377-79 (Fed.Cir.2002). Thus, the ordinary meaning of "positively different" is "definitely or certainly not alike."

Next, the court examines the written description and drawings to determine whether the patentee's use of "positively different" is consistent with the term's ordinary meaning. The specification does not provide an explicit definition of "positively different." However, in the description of the preferred embodiments, the written description states:

The flowed second plastic is then adjusted in the second-layer-defining-mold-cavity section **4**, to thereby form a second plastic layer **15**, so that the second plastic layer **15** has a second-direction-flow-record, similarly indicated by the second arrow **14**, *which is approximately at a right angle to the first-direction-flow-record and therefore is positively different from the first-direction-flow-record,* indicated by the first arrow **12**....

'268 Patent, col. 4, lines 11-18 (emphasis added). In addition, the drawings, which show the flow directions and flow records as arrows, always show the first and second flow records at right angles to one another. Koito therefore argues that "positively different" means that the flow records and flow directions must intersect at 90 degree, or substantially 90 degree angles. Turn-Key argues that the claim language contains no such numerical limitation, and that adopting such a construction would improperly import a limitation

based on the preferred embodiment into the claims.

The court need not decide whether adopting Koito's construction would indeed cross the line between using the written description as an aid in interpretation (which is permissible), and using it to import limitations into the claims (which is not), because Koito is simply incorrect: the written description clearly indicates that directions intersecting at other than 90-degree angles can still be "positively different." As noted above, the claims use "positively different" both to describe the difference between the first and second flow records, and to describe the difference between the flow direction through and out of the flow channel (*i.e.*, between the direction of flow in the flow channel and the "predetermined general direction" of flow through the layer-defining-cavity-section). As Koito notes, the preferred embodiments consistently show the difference in flow records as approximately 90 degrees. However, the patent also teaches that the two flow directions can be "positively different" even while the angle between them is as little as 45 degrees, as shown by arrows 33 and 32 in Figure 6 of the patent. The specification specifically describes flow directions 32 and 33 as being "positively different." '268 Patent, col. 6, lines 16-26. Thus, it is clear that two flow directions can be "positively different" without intersecting at a 90 degree angle. Furthermore, Figure 6 illustrates a preferred embodiment of the invention, and this preferred embodiment would be excluded from the scope of the claims if the court were to limit the term "positively different" to angles of 90 or substantially 90 degrees. The Federal Circuit has repeatedly cautioned that an interpretation that excludes the preferred embodiment is "rarely, if ever, correct," Vitronics, 90 F.3d at 1583, and without highly persuasive support-which Koito has not provided-the court is unwilling to adopt such an unduly narrow construction of "positively different." In addition, the specification teaches a method of obtaining a variety of angles between the flow directions by varying the relative cavity thicknesses of the flow channel and layer-defining-mold-cavity-section. *See* '268 Patent, col. 6, lines 24-26, 38-40. The patentee, therefore, obviously did not contemplate limiting the angle between the flow directions to a specific number, but rather envisioned a range of possible angles obtainable by the patented method. And, the patentee clearly did not intend the phrase "positively different" to refer only to 90 or substantially 90 degree differences, or he would not have used that phrase to describe the various angles between flow directions obtainable by the patented method.

In short, the specification does not explicitly or implicitly narrow or otherwise contradict the rather broad customary meaning of "positively different;" indeed, it is consistent with that meaning. Nor have the parties pointed to any portion of the prosecution history in which the patentee either explicitly defined or otherwise limited the scope of the "positively different" limitation. Thus, this term carries its ordinary meaning. The court therefore holds that "positively different," in accordance with its dictionary definition discussed above and consistent with the patentee's use of the term in the specification, means "definitely or certainly not alike," and therefore this claim limitation requires that the two flow records, as well as the directions of flow through the flow channel and adjacent layer-defining-cavity-section be definitely or certainly not alike.

C. Cross-Laminated Section

[8] The parties seek a construction of the term "cross-laminated section," which appears in both the preamble and bodies of claims 1 and 21. The preambles of claims 1 and 21 recite "[a] method of injection molding a plastic product, with a *cross-laminated section* that includes a first plastic layer and a second plastic layer ...." '268 Patent, col. 8, lines 11-13; col. 10, lines 53-55 (emphasis added). The bodies of the claims recite, in step (e) of the claimed method:

(e) solidifying the flowed second plastic in the second-layer-defining-mold-cavity-section to thereby form said second plastic layer, so that the second plastic layer has a second-direction-flow-record which is positively different from said first-direction-flow-record, to thereby form said plastic product with *said cross-laminated section that includes both the first plastic layer and the second plastic layer ....*

'268 Patent, col. 8, lines 37-45; col. 11, lines 11-19 (emphasis added).

As an initial matter, the court notes that Turn-Key has directed its arguments towards the language appearing in the preambles of claims 1 and 21, and it appears that it wishes the court to construe this preamble language. However, claim preambles do not always limit the scope of the claimed invention, and, in fact, the Federal Circuit has noted that "[g]enerally, ... the preamble does not limit the claims." DeGeorge v. Bernier, 768 F.2d 1318, 1322 n. 3 (Fed.Cir.1985). Later cases have clarified, however, that "a claim preamble has the import that the claim as a whole suggests for it," and "when the claim drafter chooses to use *both* the preamble and the body to define the subject matter of the claimed invention, the invention so defined, and not some other, is the one the patent protects." Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620 (Fed.Cir.1995). In this case, the same language that appears in the preamble also appears in the body of the claims, *i.e.* a "cross-laminated section that includes both the first plastic layer and the second plastic layer." Thus, even if the preamble language does not limit the '268 claim scope, this particular term does limit the claims by virtue of its inclusion in the claim body, and therefore the court will construe this term.

The claim recites a "plastic product with said cross-laminated section that includes a first plastic layer and a second plastic layer." Thus, by its own terms the claim requires that the cross-laminated section contain at least two different layers: the first plastic layer and the second plastic layer. Furthermore, the claims dictate that the first plastic layer and second plastic layer that form the cross-laminated section have flow records that are "positively different." '268 Patent, col. 8, lines 37-45. As discussed above, the court has construed "positively different" to mean definitely or certainly not alike. Therefore, the claims themselves define "cross-laminated section" as a section of the injection molded plastic product that contains both a first and a second plastic layer, where the first and second plastic layers have definitely different flow records.

As it did with respect to the meaning of "positively different," Koito argues that "cross-laminated section" requires that the flow records of the two layers intersect at 90 or substantially 90 degree angles. In making this argument, Koito raises many of the same arguments that it did with respect to its proposed construction of "positively different," including its reliance on the preferred embodiments, which show 90 degree angles between flow records in the cross-laminated section. The court rejects those arguments here for the same reasons as it did above. However, with respect to the "cross-laminated section" limitation, Koito also marshals an extensive array of technical dictionaries and treatises that define a "cross-laminate" as "a laminate in which the grain direction of some layers of material is oriented at right angles to the grain of the remaining layers." J. Shields, *Adhesives Handbook* 341 (3d Ed.1985); *see also* A. Landrock, *Adhesives Technology Handbook* 21 (1985) (defining cross laminate as "[a] laminate in which some of the layers of material are oriented at right angles to the remaining layers with respect to the grain or strongest direction in tension"); *McGraw-Hill Dictionary of Scientific and Technical Terms* 455 (4th Ed.1989) (defining cross-lamination as "[c]onstruction of a laminated composite material so that some layers are oriented at right angles to the other layers with respect to the grain or the strongest direction in terms of tension"); T. Whelan, *Polymer Technolgy Dictionary* 93 (defining cross-laminate as "[a] laminate in which some of the layers of material are oriented approximately at right angles to other layers; used to make, for example, strong film for packaging").

Based on the breadth of technical materials Koito presents and the consistency of the definitions provided therein, it seems clear that "cross-lamination" ordinarily does refer to layers oriented at 90 degree angles to one another, and thus Koito's proposed definition of "cross-laminated section" is more consistent with the ordinary understanding of "cross-laminate" in the polymer arts than is Turn-Key's. However, a patentee is free to depart from the ordinary meaning of a term like "cross-laminated section," so long as the patentee's definition is provided in the intrinsic evidence. *See* Bell Atl. Network Servs., Inc. v. Covad Communications Group, Inc., 262 F.3d 1258, 1268 (Fed.Cir.2001); Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1249 (Fed.Cir.1998). Here, as discussed above, the patent claims themselves define the cross-laminated section as including two layers that have "positively different" flow records, and the patent uses "positively different" to refer to angles other than 90 degrees. That the other "positively different" angles are between flow directions rather than flow records does not change the fact that the patentee clearly did not use the phrase "positively different" to refer to angles of only 90 degrees. And, because a cross-laminated section is defined as including two layers with positively different flow records, the broad meaning of "positively different" espoused by the patentee results in an equally broad meaning of "cross-laminated section."

For the reasons discussed above, the court construes "cross-laminated section" to mean a section of the injection molded plastic product that contains both a first and a second plastic layer, where the first and second plastic layers have positively different flow records-meaning that the flow records of the two layers are definitely not alike.

D. Predetermined General Direction

[9] The parties dispute the meaning of "predetermined general direction," which appears in steps (a), (d), and (g) of claims 1 and 21. Step (a) recites "injecting a quantity of first plastic into the first mold cavity so that the first plastic flows in the first-layer-defining-mold-cavity-section in a first *predetermined general direction*." '268 Patent, col. 8, lines 19-22 (claim 1); col. 10, lines 61-64 (claim 21) (emphasis added). Step (d) recites "injecting a quantity of second plastic into the second mold cavity so that the second plastic flows in a second *predetermined general direction* ...." Id. col. 8, lines 30-36 (claim 1); col. 11, lines 4-10 (claim 21) (emphasis added). Step (g) of claim 1 recites "directing the first plastic into the first-layer-defining-mold-cavity-section via the first-cavity-flow-channel, so that the first plastic flows in the first-cavity-flow-channel in a direction which is positively different from said first *predetermined general direction*." Id. col. 8, lines 56-61 (emphasis added). Similarly, step (g) of claim 21 recites "directing second plastic [sic] in the second-layer-defining-mold-cavity-section via the second-cavity-flow-channel, so that the second plastic flows in the second-cavity-flow-channel in a direction which is positively different from said second *predetermined general direction*." Id. col. 11, lines 30-55 (emphasis added).

The parties agree that "predetermined general direction" is not a term of art in injection molding, and therefore the ordinary meaning of the claim term controls, absent some indication that the patentee used this term in a fashion inconsistent with its customary meaning. The patent does not specifically define this term in either the written description or the claims themselves, and the parties have not presented the court with any evidence that the patentee limited this term during prosecution. Thus, the court will look to a standard English dictionary to help provide the customary meaning of this claim term.

The dictionary defines "predetermined" as "[d]etermined beforehand," *Oxford English Dictionary* (2d Edition 1989), and "general" as "applicable to or characteristic of the majority of individuals involved:

prevalent," *Webster's Ninth New Collegiate Dictionary* 510 (1986). Therefore, the ordinary meaning of "predetermined general direction" is the prevalent direction of plastic flow, and the ordinary understanding of the term further requires that the prevalent direction be determined before injection of the liquid plastic into the mold cavity. While it does not provide an explicit definition of the term, the written description is consistent with the ordinary meaning of predetermined general direction. The patent teaches that the direction of flow out of the flow channel and into the layer-defining-mold-cavity-section is largely a function of the relative cavity thicknesses in the first mold cavity. *E.g.* '268 Patent, col. 4, lines 38-40. Thus, according to the teachings of the patent the mold cavity design, together with the injection parameters, can-and in the claimed invention, must-be arranged to result in a predetermined prevalent flow direction. The preferred embodiments provide further support for a construction of "predetermined" as "determined beforehand." As Koito notes, the preferred embodiments have first and second flow records in the cross-laminated section that are at right angles to each other. *See* id. at col. 4, lines 11-22.FN4 While the invention is not limited to the ninety degree angles of the preferred embodiments, the specificity of the angles called for in the preferred embodiments nevertheless demonstrates that the invention involves distinct flow directions determined in advance.

FN4. As discussed in the court's construction of "flow record," below, the first and second predetermined general directions of flow are preserved in the first and second flow records.

[10] Turn-Key objects that this definition of "predetermined" improperly injects an intent element into the infringement inquiry by requiring proof of the mental state of the mold designer. Turn-Key's objection is without merit. It is true, of course, that "[t]here is no intent element to direct infringement" of a patent. Intel Corp. v. United States Int'l Trade Comm'n, 946 F.2d 821, 832 (Fed.Cir.1991). This simply means that a patent may be infringed regardless of whether the accused infringer intended to copy the patented design-or even knew of the patent at all. The issue of intent to infringe, and the cases cited by Turn-Key on this point, are simply irrelevant to the problem facing the court today, which involves interpretation of a claim limitation that expressly requires a particular direction to be "predetermined." The patentee chose this wording during prosecution, and there is no indication that he used the word inconsistently with the ordinary meaning discussed above. That meaning requires that the flow direction be determined prior to injection of the plastic into the mold.

For the reasons discussed above, the court construes "predetermined general direction" as the prevalent direction of flow determined before injection of the liquid plastic into the mold.

E. Flow Record

[11] The term "flow record" appears in steps (b) and (e) of claims 1 and 21:

(b) solidifying at least partly the flowed first plastic in the first-layer-defining-mold-cavity-section to thereby form said first plastic layer having a *first-direction-flow-record, ...*

(e) solidifying the flowed second plastic in the second-layer-defining-mold-cavity-section to thereby form said second plastic layer, so that the second plastic layer has a *second-direction-flow-record* which is positively different from said *first-direction-flow-record,* to thereby form said plastic product with said cross-laminated section that includes both the first plastic layer and the second plastic layer ....

'268 Patent, col. 8, lines 23-26, 37-45; col. 10, lines 65-68; col. 11, lines 11-19 (emphases added). Neither the claims themselves, the written description, nor the prosecution history provides an explicit definition of flow record. Turn-Key argues that a flow record is the flow direction of plastic when it is at least partially solidified. For its part, Koito notes that a "flow record" must be distinguished from a the predetermined general direction of flow. Koito argues that a flow record reflects the direction of flow of injected plastic, but is different from the "predetermined general direction" in that it is the preserved record of the flow.

The *Oxford English Dictionary* defines "record" as "[t]he fact or condition of being preserved as knowledge, esp. by being put into writing; knowledge or information preserved or handed down in this way." *See also Random House Dictionary of the English Language* 1612-13 (2d Ed.1987) (defining record as "the state of being recorded, as in writing"). Thus, the ordinary meaning of "flow record" refers to a preservation in the solidified plastic layer of the flow of liquid plastic used form the solidified layer. Furthermore, the court agrees with Koito that a "flow record" cannot be precisely the same as the predetermined general direction of flow. By the plain terms of the patent, the plastic must be at least partially solidified in order to form a flow record. By definition, solidified plastic no longer flows, and therefore it cannot have a flow direction (general or otherwise). Thus, contrary to Turn-Key's argument, the "flow record" is not synonymous with flow direction. Rather, the flow record in some way preserves a history of the flow direction in a permanent form.

Koito argues, and the court agrees, that the flow record is a preservation of the direction of the plastic's flow as it filled the mold. Because the claims require that the plastic flow in a first or second predetermined general direction to fill the first and second layer-defining-mold-cavity-sections respectively, it follows that the flow record is a preserved record, or history, of the predetermined general direction created when the plastic solidifies or partially solidifies in the mold.

This interpretation of flow record is consistent with the written description and drawings. Figure 3 of the patent, which illustrates a partial view of a cross-laminated product, shows the first and second predetermined general directions as arrows 12 and 14 respectively. '268 Patent, col. 3 line 60-col. 4, line 16. The patent uses the identical arrows 12 and 14 to refer to the first and second flow records. Id. Thus, the patent teaches that the flow record in a layer runs in the same direction as the predetermined general direction of flow of the plastic that formed the layer.

For the reasons discussed above, the court construes "flow record" as a preserved record, or history, of the predetermined general direction of flow created when the plastic layer solidifies or partially solidifies in the mold.

F. Flow Channel

[12] The term "flow channel" appears in steps (f) and (g) of claims 1 and 21. Claim 1 recites:

(f) adjusting the mold system to thereby eject the product, wherein the first mold cavity comprises a *first-cavity-flow-channel* which is located adjacent the first-layer-defining-mold-cavity-section, with a *flow channel being defined as a portion of a mold cavity which is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic,* and wherein step (a) comprises the step of:

(g) directing the first plastic into the first-layer-defining-mold-cavity-section via the *first-cavity-flow-*

channel, so that the first plastic flows in the first-cavity-flow-channel in a direction which is positively different from said first predetermined general direction.

'282 Patent, col. 8, lines 46-62 (emphases added). Claim 21 similarly recites:

(f) adjusting the mold system to thereby eject the product, wherein the second mold cavity comprises a *second-cavity-flow-channel* which is located adjacent said second-layer-defining-mold-cavity-section, *with a flow channel being defined as a portion of a mold cavity which is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic,* and wherein step (d) comprises the step of:

(g) directing second plastic into the second-layer-defining-mold-cavity-section via the *second-cavity-flow-channel,* so that the second plastic flows in the *second-cavity-flow-channel* in a direction which is positively different from said second predetermined general direction.

Id. at col. 11, lines 20-35 (emphases added).

As Turn-Key notes, the claims themselves explicitly define the term "flow channel" to be "a portion of a mold cavity which is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injectedplastic." Such an explicit definition in the intrinsic evidence is, of course, controlling. *See* Jack Guttman, Inc. v. Kopykake Enterprises, 302 F.3d 1352, 1360 (Fed.Cir.2002). This definition provides both a structural and a functional limitation to the term "flow channel." Structurally, it is a part of the mold cavity that is significantly thicker and wider than the adjacent cavity thickness. Functionally, the flow channel directs the flow of injected plastic, *i.e.,* the flow channel is thicker and wider than the adjacent mold cavity "for the purpose of directing the flow of injected plastic." Furthermore, step (g) qualifies the functional "directing" limitation of step (f) by providing that the flow channel directs flow so that the plastic flows in the flow channel "in a direction which is positively different from said ... predetermined general direction." Turn-Key concedes that a structural element, even if thicker and wider than the adjacent mold cavity, cannot be a "flow channel" as claimed in the '268 patent "if it does not direct plastic melt into a layer-defining-mold-cavity-section in an unquestionably different direction than it had in the 'flow channel' prior to being so directed."

Perhaps because the claim language itself so thoroughly defines a "flow channel," the written description shines little additional light on this term. However, Figure 1, *supra,* illustrates the relationship between a flow channel and the rest of the mold cavity. As described in the written description and illustrated in Figure 1, mold cavity 1 includes both flow channel 6 and layer-defining-mold-cavity-section 2. Thus, as provided in the claims, the flow channel is a portion of the mold cavity. In addition, as can be seen from the figure, flow channel 6 is much deeper and wider than the adjacent mold cavity section. This is consistent with the definition provided in the claim language, which requires the flow channel to be "significantly" thicker and wider than the adjacent cavity section.

The prosecution history provides further support for the definition of flow channel found in the claims. The patentee amended the claims to add steps (f) and (g) in response to an anticipation rejection over U.S. Patent No. 3,822,107 to Wogerer (the "Wogerer patent"). The examiner explained:

The sections of the cavity extending from the gate for nozzles 1 and 2, as shown in the figures of Wagerer [sic], are equivalent to first-cavity-flow-channel and second-cavity-flow-channel. The section of the cavity

(where pin 5 extends) is equivalent to the first-layer-defining-mold-cavity (figure 1) and the second-layer-defining-mold-cavity (figure 2). Part 3 (fixed mold) is a shared gate means.

(Turn-Key Tech's Markman Exhibit 3 at 65). The limitations that became steps (f) and (g) were previously recited in a dependent claim, and were incorporated into independent claim 1 in response to the rejection. Relying on the both the structural and functional limitations recited in the amendment, the patentee distinguished Wogerer by noting that:

Wogerer does not describe an injection molding system in which injected plastic is directed by flow channels, as recited in amended claim 1 and new Claim 28 [which became independent claim 21 in the issued patent] .... The definition of "flow channel" added to these claims by this amendment precludes the Examiner's interpretation of Wogerer's cavity as including sections that are equivalent to flow channels. If the flow channels are not significantly thicker and wider than the adjacent mold cavity thickness, they do not significantly direct the flow of the injected plastic.

(Id. at 121). This explanation reinforces the structural and functional definition of "flow channel" provided in the claims. And, the patentee relied both upon the unique structural features of the claimed flow channel, as well as its ability to direct the flow of plastic into the mold, in order to distinguish the claimed invention from the prior art Wogerer patent. Furthermore, as Turn-Key notes, by specifically referring to "[t]he definition of flow channel added to these claims by this amendment," the patentee's explanation also clearly refers the public to the claim language itself to find a definition of "flow channel."

In short, the patent claims themselves define "flow channel" to be "a portion of a mold cavity which is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic," and further require (in step (g)) that the flow channel directs flow so that the plastic flows in the flow channel "in a direction which is positively different from said ... predetermined general direction."

Koito does not disagree with the general definition of "flow channel" provided above. However, it seeks either to add to or clarify that definition in several respects. First, Koito urges that the court construe "flow channel" to require a structure that directs the plastic to flow in a single direction through the flow channel. Koito argues that the use of the article "a" before "direction" in step (g) mandates this result. The Federal Circuit "has repeatedly emphasized that an indefinite article 'a' or 'an' in patent parlance carries the meaning of 'one or more' in open-ended claims containing the transitional phrase 'comprising.' " KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000). Only if the intrinsic evidence indicates that the inventor intended "a" to carry its normal, singular meaning, will the court so limit the claim. *See* Abtox, Inc. v. Exitron Corp., 122 F.3d 1019, 1023 (Fed.Cir.1997). Koito contends that in context, these claims require a singular definition because they require comparison with the "predetermined general direction" of flow in the layer-defining-mold-cavity-section. Koito argues, in essence, that it is impossible to have the predetermined general direction be "positively different" from the direction through the flow channel unless there is only one direction through the flow channel. Koito is mistaken. That there may be more than one direction of flow through the flow channel does not necessarily prevent one of those flow directions from being "positively different" from the predetermined general direction. In short, the intrinsic evidence in this case does not indicate that the inventor intended "a" to carry a singular meaning, and therefore the court construes "a direction" to carry its normal meaning in patent parlance, *i.e.*, one or more. Thus, the claims do not require that the plastic flow through the flow channel in a single direction.

Koito also argues that the claimed flow channel must possess a discrete shape. Specifically, it argues that "the flow channel is defined by two discrete side walls, a beginning wall, and an end wall, and is shaped so that plastic flows in only one direction along the length of the flow channel" as illustrated in Figures 3 and 6 of the patent. Koito cannot provide any reason, other than by reference to the preferred embodiments, why a flow channel must be limited to a specific shape that includes four discrete walls. The claim language does not so limit the term, and the court declines Koito's invitation to import additional structural limitations based on the preferred embodiment.

Finally, Koito asks the court to construe "significantly thicker and wider," which appears in the claims as part of the definition of "flow channel," to mean much thicker and wider. Turn-Key argues that "significantly thicker and wider" simply means thick and wide enough to direct flow in accordance with step(g). The parties apparently agree that the ordinary meaning of "significantly" is "of a noticeably or measurably large amount." *Merriam-Webster's Collegiate Dictionary;* (Joint Claim Construction and Prehearing Statement at 20). Nowhere in the written description or drawings does the patentee define exactly what is meant by "significantly thicker and wider," and in the absence of such a definition the term generally carries its ordinary meaning, which in this case would lead the court to adopt Koito's proposed construction, much thicker and wider.

Turn-Key supports its construction by referring both to the functional language in the claim itself ("for the purpose of directing the flow of injected plastic") and to the patentee's response to the examiner's rejection over Wogerer. As discussed above, in the response to the Wogerer rejection the patentee explained the "significantly thicker and wider" language in a functional manner: "If the flow channels are not significantly thicker and wider than the adjacent mold cavity thickness, they do not significantly direct the flow of the injected plastic." Turn-Key argues that this functional language provides a complete definition of "significantly thicker and wider," *i.e.,* that it simply means thick and wide enough relative to the adjacent cavity to perform the function of directing flow.

The court is persuaded by Turn-Key's argument, which relies on the explicit language of the claim itself. Moreover, as discussed above, the prosecution history specifically directs one of skill in the art to look to the amended claim language itself for the definition of "flow channel." This language directly links the required thickness and wideness of the flow channel to its purpose: directing the flow of injected plastic.

For the reasons given above, the court construes the term "flow channel" to be a portion of a mold cavity that is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic, and the claim further requires that the flow channel direct flow so that the plastic flows in the flow channel in at least one direction that is positively different from the predetermined general direction. Finally, "significantly thicker and wider" means thick and wide enough relative to the adjacent cavity thickness to direct the flow of injected plastic as required by the claim.

G. Layer-Defining-Mold-Cavity-Section

[13] The parties dispute the meaning of "layer-defining-mold-cavity-section." The claims recite this term repeatedly, and refer to both a first and a second layer-defining-mold-cavity-section. Steps (a)-(b) of claim 1 are illustrative:

(a) injecting a quantity of first plastic into the first mold cavity so that the first plastic flows in the first-layer-defining-mold-cavity-section in a first predetermined general direction,

(b) solidifying at least partly the flowed first plastic in the first-layer-defining-mold-cavity-section to thereby form said first plastic layer having a first-direction-flow-record.

'268 Patent, col. 8, lines 19-26. Koito asserts that the "layer-defining-mold-cavity-section" is the area of the mold cavity that forms a layer of the product. As a corollary, Koito also asserts that the layer-defining-mold-cavity-section is the entire section in which plastic flows in the mold cavity adjacent the flow channel. In other words, Koito proposes that the layer-defining-mold-cavity-section occupies the remainder of the mold cavity not used as a flow channel. In contrast, Turn-Key argues that a layer-defining-mold-cavity-section is simply a section of the mold cavity that defines and forms a layer of a cross-laminated section of the product. Under Turn-Key's construction, the layer-defining-mold-cavity-section need not be coextensive with the portion of the mold cavity not used as a flow channel.

The plain meaning of "layer-defining-mold-cavity-section" favors Turn-Key's proposed definition. This is so because the ordinary meaning of "section" refers to a part or portion of a whole. *Oxford English Dictionary* (2d Ed.1989) (defining section as "[a] *part* separated or divided off from the remainder; one of the portions into which a thing is cut or divided" (emphasis added)); *Webster's Third New International Dictionary* 2053 (defining section in pertinent part as "a *part* that is, may be, or is held to be separated" (emphasis added)). It follows that a layer-defining-mold-cavity-section is a part of the mold cavity-not necessarily the whole mold cavity (as would be required were the layer-defining-mold-cavity-section to be interpreted as forming a layer of the product as a whole, rather than simply a layer of the cross-laminated section of the product).

The choice between the two parties' positions also depends upon the meaning attached to the word "layer," specifically, whether it refers to a layer of the product as a whole, or whether it refers only to a layer of the cross-laminated section of the product. As discussed above, the layers referred to in the claims are first mentioned in the preamble (and are later defined in the body of the claims) as being part of the cross-laminated section of the product: "a plastic product, with a cross-laminated section that includes a first plastic layer and a second plastic layer ...." Id., lines 11-13. Thus, as used in the claims, "layer" refers to one of the two or more layers that form the cross-laminated section. The court has construed "cross-laminated section" to refer to a section of the product that contains both a first and a second plastic layer, where the first and second plastic layers have positively different flow records. Under the court's construction, the cross-laminated section can, but need not be co-extensive with the layer of plastic forming the entire product, *i.e.,* the claims do not require the entire product to be cross-laminated, but instead require cross-lamination in only a "section" of the product. It follows that the layers forming the cross-laminated section need not encompass an entire layer of the product, but rather need only be large enough to form the cross-laminated section of the product. Hence, the "layer-defining-mold-cavity-section" is not, as Koito argues, a portion of the mold cavity that defines a layer of the product, but rather is a portion of the mold cavity that forms a layer of the cross-laminated section of the product. There is, of course, no reason why one or both of the layers could not also be an entire layer of the product itself. The court merely holds that the claims themselves are not so limited, and by their plain terms can include one or more layers that extend only to the boundaries of the cross-laminated section, and not beyond.

For the reasons discussed above, the court construes the term "layer-defining-mold-cavity-section" to mean a section of the mold cavity that defines and forms a layer of a cross-laminated section of the product.

III. CONCLUSION

The court construes the disputed claim limitations of the '268 patent as follows:

(1) Positively different: Positively different means definitely or certainly not alike.

(2) Cross-laminated section: Cross-laminated section means a section of the injection molded plastic product that contains both a first and a second plastic layer, where the first and second plastic layers have positively different flow records-meaning that the flow records of the two layers are definitely not alike.

(3) Predetermined general direction: Predetermined general direction means the prevalent direction of flow determined before injection of the liquid plastic into the mold.

(4) Flow record: Flow record means a preserved record, or history, of the predetermined general direction of flow created when the plastic layer solidifies or partially solidifies in the mold.

(5) Flow channel: Flow channel means a portion of the mold cavity that is significantly thicker and wider than the adjacent mold cavity thickness for the purpose of directing the flow of injected plastic. The claim further requires that the flow channel direct flow so that the plastic flows in the flow channel in at least one direction that is positively different from the predetermined general direction. Finally, "significantly thicker and wider" means thick and wide enough relative to the adjacent cavity thickness to direct the flow of injected plastic as required by the claim.

(6) Layer-defining-mold-cavity-section: Layer-defining-mold-cavity-section means a section of the mold cavity that defines and forms a layer of a cross-laminated section of the product

IT IS SO ORDERED.

S.D.Cal.,2002.
Koito Mfg. Co., Ltd. v. Turn-Key-Tech, L.L.C.