

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF VIRGINIA  
ABINGDON DIVISION**

**TITAN ATLAS MANUFACTURING )  
INC. and STRATA MINE SERVICES, )  
LLC, )**

Plaintiffs, )

Case No. 1:11CV00012

v. )

**FRANK A. SISK and PRECISION MINE )  
MINE REPAIR, INC., )**

Defendants. )

**FRANK A. SISK and PRECISION MINE )  
REPAIR, INC., )**

Plaintiffs, )

Case No. 1:11CV00068

v. )

**TITAN ATLAS MANUFACTURING )  
INC. and STRATA MINE SERVICES, )  
LLC, )**

Defendants. )

**OPINION AND ORDER**

*Gregory L. Hillyer, Feldman Gale, P.A., Philadelphia, Pennsylvania, Javier Sobrado, Feldman Gale, P.A., Miami, Florida, and Mark D. Loftis, Woods Rogers PLC, Roanoke, Virginia, for Frank Sisk and Precision Mine Repair, Inc. Mark Varboncouer, McGuireWoods LLP, Chicago, Illinois, and Jonathan Blank and*

*Lisa Lorish, McGuireWoods LLP, Charlottesville, Virginia, for Strata Mine Services, LLC. David Ludwig, Dunlap, Grubb & Weaver, PLLC, Leesburg, Virginia, for Titan Atlas Manufacturing, Inc.*

In this patent infringement action, following a so-called *Markman* proceeding, I construe as a matter of law the disputed claims of the subject patent.

## I

The patent at the center of this dispute, U.S. Patent No. 5,879,231 (“the ‘231 patent”) is entitled “Mine Ventilation Structure” and is owned by Frank A. Sisk. Precision Mine Repair, Inc. (“PMR”) is the exclusive licensee of the ‘231 patent. In their First Amended Complaint, Titan Atlas Manufacturing, Inc. (“Titan”) and Strata Mine Services, LLC (“Strata”) request a declaration that the ‘231 patent is invalid and that the prefabricated construction panels sold by Titan and purchased and used by Strata do not infringe on the patent. In their Third Amended Complaint, Sisk and PMR claim that Strata willfully infringed the patent, that Titan induced Strata’s infringement and that Titan and Strata together induced infringement by others, all in violation of 35 U.S.C.A. § 271 (West 2001 & Supp. 2011).<sup>1</sup> Jurisdiction of this court exists pursuant to 28 U.S.C.A. §§ 1331, 1338(a),

---

<sup>1</sup> Sisk and PMR initially filed their Complaint against Titan and Strata in the Northern District of Illinois. That case was transferred to this court and consolidated with Titan’s and Strata’s action seeking a declaration of non-infringement. All claims

and 2201 (West 2006 & Supp. 2011). The parties have briefed and argued the proper construction of certain claims of the '231 patent and the issues are ripe for decision.

## II

The '231 patent sets forth an invention designed to ventilate underground mines by blocking a mine passageway or preventing the mixture of ventilation air at the intersection of two passageways. The need for ventilation in underground mines is obvious, and increases as the mining activity takes place further from the source of the ventilation. Generally, ventilation systems make use of air shafts formed by selected passageways through which intake air and return air are directed. Intersecting passageways are blocked with a partition or ducted through an overcast or undercast. For the ventilation system to work properly, it must be impervious to air so that intake air and return air do not mix.

The '231 patent contains twelve claims, all of which describe different aspects of the mine ventilation structure. The structure itself is made up of lightweight wire panels sandwiched around a core of insulation with wire struts connecting the panels by running through the insulation to form a truss system.

---

made by any party in one case are deemed to constitute compulsory counterclaims in the other case, if so required by Federal Rule of Civil Procedure 13(a).

The panels are constructed in the passageways of the underground mine to form the walls of an air shaft and a layer of concrete is applied extending beyond the structure itself and onto the walls and ceiling of the passageway to form an air seal. The main benefits of the structure, according to the inventor, are that it creates an air seal, requires no maintenance, is lightweight, and is easy to install underground.

The '231 patent has two independent claims, both of which are the subject of the parties' claim construction arguments. The other ten claims are dependent variations of these two.

Claim 1 states:

A mine ventilation structure for use in an underground mine having a grid of intersecting passageways separated by columns of remaining material, said passageways having sidewalls and a ceiling, said structure comprising a wall formed of a plurality of panels fitted across the passageway and to the ceiling, said panels assembled in side-by-side relationship with wire fasteners, each panel having first and second spaced apart wire grids with an insulation core, said grids interconnected with strut wires passing through the insulation core and forming a truss system, and a layer of concrete applied as gunite or shotcrete to the assembled panels embedding the strut wires and covering the wire grids, said layer of concrete extending beyond the wall along the passageway and the ceiling whereby the structure forms an air seal in the passageway.

('231 patent, col. 6, l. 61 – col. 7, l. 8.)

Claim 2 describes the structure as used at the intersection of two mine passageways:

A mine ventilation structure for usage at an intersection of first and second passageways in an underground mine having a grid of

intersecting passageways separated by columns of remaining material, said ventilation structure defining a first airway communicating with said first passageway and a second airway communicating with said second passageway, said ventilation structure comprising

- a pair of generally parallel, spaced-apart sidewalls forming the sidewalls of said first airway, each of said sidewalls formed of a plurality of panels fitted across the second passageway, said panels assembled in side-by-side relationship with wire fasteners,

- a deck which is a roof of one of said first and second airways and a floor of the other of said first and second airways, said deck formed of a plurality of panels spanning the full distance between the sidewalls, said panels assembled in side-by-side relationship with wire fasteners,

said ventilation structure further comprising a pair of wing walls, if said spaced-apart sidewalls do not reach the ceiling, each said wing walls formed of a plurality of panels spanning the full distance between the deck and the ceiling, said panels assembled in side-by-side relationship with wire fasteners and said wing walls positioned on the deck above the sidewalls,

each of the panels in the sidewalls, deck and wing walls having first and second spaced apart wire grids with an insulation core, said grids interconnected with strut wires passing through the insulation core and forming a truss system, and a layer of concrete applied as gunite or shotcrete to the assembled panels embedding the strut wires and covering the wire grids, said layer of concrete extending beyond the ventilation structure along the first and second passageways and to the ceiling whereby the ventilation structure forms an air seal between the first and second airways.

('231 patent, col. 7, ll. 9-45.) The dependent claims outline various versions of the structures in claims 1 and 2.

### III

In this opinion, I undertake the first step in any patent infringement case – to construe the meaning and scope of the patent claims at issue. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc), *aff'd*, 517 U.S. 370 (1996). This process, called claim construction, is a matter of law reserved exclusively for the court. *Id.* at 979, 984. This is distinct from the question of fact of whether the accused product infringes on the patent claims, which is the province of the jury. *Id.* “Victory in an infringement suit requires a finding that the patent claim covers the alleged infringer’s product or process, which in turn necessitates a determination of what the words in the claim mean.” *Markman*, 517 U.S. at 374 (citation and internal quotation marks omitted).

It is a “bedrock principle of patent law that the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Innova/Pure Water, Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004). In the task of claim construction, claim terms “are generally given their ordinary and customary meaning.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (citation and internal quotation marks omitted). “[T]he ordinary and customary meaning of a claim term is the meaning that the term would have to a person of ordinary skill in the art in question at the time of the invention, i.e., as of the effective filing date of the patent application.” *Id.* at 1313.

“The inquiry into how a person of ordinary skill in the art understands a claim term provides an objective baseline from which to begin claim interpretation.” *Id.* “[T]he claims themselves provide substantial guidance as to the meaning of particular claim terms.” *Id.* at 1314. “Other claims of the patent . . . can also be valuable sources of enlightenment as to the meaning of a claim term.” *Id.*

The claims must also “be read in view of the specification, of which they are a part.” *Id.* at 1315 (citation and internal quotation marks omitted). “[T]he person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* at 1313. “[T]he specification is always highly relevant to the claim construction analysis” as it is the “best source for understanding” the meaning of a disputed term, “informed, as needed, by the prosecution history.” *Id.* at 1315 (citations and internal quotation marks omitted).

The claims, the specification, and the prosecution history are all forms of intrinsic evidence the court may rely on during claim construction. The court may also examine extrinsic evidence, but should do so with caution. “Extrinsic evidence consists of all evidence external to the patent and prosecution history, including expert and inventor testimony, dictionaries, and learned treatises.” *Markman*, 52 F.3d at 980. “[W]hile extrinsic evidence can shed useful light on the relevant art, . . . it is less significant than the intrinsic record in determining the

legally operative meaning of claim language.” *Phillips*, 415 F.3d at 1317 (citation and internal quotation marks omitted).

“Extrinsic evidence is to be used for the court’s understanding of the patent, not for the purpose of varying or contradicting the terms of the claims.” *Markman*, 52 F.3d at 981. It “is not for the purpose of clarifying ambiguity in claim terminology. It is not ambiguity in the document that creates the need for extrinsic evidence but rather unfamiliarity of the court with the terminology of the art to which the patent is addressed.” *Id.* at 986. “[E]xtrinsic evidence cannot add, subtract, or vary the limitations of the claims.” *Id.* at 985. Therefore, “[t]he district court’s claim construction, enlightened by such extrinsic evidence as may be helpful, is still based upon the patent and prosecution history.” *Id.* at 981.

In construing the claim terms, this court is not bound by the proposed constructions presented and argued by the parties. *See Marine Polymer Techs., Inc. v. HemCon, Inc.*, 672 F.3d 1350, 1359 n.4 (Fed. Cir. 2012) (citing *Exxon Chem. Patents, Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555 (Fed. Cir. 1995)).

#### IV

The parties in this case dispute terms found in both Claim 1 and Claim 2. In both claims, the parties dispute the meaning of the preambles, the whereby clauses, “concrete,” “a layer of concrete applied as gunite or shotcrete,” “wire fasteners,”



and “insulation core.” By applying the applicable principles of claim construction, I find the following to be the proper construction of the disputed terms.

#### A. PREAMBLE.

The preamble of Claim 1 reads, “A mine ventilation structure for use in an underground mine having a grid of intersecting passageways separated by columns of remaining material, said passageways having sidewalls and a ceiling, said structure comprising. . . .” (’231 patent, col. 6, ll. 61-64.) The preamble of Claim 2 reads, “A mine ventilation structure for usage at an intersection of first and second passageways in an underground mine having a grid of intersecting passageways separated by columns of remaining material, said ventilation structure defining a first airway communicating with said first passageway and a second airway communicating with said second passageway, said ventilation structure comprising. . . .” (’231 patent, col. 7, ll. 9-15.) Strata and Titan argue that the preambles do not limit the claims. Sisk and PMR contend that the preambles need no construction but their argument assumes that the preambles do state limitations on the claims.<sup>2</sup>

---

<sup>2</sup> Often the patentee in an infringement action will seek to broaden the scope of the patent during claim construction as a litigation strategy, while the alleged infringer will seek to narrow that scope. Here Sisk and PMR seek to narrow the claims, presumably as an answer to the defense of invalidity, while Strata and Titan want to broaden them.

Claim preambles are to be construed consistently with the general principles of claim construction outlined above. *See Bell Commc'ns Research, Inc. v. Vitalink Commc'ns Corp.*, 55 F.3d 615, 620 (Fed. Cir. 1995) (“[A] claim preamble has the import that the claim as a whole suggests for it. In other words, 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.”). *Id.* A preamble is limiting “if it recites essential structure or steps, or if it is necessary to give life, meaning, and vitality to the claim.” *Catalina Mktg. Int’l, Inc. v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002) (citation and internal quotation marks omitted). A preamble is not limiting where the claim body defines a structurally complete invention and “uses the preamble only to state a purpose or intended use for the invention.” *Id.* (citation and internal quotation marks omitted). In *Catalina*, the Federal Circuit established that a preamble will generally not be limiting unless there is clear reliance upon the preamble to distinguish prior art in the prosecution history or unless the preamble is necessary to provide antecedent basis for the body of the claim. *Id.* at 808-09.

I find that the preambles do state limitations on Claims 1 and 2. The preambles establish that the essential fact that the invention protected by the '231 patent is a mine ventilation structure that is constructed in and as part of the

passageways of an underground mine. The invention is a “mine ventilation structure,” not a structure of walls covered in concrete outside of and separate from an underground mine. The terms of the claims also rely upon the preamble for essential context. Claim 1, for example, states, “a wall formed of a plurality of panels fitted across the passageway and to the ceiling.” (’231 patent, col. 6, ll. 64-66.) Similarly, Claim 2 states, “a pair of generally parallel, spaced-apart sidewalls forming the sidewalls of said first airway, each of said sidewalls formed of a plurality of panels fitted across the second passageway. . . .” (’231 patent, col. 7, ll. 16-19.) Without the preambles’ description of the invention as a “mine ventilation structure for use in an underground mine having a grid of intersecting passageways separated by columns of remaining material,” the terms “passageways” and “ceiling” in the claims are without essential context. (’231 patent, col. 6, ll. 61-63.) The preambles establish that the invention described by the patent is a structure built into the passageways and ceiling of an underground mine.

Strata and Titan argue that the preamble in this case only states the purpose or intended use of the invention and that the body of the claim defines a structurally complete invention. (Strata Opening Claim Constr. Br. 6 (citing *Catalina Mktg. Int’l, Inc.*, 289 F.3d at 808).)<sup>3</sup> However, Strata and Titan’s description of the structure undermines their argument. They describe the

---

<sup>3</sup> Titan has not filed separate briefs but has relied upon Strata’s arguments.

invention as a wall or a hallway formed of wire panels covered in concrete. (*Id.*) That is not a complete description of the structure. Rather, the claims specifically describe a structure fitted into the passageways and ceilings of an underground mine and completed by the application of concrete to both the wire panels and the walls of the passageways and the ceilings. The invention would not be cognizable without reference to the preamble. *See Catalina Mktg. Int'l, Inc.*, 289 F.3d at 808 (noting that “when reciting additional structure or steps underscored as important by the specification, the preamble may operate as a claim limitation”); *see also Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 952 (Fed. Cir. 2006) (stating that when limitations in the body of the claim “rely upon and derive antecedent basis from the preamble, then the preamble may act as a necessary component of the claimed invention.”) (quoting *Eaton Corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003)).

Further, the specification, particularly the section addressing prior art, supports the interpretation of the preamble as a limitation. *See Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257 (Fed. Cir. 1989) (“The effect preamble language should be given can be resolved only on review of the entirety of the patent to gain an understanding of what the inventors actually invented and intended to encompass by the claim.”). The specification describes the problems with prior art in the context of mine ventilation and describes the

specific problem the invention seeks to resolve as the need for a mine ventilation system that is airtight, relatively easy to install, and requires minimal maintenance. ('231 patent, col. 1, l. 13-55.) *See Gen. Elec. Co. v. Nintendo Co.*, 179 F.3d 1350, 1361-62 (Fed. Cir. 1999) (finding that the specification “makes clear that the inventors were working on the particular problem of displaying binary data on a raster scan display device and not general improvements to all display systems.”).

For these reasons, I will construe the preambles to Claims 1 and 2 as limitations on the claims.

#### B. WHEREBY CLAUSE.

The whereby clause of Claim 1 states, “whereby the structure forms an air seal in the passageway.” ('231 patent, col. 7, ll. 7-8.) The whereby clause of Claim 2 states, “whereby the ventilation structure forms an air seal between the first and second airways.” ('231 patent, col. 7, ll. 44-45.) Strata and Titan argue that the court should find that the clauses do not state limitations on the claims. Sisk and PMR argue that the court should find that the clauses are part of the claims and state positive limitations.<sup>4</sup>

“A ‘whereby’ clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim.” *Tex.*

---

<sup>4</sup> Similar to their argument on the preambles, Sisk and PMR assert that the whereby clauses need not be construed, but they do seek a ruling that the whereby clauses limit the claims.

*Instruments Inc. v. U.S. Int’l Trade Comm’n*, 988 F.2d 1165, 1172 (Fed. Cir. 1993) (concluding, in process claims, that the whereby clauses described “the result of arranging the components of the claims in the manner recited in the claims” and thus were not limitations). However, “when the ‘whereby’ clause states a condition that is material to patentability, it cannot be ignored in order to change the substance of the invention.” *Hoffer v. Microsoft Corp.*, 405 F.3d 1326, 1329 (Fed. Cir. 2005); *see also Scheinman v. Zalkind*, 112 F.2d 1017, 1019 (C.C.P.A. 1940) (finding that whereby clause in structure claim were “structural in character and import[ed] into the count the structural features which both parties sought to produce.”).

I find that the whereby clauses of Claims 1 and 2 state the necessary results of fabricating a mine ventilation structure according to the patent. Although the element of an “airtight seal” is not stated in the body of the claims, the structure described in the body of the claims is an airtight structure. The patent specification clarifies that an airtight seal necessarily occurs when the structure is created as dictated by the patent. For example, the specification states, “The layer of concrete is applied such that it extends beyond the margins of the wall along the passageway and the ceiling ensuring that the ventilation structure forms an air seal.” (’231 patent, col. 2, ll. 14-17.) It also states:

When the infrastructure of the overcast or undercast is coated with a layer of concrete applied as gunite or shotcrete, a monolithic

ventilation structure is formed which is virtually air impervious. A good air seal is also obtained between the ventilation structure and the pillars, requiring substantially no maintenance, when the pillars are sprayed with concrete applied as gunite or shotcrete several feet beyond the margins of the ventilation structure.

(’231 patent, col. 2, ll. 35-42.) Based on this language, the structure recited in the claims is an airtight structure such that the whereby clause adds nothing to the claims themselves.

Sisk and PMR argue that the whereby clauses state a structure, the airtight seal, necessary to the patentability of the claims. They argue that there are no disclosures in the patent indicating that an airtight seal is presumed to exist or is an inherent part of the claimed structure. (Sisk and PMR Resp. Claim Constr. Br. 9.) As discussed above, the specification of the patent actually indicates that the airtight seal is a presumed and inherent part of the claimed structure. The specification describes an airtight seal as being automatically formed when the layer of concrete is applied to the panels. *Cf. C & C Jewelry Mfg., Inc. v. West*, No. 09-1303-JF(HRL), 2010 WL 2681921, at \*3 (N.D. Cal. Jul. 6, 2010) (finding that the clause “to provide a pleasing appearance” did not state the necessary result of the method recited in the claims and therefore stated a limitation on the claim); *Stimsonite Corp. v. NightLine Markers, Inc.*, 33 F. Supp. 2d 703, 709 (N.D. Ill. 1999) (“[T]he ‘whereby’ clause in Claim 20 simply states the requisite

consequence of forming a reflective marker with the dimensions set forth in the '513 Patent claims.”).

It is true, as Sisk and PMR argue, that the fact that the claimed structure forms an airtight seal was relied upon in distinguishing prior art which did not form an airtight seal. ('231 patent, col. 1, ll. 24-35.) However, that does not change the fact that the structure described in the claims is, according to the specification, an airtight structure. In other words, the element relied upon by Sisk in establishing patentability is inherent to the structure described in the claims and the whereby clause does not add anything material or substantive to the claims. *See Minton v. Nat'l Ass'n of Sec. Dealers, Inc.*, 226 F. Supp. 2d 845, 867 (E.D. Tex. 2002), *aff'd*, 336 F.3d 1373 (Fed. Cir. 2003). It is, therefore, unnecessary to construe it as an additional limitation on the claims.

### C. “CONCRETE.”

Both Claims 1 and 2 include the term “concrete” in the body of the claims. Strata and Titan argue that the term should be construed as “concrete or mortar.” Sisk and PMR argue that the term does not need construction.

I find that the term concrete, understood in its ordinary and customary context and in the specific context of the patent specification, includes the term mortar.



The “ordinary and customary” meaning of “concrete” is a “mixture of cement, water, sand, and coarser material such as gravel or crushed stone.” Alfred H. White, *Engineering Materials* 406 (1st ed. 1939).<sup>5</sup> Although in the body of the claims there is no indication that the construction of “concrete” should be anything other than this ordinary meaning, the specification states, “The concrete applied as gunite or shotcrete is preferably formed with mortar mix and rich in cement, dry mixed at a nozzle . . . with just enough water to form a mixture that when sprayed will stay in place.” (’231 patent, col. 6, ll. 6-9.) Thus, it is clear that the term concrete must be able to incorporate the term mortar. If it did not, then the claim term would exclude a preferred embodiment. “[A] claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.” *MBO Labs., Inc. v. Becton, Dickinson & Co.*, 474 F.3d 1323, 1333 (Fed. Cir. 2007) (quoting *On-Line Techs., Inc. v. Bodenseewerk Perkin-Elmer GmbH*, 386 F.3d 1133, 1138 (Fed. Cir. 2004)).<sup>6</sup>

---

<sup>5</sup> This definition of concrete, and that of mortar, are taken from a treatise on engineering materials which is the appropriate context for the definition of these elements of the patent. See *Hoechst Celanese Corp. v. BP Chems. Ltd.*, 78 F.3d 1575, 1580 (Fed. Cir. 1996) (“[A] general dictionary definition is secondary to the specific meaning of a technical term as it is used and understood in a particular technical field.”).

<sup>6</sup> Sisk and PMR argue, without explanation, that the statement that the concrete is “preferably formed with mortar mix” is not a preferred embodiment. It is unclear on what basis they assert this position as the specification clearly states that use of mortar mix to create the concrete is preferred.

The term mortar applies to a “mixture of cement, water and sand.” White, *supra*. On the face of it, the definition of the term concrete includes mortar, as it is made up of a “mixture of cement, water and sand,” *plus* coarser materials such as gravel or crushed stone. The description of the concrete in the specification supports this interpretation of the term as inclusive of mortar because it states that the concrete used in completing the structure is “preferably formed with a mortar mix and rich in cement.” Thus, a person of ordinary skill in the art would interpret the term concrete as it is used in this patent to include mortar and/or mortar mix, as that is how the specification uses the term. *See Phillips*, 415 F.3d at 1313 (“It is the person of ordinary skill in the field of the invention through whose eyes the claims are construed. Such person is deemed to read the words used in the patent documents with an understanding of their meaning in the field, and to have knowledge of any special meaning and usage in the field.”) (quoting *Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1477 (Fed. Cir. 1998)).

Strata and Titan argue that concrete should be defined as “concrete or mortar” because the specification indicates that the preferred embodiment is made with mortar mix. However, Strata and Titan’s proposed definition actually serves to broaden the term concrete in a way that is not in conformity with the specification. To construe the term concrete as “concrete or mortar” is to say that the layer of concrete can be made of *either* concrete *or* mortar. This is not

supported by the claims or the specification. The claims state that the structure is made with a “layer of concrete.” The specification states that the layer of concrete “is preferably formed with mortar mix.” In other words, the specification provides that mortar mix is a component of the concrete; not that the layer itself is made of mortar. This is at the heart of the disagreement between the parties. Sisk and PMR agree that the concrete can be made with mortar (Sisk and PMR Opening Claim Constr. Br. 11), but assert that Strata and Titan’s proposed definition is too broad. I agree with this assessment for the reasons stated.

Given this understanding, I find that the term concrete does not need construction. The term is clearly used in its ordinary sense in the claims and the specification indicates that the term can, and in the preferred embodiment does, include mortar/mortar mix as a component.

#### D. “A LAYER OF CONCRETE APPLIED AS GUNITE OR SHOTCRETE.”

Both Claims 1 and 2 state that the layer of concrete is to be “applied as gunite or shotcrete” to complete the invention. Strata and Titan argue that because this phrase is a process claim within an apparatus claim, it should essentially be read out of the claim. Sisk and PMR contend that the phrase requires no construction and is a limitation on the claim.

I find that the phrase “a layer of concrete applied as gunite or shotcrete,” read in context, states a pure apparatus claim because it “describes the product

more by its structure than by the process used to obtain it.” *Hazani v. U.S. Int’l Trade Comm’n*, 126 F.3d 1473, 1479 (Fed. Cir. 1997). Both the claims of the patent and the specification describe a layer of concrete that forms the final coating to the mine ventilation structure and completes the airtight seal by covering the wire panels, insulation core, and strut wires and extending beyond the structure to the walls and ceilings of the passageways in which the structure is embedded. The phrase “a layer of concrete applied as gunite or shotcrete” describes the structural relationship of the concrete to the underlying panels and to the walls and ceiling of the underground mine. *Id.*; *see also LG Display Co., v. AU Optronics Corp.*, 686 F. Supp. 2d 429, 445-46 (D. Del. 2010).

Strata and Titan argue that the phrase describes a process for applying the concrete – gunite or shotcrete – and therefore has no place in an apparatus claim. The terms “gunite” and “shotcrete” are used to describe concrete applied to a surface by being sprayed as a dry-mix or wet-mix through a hose. *See Am. Shotcrete Ass’n, Shotcrete FAQs*, available at <http://www.shotcrete.org/ASAfaqs.htm> (last visited June 7, 2012). Strata and Titan contend that because these terms inherently describe a particular process for applying concrete, they have no restrictive application in an apparatus claim. *See Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1344 (Fed. Cir. 2008) (finding that claim stated a pure apparatus claim and had no process limitations).

It is true that a court must generally seek to avoid reading process limitations into an apparatus claim “because the process by which a product is made is irrelevant to the question of whether that product infringes a pure apparatus claim.” *Id.* “The mere use in a claim of structural or characterizing terms derived from processes or methods, however, does not prevent a claim from being considered a true product claim.” *Biacore v. Thermo Bioanalysis Corp.*, 79 F. Supp. 2d 422, 456 (D. Del. 1999). Indeed, courts generally seek to interpret potential process terms as “structural limitations when used in an adjective non-process sense and define a physical characteristic of the apparatus.” *LG Display Co.*, 686 F. Supp. 2d at 445-46 (quoting *R2 Med. Sys., Inc. v. Katecho, Inc.*, 931 F. Supp. 1397, 1425 n.5 (N.D. Ill. 1996)).

In *LG Display Co.*, the court concluded that the phrase “joined by hot bar soldering” was not a process limitation, but rather described the structural relationship between a first and second circuit board. *Id.* at 446. This structural relationship was essential to the patentability of the invention. *Id.* The court thus construed the phrase to mean the “first and second printed circuit boards are joined by solder material.” *Id.* In *R2 Med. Sys. Inc.*, the court interpreted the phrase “a quantity of stannous chloride affixed to at least a portion of said tin” to refer not to the process of affixing the stannous chloride, but the result of that process, i.e. the structural relationship between the stannous chloride and the tin plate. 931 F.

Supp. at 1424. These cases stand for the principle that where a term in an apparatus claim implicates a process, the court should interpret the term, if it can, as a structural limitation. That is the appropriate approach in this case. Simply because a claim has “functional attributes does not change the fact that the claim recites a structural component, albeit one possessed with certain understood characteristics.” *Miken Composites, L.L.C. v. Wilson Sporting Goods Co.*, 515 F.3d 1331, 1337-38 (Fed. Cir. 2008). The terms “gunite” and “shotcrete” should be applied as adjectives to specifically describe the structural nature of the layer of concrete.

Thus, I construe the phrase “a layer of concrete applied as gunite or shotcrete” as “a layer of gunite or shotcrete concrete.”

#### E. “WIRE FASTENERS.”

Claims 1 and 2 both require that the wire panels be “assembled in side-by-side relationship with wire fasteners.” (’231 patent, col. 6, ll. 66-67; col. 7, ll. 32-33.) Strata and Titan argue that this term should be construed to mean “fasteners made of wire.” Sisk and PMR assert that no construction is necessary but in fact argue for the court to construe the term to mean “fasteners for wire.” Both sides argue that their interpretation is an application of the ordinary meaning of the term.

Careful inspection of both the claims and the specification indicates that the proper construction of the term “wire fasteners” is “fasteners made of wire.” The

specific fasteners at issue are those used to connect the wire grids of the panels to one another in a side-by-side fashion to form the walls of the ventilation structure. It would be unnecessary to specify that these fasteners were *for* wire when the claims specifically state that the fasteners are used to attach the wire grids of the panels. See *Digital-Vending Servs. Int'l, LLC v. Univ. of Phx., Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012) (quoting the “well-established rule that claims are interpreted with an eye toward giving effect to all terms in the claim.” (citation and internal quotation marks omitted)).

Sisk and PMR argue that the specification shows that the term is not limited to fasteners made of wire because it states, “Rebar . . . is installed at spaced intervals in panels . . . forming deck . . . and secured to the adjacent wire grid with suitable fasteners such as a wire tie.” (’231 patent, col. 5, ll. 36-38.) They contend that the use of “suitable fasteners” here shows that the term “fasteners” in the claims is not limited to those made of wire. However, this passage of the specification actually undermines their argument. The claims themselves do not state that the panels can be connected with “suitable fasteners.” They state specifically that the panels must be connected with “wire fasteners.” If any kind of suitable fastener was appropriate, then the claims would have used the term

“suitable fasteners” as it was used in the specification.<sup>7</sup> In addition, this passage of the specification is not addressing the problem of attaching the wire grids of the panels together. It is addressing the problem of attaching the rebar in the overcast to the wire grids. It remains a fact that in claiming the structure for attaching the wire grids of the panels in a side-by-side formation, the patentee chose to limit the type of fasteners to “wire fasteners.”

The same response applies to Sisk and PMR’s argument that the specification’s reference to a “plurality of connectors” somehow changes the meaning of the term “wire fasteners” in the claims. (*See* ’231 patent, col. 4, ll. 54-55.) It was certainly possible for the patentee to use the general term connectors if that was appropriate to the claimed invention, as indicated in Claims 6 and 11. Each of these claims describes a seam between the side-by-side panels which is reinforced with a strip of mesh, “said strips attached to the grids with connectors.” (’231 patent, col. 8, ll. 14-15; ll. 40-41.) However, Claims 1 and 2 require the specific “wire fasteners” to fasten the panels in their side-by-side configuration. It would be improper to construe the term as broader than it is.

---

<sup>7</sup> Sisk and PMR concede that the term “wire tie,” as used in the specification, does mean a tie made of wire. (Sisk and PMR Resp. Claim Constr. Br. 17 n.7.)



## F. “INSULATION CORE.”

Claims 1 and 2 both describe each panel as “having first and second spaced apart wire grids with an insulation core.” Strata and Titan contend that the term “insulation core” should be construed as “a material that retards the passage of heat, as compared to a corresponding thickness of concrete.” (Strata Opening Claim Constr. Br. 3.) Sisk and PMR argue that the term should be construed as “an insulating material between the first and second wire grids, such as a foamed polymer.” (Sisk and PMR Opening Claim Constr. Br. 9.)<sup>8</sup>

I find that the term “insulation core” should be construed as “a material between the first and second spaced-apart wire grids that retards the passage of fire, smoke, and heat.”<sup>9</sup> This construction is based, for the most part, on the ordinary meaning of insulation as determined by reference to a technical dictionary. “Insulation” is defined in the building context as “[m]aterial used in walls, ceilings, and floors to retard the passage of heat and sound.” McGraw-Hill, Inc., *Dictionary of Scientific and Technical Terms* 759 (1976). The term insulation core is not defined in the patent and, for the most part, the dictionary definition

---

<sup>8</sup> The parties essentially concede that there is no substantive dispute over the meaning of the word “core.”

<sup>9</sup> Although it may be that the meaning of “insulation core” is obvious and thus does not require construction, the parties do dispute the meaning and therefore, to prevent any confusion to the jury, it is best for the court to construe the term. *See O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360-62 (Fed. Cir. 2008).

provides an adequate construction. *See Lazare Kaplan Int'l, Inc. v. Photocopy Techs., Inc.*, 628 F.3d 1359, 1373 (Fed. Cir. 2010) (“As we explained in *Phillips*, courts are free to consult dictionaries and may . . . rely on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.” (citation and internal quotation marks omitted)).

However, because the specification gives some additional meaning to the use of the term insulation in this particular context, I have adjusted the construction as necessary. *See Phillips*, 415 F.3d at 1316 (“[O]ur cases recognize that the specification may reveal a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess. In such cases, the inventor’s lexicography governs.”). For example, because problem of retardation of sound is irrelevant in this particular context, the court will not include that function in this construction. *See Anderson v. Int’l Eng’g & Mfg., Inc.*, 160 F.3d 1345, 1348 (Fed. Cir. 1998) (“A word describing patented technology takes its definition from the context in which it was used by the inventor.”).

In addition, the specification indicates that the primary purpose of the insulation is to enhance the invention’s resistance to fire and smoke, and, accordingly, heat. The specification states, “It is also an object [of the present invention] to provide a ventilation structure which is economical to make and fire

resistant.” (’231 patent, col. 1, ll. 64-65.) In the description of the insulation core, the specification states that “good results” have been obtained using polystyrene foam “as this material has excellent flame spread and smoke ratings.” (’231 patent, col. 3, ll. 62-65.) The specification also states, “Panels [meaning the structure including the insulation core] having a layer of concrete . . . may be designed to have a three-hour fire resistance.” (’231 patent, col. 4, ll. 10-11.) Construction of the term insulation as a material that retards the passage of fire, smoke and heat reflects the particular purpose of insulation in this invention. *See Phillips*, 415 F.3d at 1315 (“[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” (citing *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996))).

Sisk and PMR’s suggestion that the construction include the example of a foamed polymer is unnecessary and does nothing to delineate the “outer reaches of the claim term.” *Digital-Vending Servs. Int’l., LLC*, 672 F.3d at 1274. Both the specification and the claims show that the insulation may be polystyrene but the addition of the clause adds nothing to the claims.

Strata and Titan argue that the construction should require the insulation to retard the passage of heat “as compared to a corresponding thickness of concrete. They argue that such a construction reflects the common sense understanding that

insulating material would have to retard heat and sound better than the concrete in the context of the structure. However, Strata and Titan's argument is not supported by the specification. The specification states that "Good results have been obtained when insulation core . . . is 2½ inch thick and a polystyrene foam with a minimum density of 0.9 pounds per cubic foot as this material has excellent flame spread and smoke ratings." ('231 patent, col. 3, ll. 62-65.) This passage specifies a possible thickness and density for the insulation but does not contain any corresponding reference to the concrete.

## V

For the foregoing reasons, it is **ORDERED** that the disputed terms of the '231 patent are properly construed as follows:

1. The preambles of Claims 1 and 2 state limitations on the claims;
2. The whereby clauses of Claims 1 and 2 do not state limitations on the claims;
3. "Concrete" means "concrete";
4. "A layer of concrete applied as gunite or shotcrete" means "a layer of gunite or shotcrete concrete";
5. "Wire fasteners" means "fasteners made of wire"; and

6. “Insulation core” means “a material between the first and second spaced-apart wire grids that retards the passage of fire, smoke, and heat.”

ENTER: June 8, 2012

/s/ James P. Jones  
United States District Judge