UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

VF OUTDOOR, LLC,
Petitioner,

v.

COCONA, INC.,
Patent Owner.

Patent No. 8,945,287
Inter Partes Review No. 2018-00190

DECLARATION OF STEPHEN J. CALLAN

I, Stephen J. Callan, declare:

1. I have been retained by counsel for Patent Owner Cocona, Inc. ("Cocona") in connection with the above-captioned proceeding. If called upon as a witness, I could competently testify to the truth of each statement herein.

I. INTRODUCTION

2. I have been asked to provide an opinion concerning U.S. Patent No. 8,945,287 ("the '287 Patent') (Ex. 1001) and to render an opinion as to the scope and meaning of claims 27, 28, 30, 32, 33, and 35-39 (the "Challenged Claims"); the

disclosures/teachings of certain alleged prior art; and the validity of the Challenged Claims in view of the specific arguments made by Petitioner VF Outdoor, LLC ("VF"). This includes responding to the Declaration of Abigail Oelker (Ex. 1005), which was submitted by Petitioner in this case.

3. I understand that VF is seeking cancellation of the Challenged Claims of the '287 Patent based on the argument that the claims are anticipated and/or would have been obvious in view of the teachings of alleged prior art. I understand that the specific grounds include the following: (1) whether claims 27, 28, 30, 32, and 36-37 are anticipated by Dutta under 35 U.S.C. §102(b) ("Ground 1"); (2) whether claims 27, 28, 30, 32, and 35-39 would have been obvious over Dutta and Haggquist under § 103(a) ("Ground 2"); (3) whether claims 27, 28, 30, 32, 33, and 35-37 are anticipated by Halley under § 102(b) ("Ground 3"); and (4) whether claims 38-39 would have been obvious over Halley and Haggquist under § 103(a) ("Ground 4"). Further, I understand that, in response to the parties' prior filings, the Board instituted an inter partes review of the Challenged Claims on all four grounds set forth in the Petition.

4. My firm, Polymer Testing, is being compensated at a rate of $625 per hour for my time in this case. The compensation received from this case is not contingent upon my opinions or performance, the outcome of the case, or any issues involved in or related to the case.

II. QUALIFICATIONS

5. My opinion in this matter takes into account my knowledge and experience from decades of work in the polymer industry.

6. I have personally conducted thousands of failure analyses involving polymeric materials, including failure analyses of Multi-Layer Military Films involved with National Defense, and reverse engineering of multi-layer films with as many as 11 layers. I have been in the polymer industry for 40 years, and owned my own Polymer Laboratory for 29 years. Many of the major film manufacturers in the United States have relied on my expertise regarding film compositions and film structures.

7. I have attached, as Attachment A, a copy of my Curriculum Vitae, which outlines my educational, professional, and employment credentials and also includes a partial list of previous clients.

III. INFORMATION REVIEWED IN FORMING EXPERT OPINIONS

8. I have reviewed a number of materials to inform my opinion. These include, but are not limited to:

- Petition for Inter Partes Review of Patent No. 8,945,287
- Patent Owner's Preliminary Response
- Decision Institution of Inter Partes Review 35 U.S.C. 314 (a)

- Declaration of Abigail Oelker, Ph.D. in Support of Petition for Inter Partes Review of Patent 8,945,287
- Patents:
    - US 2004/0018359
    - US 8,945,287 B2
    - WO 95/33007
    - WO 00/70975 A1
    - WO 98/06891
    - US 4,194,041
    - 6,028,019
- August 10, 2018 Deposition of Abigail Oelker, Ph.D.
- Petitioner's Updated Exhibit List
- Exhibits 1001 – 1043 presented in "Petitioner's Updated Exhibit List
- Patent Owner's Exhibit List
- Declaration of Dr. Gregory Haggquist
- Gore European Prosecution History Related To Patent WO 95/33007
- Dutta European File History
- Rosato's Plastics Encyclopedia and Dictionary definition of "activation" as it relates to the Plastics Industry
- SMTL Dressings Datacard: Product Name Debrisan beads

- Concise Encyclopedia of Polymer Science and Engineering definitions of "Carbon Black", "Activated Carbon" and "Graphite"

III. LEGAL STANDARDS

9. I understand that the Petitioner must demonstrate by a preponderance of the evidence that the Challenged Claims are invalid. I understand that the preponderance of the evidence standard is one characterized as being more likely than not. As each claim is considered a separate invention, I understand that the Petitioner's burden is applicable individually to each claim.

10. I further understand that determining whether a patent claim is invalid requires two steps: first, construction of the meaning and scope of the claim (or individual terms of the claim), and second, comparing the construed claim to the prior art. A party may assert invalidity on the basis of anticipation or obviousness.

11. I understand that determining whether a patent claim is invalid is made from the perspective of a person of ordinary skill in the art. That determination is made as of the date of priority applicable to the patent claims. For my analysis, I have used the date of the filing of the '287 Patent Provisional Application (No. 60/799,426), which was filed on May 9, 2006. This date may change should there be other information disclosing an earlier invention date.

12. I understand that claim construction begins with the ordinary and customary meanings of the terms used in the claims. I further understand that the

meanings of terms used in the claims should be understood primarily in view of the intrinsic record, including the specification and file history. I understand that the terms of the claims in this proceeding are to be given their broadest reasonable interpretation in view of the intrinsic record.

13. I understand that a patent claim is anticipated by prior art when each element of the claim is present and enabled within a single prior art reference. The single prior art reference must enable one of ordinary skill in the art to practice the claimed invention. A prior art reference does not anticipate a claim if one or more elements of that claim are not present in the asserted prior art reference. Further, if a prior art reference discloses multiple embodiments, then for the reference to anticipate a claim all elements of the claim must be found in one embodiment.

14. A limitation may be either disclosed expressly or inherently in a particular prior art reference. A claim element is inherent in the prior art reference if the prior art reference necessarily functions in accordance with, or includes, the claimed element asserted to be inherently disclosed. An element is not inherently present in a prior art reference if it is merely possible or probably that the element is in that specific prior art reference. The inherent characteristic must be a necessary part of the prior art reference.

15. I understand that a claim may be invalid as obvious if the differences between a claim and one or more prior art references are such that the claim as a

whole would have been obvious at the time the alleged invention was made to a person of ordinary skill in the art. It is not enough however that two or more alleged prior art references disclose each element of a claim; there must be a motivation to combine those references and arrive at the claimed invention. The requirement for a motivation to combine is intended to avoid improper hindsight reasoning. I further understand that the Petition must provide a persuasive reason with a rational underpinning to support a legal conclusion of obviousness for each proposed combination. I also understand that a statement that an alleged combination would have been "common sense" is not enough.

16. As I understand the relevant law, an obviousness analysis must be based on several factual inquiries, including: "(1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art at the time the invention was made; and (4) objective evidence of non-obviousness, if any." *Leo Pharm. Prods. v. Rea*, 726 F.3d 1346, 1353 (Fed. Cir. 2013) (quoting In re Kubin, 561 F.3d 1351, 1355 (Fed. Cir. 2009).

III. U.S. PATENT NO. 8,945,287

17. I have reviewed the '287 Patent entitled "Active Particle-Enhanced Membrane and Methods for Making and Using the Same" and the related prosecution history. The '287 Patent issued on February 3, 2015 and claims priority to Provisional Patent Application No. 60/799,426, filed on May 9, 2006.

18. The '287 Patent, entitled "Active Particle-Enhanced Membrane and Methods for Making and Using the Same," is directed generally to a breathable membrane that includes a base material solution and active particles, which may improve or add various desirable properties to the membrane, such as for example, moisture vapor transport capability, odor adsorbance, anti-static properties, or stealth properties. *See, e.g.*, Patent at Abstract.

19. Of the Challenged Claims, Claim 27 is the only independent claim, which recites:

> A water-proof composition comprising:
>
> > a liquid –impermeable breathable cured base material comprising a first thickness;
> >
> > a plurality of active particles in contact with the liquid-impermeable breathable cured base material, the plurality of active particles comprising a second thickness; and wherein,
> >
> > the first thickness comprises a thickness of at least 2.5 times larger than the second thickness but less than an order of magnitude larger than the second thickness,
> >
> > the active particles improve the moisture vapor transport capacity of the composition, and a moisture vapor transmission rate of the water-proof composition comprises from about 600 $g/m^2/day$ to about 11000 $g/m^2/day$.

The remainder of the Challenged Claims depend directly or indirectly from Claim 27.

IV. CLAIM CONSTRUCTION

20. Determining the scope of the Challenged Claims requires an understanding of the terms used in those claims, including the terms "active particles," "first thickness," and "second thickness" which are disputed by the parties.

21. I understand that the terms of the '287 Patent should be construed according to their broadest reasonable interpretation in light of the specification, and that the words of the claims should be given their plain and ordinary meaning unless that meaning is not consistent with the specification. I further understand that the claim terms should be construed from the perspective of a person of ordinary skill in the art at the time of the filing of the '287 Patent. For purposes of this analysis, I consider myself a person of ordinary skill in the art and have applied and analyzed the '287 Patent claims according to their plain and ordinary meaning.

A. Active Particles

22. The Petition argues for and depends on a proposed definition of the term "active particles" that would include any particle capable of a physical reaction. Cocona proposed that "active particles" as "particles that adsorb or trap substances on their surface." Cocona's proposed definition is the ordinary meaning in the plastics industry and the only definition that aligns with the specification.

23. The Board did not accept either party's exact proposed construction, but instead adopted a construction that "active particles" means "particles that have

the capacity to cause chemical reactions at the surface or physical reactions, such as, adsorb or trap substances." Decision at ¶ 10. While the Board properly excluded the word "absorb" from this construction, the phrase "or physical reactions" still creates an overly-broad interpretation of this term – and essentially allows "absorption" in through the back door by allowing ***any*** physical reaction, even those not at the surface. This is not consistent with the specification. I'll take these issues in turn.

24. First, undoubtedly, the Board properly excluded the term "absorb." The '287 Patent is not at all directed toward absorption – just the opposite. Cocona defined "active particles" are "active" because they have the capacity to adsorb or trap substances on their surfaces. *See, e.g.*, Ex. 1001 at 4:4-21, 5:59-65; *see also* Ex. 1004 at ¶¶ 4-5, 7, 28-29, 32, 37-38, 80, 84, 92 , 99. This would be the understanding of a person of ordinary skill in the art. The Board was correct to reject Petitioner's addition of the term "absorb" to the definition of "active particles," as including "absorb" directly violates the requirement that "claim terms are given their ordinary and customary meaning in view of the specification."

25. The customary meaning of activation as it relates to plastic materials in view of the specification, and as understood by one of ordinary skill in the art at the time of the invention is clearly defined on Page 8 of Rosato's Plastics Encyclopedia

and Dictionary (1993) as: "activation 1. Basically it is any process whereby a substance is treated to develop adsorptive properties." *See* Ex. 2002.

26. As the Board states on Page 7, "Regarding the 'absorb' portion of its proposed claim construction, Petitioner relies on one portion of Haggquist that provides for an "encapsulated active particle comprising an active particle that is at least partially encapsulated by at least one encapsulant that inhibits absorption by said active particle", and another portion of Haggquist that provides that 'particles can deactivate before having an opportunity to adsorb desirable substances. Premature deactivation can include deactivation on account of absorption occurring at an undesirably early time whether or not the absorbed substance was deleterious, non-deleterious or even the intended target.'" Institution Decision at 7 (citing Pet. 12). The Board is correct that the terms "absorption" and "absorbed" are not in the '287 Patent.

27. Cocona has submitted the declaration of inventor Greg Haggquist, who testified that the references to "absorption" in the Haggquist application were typographical errors. From the perspective of a person of ordinary skill in the art, it seems clear that the nature of these mistakes is obvious in light of the entirety of Haggquist and/or the '287 Patent -- that is, it is my opinion that a person of ordinary skill in the art reading the '287 Patent and Haggquist would understand these mentions of "absorption" to be obvious typographical errors.

28. Further, regardless, one of ordinary skill in the art reading both documents would not consider these references to "absorption" to modify the definition of "active particles" in the '287 Patent, but instead would understand that the plain and ordinary meaning of "active" as used in the art would apply. Indeed, reading the patent claims in light of the specification and file history, a person of ordinary skill in the art could conclude nothing other than that the claims pertain to adsorption and exclude absorption. It is abundantly clear that the few, isolated mentions of absorption/absorbed are simply typos, which a person of ordinary skill in the art understands happens all the time in patent prosecution and issuance. Indeed, the benefits of adsorption is the crux of the '287 Patent's novelty.

29. In seven pages of text the '287 Patent uses the term "active particles" at least 112 times – having used the ordinary and customary meaning of the word "active" in view of the specification "activation 1. Basically it is any process whereby a substance is treated to develop adsorptive properties." In seven pages of text of the '287 Patent refers to the activity levels, *i.e.*, the adsorptive property of the activated particles, 41 times. *See, e.g.,* Ex. 1001 at 4:4-21, 5:59-65; *see also* Ex. 1004 at ¶¶ 4-5, 7, 14, 28-29, 32, 37-38. There is nothing in the patent claims, specification, or prosecution history that would lead a person of ordinary skill in the art to include absorption within the definition of "active" or within the scope of the claims.

30. In the same way, a person of ordinary skill in the art would not consider "any physical reaction" to be within the scope of the claims unless it is strictly referring to a physical reaction *at the surface of the particle*. That is the only way that these claims can align with the common and ordinary definition of "active" to a person of ordinary skill, and the only way the claims can align with the purpose of the '287 invention.

31. I understand that the Board took this statement from the specification. *See* Ex. 1001 at 4:4-10. However, read in isolation, the words used by the Board do not properly reflect the meaning of "active particles;" specifically, the phrase "or physical reactions," simply causes confusion. Indeed, the portion incorporated by the Board into the Board's construction is only a part of the statement – the rest is very much needed for context:

> These particles may provide such properties because they are "active." That is, the *surface* of these particles may be active. *Surface active particles* are active because they have the capacity to cause chemical reactions at the surface or physical reactions, such as, adsorb or trap substances, including substances that may themselves be a solid, liquid, gas or any combination thereof. Certain types of active particles (such as activated carbon) have an adsorptive property because each particle has a large *surface* area made up of a multitude of pores (e.g., pores on the order of thousands, tens of thousands, or hundreds of thousands per particle). It is these pores that provide the particle or, more particularly, *the surface of the particle* with its *activity* (e.g., capacity to adsorb). For example, an active particle such as activated carbon may adsorb a substance (e.g., butane) by trapping the substances in the pores of the activated carbon.

Ex. 1001 at 4:4-21 (emphasis added).

32. This is consistent with Figure 1 of Haggquist, which provides a drawing depicting the pores of an active particle:

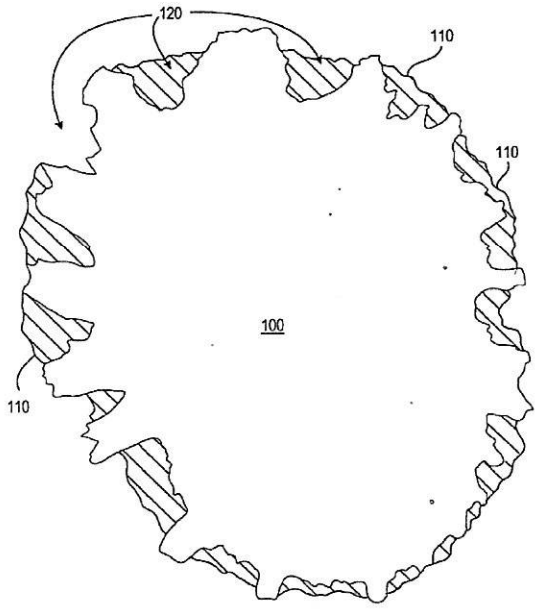

FIG. 1

See Ex. 1004 at Fig. 1.

33. A person of ordinary skill in the art reading the '287 Patent would understand that the reference to "chemical reactions at the surface or physical reactions" is a reference to "chemical or physical reactions at the surface," but is just inartfully written. But to take the statement without the full context of the paragraph and entirety of the patent would be inappropriate. Standing alone, the words "or physical reaction" could literally open up the claim to particles with the capacity to cause *any* physical reaction (*i.e.*, adsorption, absorption, or anything else), which

would apply to *any particle*. That is the absolute wrong result, as the Board recognized by excluding the word "absorb" from the construction in the first place.

34. One way to keep what I believe to be the intent of the Board's construction, and to make it accurate, would be to change the construction to read "particles that have a capacity to cause *chemical or physical reactions at the surface*, such as, to adsorb or trap substances."

35. A person of ordinary skill in the art reading the '287 would understand that "active particles" in the patent refers to activity at the surface, and that the focus of any construction needs to be on the surface. To interpret it otherwise would defeat the very purpose of the patent. Every embodiment discusses a surface process.

36. The Board's construction, moreover, if left to stand, would eliminate the novelty of this invention. The (presumably unintended) result of the Board's construction is to remove the word "active" from every claim of the 62 claims of this patent. "Active" must have some meaning less than every particle. "Physical reaction" without the "surface" modifier would mean every particle. "Active" would have no meaning in this claim.

B. "First Thickness"

37. Claim 27 recites "a liquid-impermeable breathable cured base material comprising *a first thickness*." (Emphasis added).

38. According to the plain language of the claim, the "cured base material" has a physical dimension referred to as the "first thickness." A person of ordinary skill in the art would clearly understand that "first thickness" is a physical dimension of the "cured base material" and not of other claim elements. The fact that it is "cured" tells a person of ordinary skill that the "base material" has been solidified into a physical layer or membrane to which the plurality of active particles can be applied, such as a woven material or polyurethane layer. '287 Patent at 2:42-46 ("The membrane may be applied to a substrate such as a woven, non-woven, PTFE (treated or untreated) substrate, PTFE substrate, polyurethane substrate, or knit material, or may be used independent of a substrate.") (Emphasis added).

39. A person of ordinary skill in the art understands that the "cured base material" of claim 27 is the layer or membrane on which the "active particles" are applied. This is consistent with numerous embodiments in the specification. *See, e.g.*, '287 Patent at Abstract ("The membrane may be applied to a substrate, or may be used independent of a substrate.") (Emphasis added); *Id.* at 2:12-15 ("The present disclosure relates to active particle-enhanced membrane and methods for making and using the same. The membrane can be a self-supporting membrane or a coating on a substrate.") (Emphasis added); *Id.* at 2:42-46 ("In some embodiments, the membrane may include polyurethane and solid particles. The membrane may be applied to a substrate such as a woven, non-woven, PTFE (treated or untreated)

substrate, PTFE substrate, polyurethane substrate, or knit material, or may be used independent of a substrate.") (Emphasis added); *Id.* at Figure 1 at steps 130, 140 (disclosing that active particles and base solution at 130 may be applied to a substrate at step 140).

40. In addition to being consistent with the '287 Patent specification, Cocona's interpretation of "first thickness" as "first layer or membrane" is also consistent with the Haggquist application (Ex. 1004),which discloses numerous embodiments where a layer of active particles is placed in contact with base material often referred to as an "embedding substance." *See, e.g.*, Haggquist (Ex. 1004) at ¶ 67 ("The principles of the present invention can be incorporated into an air dispersion method for treating an embedding substance … and (d) fixes the active particles to the embedding substance.") (Emphasis added); *Id.* at ¶ 68 ("The fixing step, referred to above at step (d), is the step that permanently attaches the particles to the embedding substance. In one approach, this step may be implemented by using a solution that contains a binding agent and a solvent (e.g., water). This solution is applied to bind the particles to the embedding substance. The binding agent serves as the 'glue' that secures the particles to the embedding substance, but the water serves as the 'carrier' for carrying the binding agent through the embedding substance to the particles.") (Emphasis added); *Id.* at ¶ 71 ("The principles of the present invention can be incorporated into a padding method that is used to treat an

embedding substance. The padding method involves passing a material (e.g., yarn, fabric, etc.) through a bath of active particles.") (Emphasis added); *Id.* at ¶ 72 ("The active particles can be permanently attached to the embedding substance through application of a binding agent. The binding agent is typically applied to the embedding substance as a solution either before or after the embedding substance passes through the padding chamber.") (Emphasis added); *Id.* at ¶ 71 ("This combined mixture is sometimes referred to as a liquid suspension. This suspension can, for example, be sprayed onto the embedding substance, can be applied to the embedding substance by a roller or other applicator, or can be used as a bath in which embedding substance can be submersed.") (Emphasis added); *Id.* at ¶ 78 ("The principles of the present invention can also be incorporated into a xerographic method for treating an embedding substance. The xerographic method uses the principles of electrostatic or magnetic attraction to transfer a toner formulation from a hopper to a drum assembly.") (Emphasis added); *Id.* at claim 5 (reciting "A method for incorporating active particles into an embedding substance"); *Id.* at claim 11 (reciting "an air dispersion process, a padding process, a xerographic process, and a solution preparation process").

41. I understand that that Petitioner's proposed construction of "first thickness" is "the thickness of the water-proof composition, which includes the base material and the active particles" (Pet. at 11) and that the Board construed "first

thickness" as "'the thickness of a base material,' which base material may include active particles" (*Id.* at 12).

42. I must respectfully disagree with the Petitioner and the Board. Their constructions ignore the plain language of the claim and numerous embodiments in the specification of the '287 Patent. First, the Petition *admits* that the "cured base material" is the substrate to which a layer of active particles is applied. *See, e.g.*, Pet. at 10 ("Claim 27 of the '287 Patent recites a 'cured base material,' which means a non-solution form of a substrate that was converted from a solution state via any conventional curing technique.") (Emphasis added). In other words, Petitioners acknowledge that claim 27 recites applying a layer of active particles (which may be carried in a solvent) on a "cured base material" or "substrate." This aligns with a skill artisan's understanding of claim 27 and the '287 Patent specification, as discussed above, and directly refutes Petitioner's and the Board's claim constructions for "first thickness" and "second thickness." *See, e.g.*, '287 Patent at Abstract; *Id.* at 2:12-15; *Id.* at 2:42-46; *Id.* at Figure 1; Haggquist (Ex. 1004) at ¶ 67; *Id.* at ¶ 68; *Id.* at ¶ 71; *Id.* at ¶ 72; *Id.* at ¶ 78; *Id.* at claim 5; *Id.* at claim 11.

43. Dr. Oelker's opinion is likewise directly refuted by the plain language of the claim and by the specification of the '287 Patent. Like in the Petition, her opinion acknowledges that the "cured base material" is a substrate to which active particles are applied (Ex. 1005 at ¶ 93), and then performs a slight-of-hand and

proclaims that "The first thickness of the liquid-impermeable breathable cured based material is not specifically discussed in the specification..." in order to support her proposed claim construction for "first thickness." Her opinion that the "first thickness of the cured based material" is not discussed in the specification is completely without basis since, as admitted in her opinion (Ex. 1005 at ¶ 93), the "cured base material" is the substrate to which the plurality of active particles are applied. Her statement that "first thickness" is "not defined by the specification" is an error, since a person of ordinary skill understands that a cured layer has a physical dimension—a thickness—that can be readily measured.

C. "Second Thickness"

44. Claim 27 States "A plurality of active particles in contact with the liquid-impermeable breathable cured base material, the plurality of active particles comprising a second thickness[.]"

45. Petitioner proposed a construction of the term "second thickness" as "the particle size of the active particles," whereas Cocona proposed the construction "second layer or membrane." The Board construed "second thickness" as "'the thickness of a plurality of active particles,' which may be the particle size of the active particles." Institution Decision at 13.

46. With all due respect, the Board's construction would not make any sense to a person of ordinary skill in the art and would not reflect the principles of

the claimed invention. Claim 27 clearly states that it is the plurality of active particles -- basically the layer with active particles, with or without a solvent -- that forms a second layer which is the second thickness. In other words, as a person of ordinary skill in the art would understand it, the plurality of active particles (alone or blended with a solvent) is added on top of the cured base layer. *See, e.g.*, Haggquist at ¶¶67-72, 78; *id.* at claims 5, 11. The "plurality" of the active particles forms an additional layer with its own thickness, which is the "second thickness" referred to in the claim.

47. A person of ordinary skill in the art would not understand this to indicate that the second thickness is the "particle size of the active particles" or even understand what that means. For one thing, "thickness" is not a term that a person of ordinary skill in the art would use to refer to particle size; we would use the term "diameter." Moreover, if the Board intended "particle size of the active particles" to refer to the size of a single particle, that wouldn't tell the us anything because we wouldn't know how many particles were or should be applied or what structure or formation they took on top of the base layer. That is what makes for effective transmission of the moisture, which is the subject of the invention. "Active particles" would not lie down on top of a first thickness like soldiers in marching formation. We are reading this in view of plastics and textile manufacturing facilities that existed at the time of patent application, which means the base material

is cured to form a first layer, and the active particles are cured on top of the base material to form a second layer. That is the thickness that matters. Saying the "second thickness" is "the particle size of the active particles" is the microscopic equivalent of saying worldwide, the thickness of the surface of the earth is equal to the thickness of a grain of sand on a beach rather than the thickness between sea level and peaks of mountain ranges.

48. The wording of Claim 27 is the type of wording used throughout the polymer industry. It is very common in the polymer film industry and extremely common in the pharmaceutical industry where FDA compliant barrier films that have no additives are used as inner surfaces in the construction of pharmaceutical containers. Interior walls of pharmaceutical containers originate as "base material" walls because of FDA extractive limitation requirements. Outer walls are manufactured using the same "base material" as the inner wall, but include additives that impart increased physical property values. Base material/base material with additive layer constructions are used because of the increased propensity of sheet delamination between layers in multi-layer films when principal polymers of layers in contact have differing chemistries. All of this would be understood by a person of ordinary skill in the art.

49. I have personally conducted thousands of failure analyses involving polymeric materials, including failure analyses of Multi-Layer Military Films

involved with National Defense, and reverse engineering of multi-layer films with as many as 11 layers. I have been in the polymer industry for 40 years, and owned my own Polymer Laboratory for 29 years. Many of the major film manufacturers in the United States have relied on my expertise regarding film compositions and film structures.

50. Based on my 40 years of experience, in my professional opinion, Petitioner's claim that the second layer thickness is the "particle size of the active particles" is (in a word) ridiculous, and this phrase should not be used to qualify or characterize the Board's construction. The most appropriate construction of "second thickness" is "second layer or membrane." This construction, "second layer or membrane" is supported not only by the claim language, but also by the embodiments of the Patent that disclose adding a layer of active particles on top of a base material (with or without a solvent solution, which may also be a liquid suspension of active particles). *See, e.g.*, Haggquist (Ex. 1004) at ¶ 67 ("The principles of the present invention can be incorporated into an air dispersion method for treating an embedding substance … and (d) fixes the active particles to the embedding substance."). The methods of fixing the active particles to an embedding substance is described in detail at at least ¶¶67-78 of Haggquist and is also discussed at pp. 15-16 of Patent Owner's Preliminary Response. This process creates a second layer or membrane, which, again, is properly understood to be the second thickness.

51. I understand that there is a comment in the file history stating, "…"the particle size for the Asbury 5564 powdered coconut activated carbon comprises about 10 microns (the second thickness)[,]" and that Petitioner has tried to cast this as support for its definition for second thickness. That comment would not be understood by a person of ordinary skill in the art as an attempt to define the term "second thickness," but simply an effort to identify support for a claim amendment. As to the issued claims, the applicant clearly and specifically stated that "second thickness" refers to the plurality of active particles. As the applicant explained in reference to the ultimately-issued claims, "Applicant has amended independent claims 1, 28, 63 and 68 to include the claim features that the *cured base material solution comprises a first thickness* and *the plurality of active particles comprises a second thickness*, with the first thickness being less than an order of magnitude larger than the second thickness." Ex. 1007 at 17. This language is abundantly clear and exactly what "second thickness" in the claims would mean to a person of ordinary skill in the art.

52. In fact, a person of ordinary skill in the art would be most likely to read the parenthetical reference to "second thickness" in the phrase "the particle size for the Asbury 5564 powdered coconut activated carbon comprises about 10 microns (the second thickness)" as an effort to point to the *location* of the active particles – not at all an attempt to define the second thickness. In any event, in light of the claim

language and the clear, unmistakeable statement in the context of the same amendment remarks that "the plurality of active particles comprises a second thickness," only one conclusion makes sense: the "second thickness" is the "second layer or membrane" formed by a layer that includes the active particles

53. Dr. Oelker, in paragraphs 94-95 of her declaration, discusses the preparation of a 1 mil. sample for Example 1 of the '287 Patent. Dr. Oelker's position is that the 1-mil. sample size shows that "Applicant equates the thickness of the entire membrane (including the base material and the active particles) with the first thickness." Ex. 1005 at ¶¶ 94-95. She is incorrect.

54. Example 1 is directed toward preparing multiple samples of material – some with active particles and some without. *See* Ex. 1001 at 3:17-20, Fig. 2. Each of the films was made 1 mil thick because that is the standard draw down blade thickness for ASTM E-96 WVT laboratory sample preparation. *See* Ex. 2003. The control (First Thickness, cured base material), and Samples 1-7 (Second Thickness, cured base material + active particle blends) were all made 1 mil thick so that the WVT test were comparing apples to apples. For comparative WVT tests to make sense all compared samples have to be the same thickness.

55. ASTM E-96 thicknesses are for comparison use only. They do not dictate sample thickness for an end product, or demand interpretation that end product thicknesses are the same as used for the ASTM E-96 analysis. Dr. Oelker's

statements about this somehow "equat[ing] the thickness of the entire membrane (including the base material and the active particles) with the first thickness" is disingenuous and wrong.[1]

56. Dr. Oelker is also wrong in stating that "[t]he 'second thickness' of the plurality of active particles is … not discussed in the specification and therefore not defined therein." Ex. 1005 at ¶ 101. Figure 1 of the '287 Patent, at Steps 110, 120 and 130, refer to making of the Second Thickness Formula. Figure 2 provides examples of both the control base material formula, *i.e.*, the First Thickness formula, and, at rows 1-7, the Second Thickness formulas. *See also, e.g.*, Ex. 1001 at 3:17-20 (explaining that Fig. 2 "shows specific formulations of mixtures that may be used to prepare active particle enhanced membranes" – *i.e.*, Second Thickness Layer formulations); *id.* at 3:33-34 (indicating that Fig. 1 "shows a flowchart, illustrating steps that may be taken to produce active particle enhanced membranes" – Second Thickness layers).

V. OVERVIEW OF THE ASSERTED REFERENCES

A. Dutta

1. The Dutta Science

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[1] This same point applies to the statements at ¶103 of Dr. Oelker's declaration, Ex. 1005 at ¶103.

57. I understand that the Petition asserts the Dutta published application PCT Pub. No. WO 1995/33007 A1, published December 7, 1995, against the '287 Patent. In order to understand Dutta, I reviewed both the published application and its (European) file history.

58. It is readily apparent from a review of Dutta that Dutta pertains to the use of super-hydrophilic, absorbent particles. These particles are the mechanism to drive Dutta's particular mode of water vapor transport, as, when they are exposed to moisture, they absorb the moisture, which causes them to swell. As these particles swell, they stretch their base material. And, as the base material stretches, it creates pores that allow the moisture to escape.

59. The Dutta Abstract, specification, and prosecution history clearly defines the Dutta Patent to only apply to products which contain hydrophilic absorbent particles. *See* (U.S. Patent Application PCT/US 94/07162 (Abstract) ("The water vapor transmission rate (WVTR) of a nonporous polymeric film can be increased by incorporating into it absorbent particles.... The material of the invention can be in the form of a waterproof, air permeable, water vapor permeable non-porous polymer film or sheet made of a polymer resin and hydrophilic absorbent particles having absorptive capacity greater than 1 gram of water per gram of dry (water-free) particles."); *id.* at 4, ll. 29-33 (same); *see also id.* at 5, ll. 25-30 ("The polymer film of this invention comprises of a polymer resin and hydrophilic

absorbent particles such that the WVTR through the non-porous film of this invention is higher than that through a non-porous film of comparable thickness obtained only from the polymer resin").

60. The heart of the Dutta invention is the ability of the hydrophilic absorbent particles to absorb water. *See* Ex. 1002 at 5, ll. 10-11 ("by 'hydrophilic absorbent' particles is meant that the particles absorb water"); *id.* at 5, ll. 25-30. *See also* Ex. 2004 (Document 10: Reply to First Written Opinion at 4) ("The science behind the present invention is to alter the effective solubility of water vapor in the non-porous polymer film by using highly water absorbent particles uniformly dispersed within the polymer film."); *see also id.* at 5 (Dutta distinguishing his own claimed invention from the prior art by saying, "Those [prior art] passages are very general in nature and do not at all suggest use of the absorbent particles that Applicant covers in his claimed invention").

61. The super-hydrophilic, absorbent particles used in Dutta are particles that swell when exposed to moisture. *See* Ex. 1002 at 9, ll. 15-18 ("The hydrophilic absorbent particles, as used in the present invention, are particles capable of swelling by absorbing a large volume of an aqueous liquid and assuming the form of a gel several times to several thousand times its own weight."). As a person of ordinary skill in the art would understand, that is the mechanism by which Dutta works. The

particles absorb moisture, swell, stretch the material, and – by their stretching – create pores in the material that allow the moisture/water to escape.

62. While Dutta discusses other types of particles, it describes these other particles (which would include adsorbent particles) as "inert." *See* Ex. 1002 at 9, ll. 36-10, l. 1 ("In addition to hydrophilic absorbent particles, the polymer used to make the films may contain other inert diluent particles as fillers. Talc, silica, calcium carbonate, carbon black, titanium dioxide, are examples of such filler particles."). According to Dutta, these "inert" particles play no role in water vapor transport.

63. Dutta teaches keeping the membrane thin to improve WVTR. *See, e.g.*, Ex. 1002 at 3, ll. 15-22 ("[T]he moisture vapor transmission rate is strongly dependent on several factors including the thickness of the non-porous polymer layer. In particular, as the thickness of the non-porous polymer layer is increased, there is a reduction in the water vapor transmission rate (WVTR). Therefore, in practical application, effort is made to keep this layer at its minimum thickness to obtain maximum WVTR without sacrificing the other functional attributes such as windproofness, mechanical strength and liquid water penetration resistance.").

64. Dutta also teaches keeping the surface of the membrane smooth. *See* Ex. 1002 at 11, ll. 1-4 ("In order for the polymer film to be air impermeable, it is necessary that the hydrophilic absorbent [*sic*] particles are at least partially

embedded in the polymer resin such that at least one surface of the film is substantially smooth by being free of the particles").

2. Dutta's Use of Sephadex

65. A person of ordinary skill in the art would understand that Sephadex is an absorptive particle that swells dramatically and absorbs 24 gm/gm of water as it swells. It is not an adsorptive particle.

66. Sephadex is known for its swelling, which is its effective quality as it pertains to the Dutta claimed invention. VF's Exhibit 1027, for example, describes this in detail:

- "**WHAT IS A SEPHADEX?** "Sephadex beads swell considerably in water and electrolyte solutions" and "The degree of swelling is an important characteristic of the gel." (Ex. 1027 at 4)

- "The swollen gel is washed on a Buchner funnel with excess water to remove salt and contaminants. To shrink the gel, alcohol is then added at intervals under gentle suction. When the shrunken Sephadex has been sucked dry, it can be dried at 60 – 80 C. (Ex. 1027 at 31).

See also Ex. 1032 (describing the use of Sephadex (under the brand name Debrisan) for wound care, stating, "When introduced into an exuding wound, one gram of the beads will absorb up to four grams of exudates. It has been shown that bacteria and cellular debris present in the wound are taken up by capillary action and become trapped in the spaces between the beads").

B. Halley

67. Halley is about abrasion-resistance. The reference discloses and teaches a "composite material, especially a water-resistant water-vapour-permeable material which [purportedly] has improved abrasion resistance and other desirable properties. Ex. 1003 at 1 ("Field of the Invention"), ll. 8-10.

68. Specifically, Halley teaches and claims a composite material having, among other things, continuous polymer coating on a porous substrate. Ex. 1003 at 4, ll. 13 – 5, ll. 4; *see also* Ex. 7 at ll. 5-10 ("A porous expanded PTFE membrane coated with water-vapour-permeable hydrophilic coating was produced according to US Patent 4,194, 041"). This would be much like painting your window-screen mesh. It is a hydrophilic polymeric material painted on a hydrophobic mesh screen.

69. It is important to note this coating contains a hydrophilic film that is described as "unique in transporting water solely by the absorption evaporation mechanism." Ex. 1025 at 3:54-56. Moreover, while Halley says that his material relates to a water resistant, water vapor permeable material, there is no evidence that his technology actually provides any water transport properties – particularly not applied to fabrics. In fact, Table 2 of Halley, entitled "Table 2 (fabric & membrane), shows that adding Halley's coating/particles actually decreases the moisture vapor transport rate (MVTR):

TABLE 2 (fabric & membrane)

Sample	Particle % wt	MVTR (mean) g/m²/d	Wash to leak hr	Abrasion to leak (cycles)	Handle (mean)
Control	-	13447	504-672	6000 (1155)	34.8 (1.30)
1	0.3	12851	672-864	26250 (9465)	
2	0.65	12127	504-672	32500 (8660)	30.2 (0.83)
3	1.5	13054	672-864	70,000 (34641)	31.6 (1.67)

Bracketted figures are standard deviations.

See also Ex. 1003 at 7, ll. 4-23 (describing the composition and method for making the same).

70. A person of ordinary skill in the art really would not read Halley to teach anything about how to increase water/moisture vapor transmission in a fabric or other material, but rather to teach abrasion resistance. Along these lines, it is also worth noting that Halley does not disclose how its experiments were done, how measurements were made, or what the error rate is.

VI. THE GROUNDS ASSERTED BY PETITIONER

71. I've reviewed the Petition and fail to see any basis for finding the '287 Patent unpatentable on the Grounds asserted by Petitioner. When you consider the

nature of the teachings of Dutta and Halley (alone or in combination with Haggquist), they simply do not anticipate or make obvious the Challenged Claims.

72. For Grounds 2 and 4, the Petition relies on either Dutta or Halley for "active particles," "first thickness," and "second thickness." Neither of these primary references discloses these elements when the terms are given the broadest reasonable interpretation. Moreover, it just doesn't work to combine either Dutta or Halley with Haggquist, and a person of ordinary skill in the art at the time of the claimed invention would not have been motivated to do so; just the opposite, a person of ordinary skill would be led away from combining these two completely different sciences. The science of Dutta/Halley and the science of Haggquist work by fundamentally different mechanisms and are mutually-exclusive. A person of ordinary skill in the art would not substitute the super-hydrophilic swelling particles in Dutta and Halley with "inert" particles that Dutta and Halley identify as *not swelling*. A person of ordinary skill in the art at the time of invention would be discouraged from using non-swelling particles, since swelling is identified as the key characteristic in the Dutta and Halley particles. Everything about these references teaches that the combination should not be made.

A. Dutta does not anticipate the Challenged Claims of the '287 Patent.

73. The '287 Patent specifically claims a composition having a "first thickness," a "second thickness," and "active particles." These are key components

of the mechanism that drives improved water vapor transmission in the '287 patented invention.

74. Dutta fails to disclose these elements as the elements are properly construed as discussed earlier in my declaration. Dutta does not disclose a liquid-impermeable cured base material solution comprising a first thickness; nor does it disclose a plurality of active particles in contact with that cured base material, "the plurality of active particles comprising a second thickness." Ex. 1001 at Claim 27. Dutta does not disclose active particles at all, and teaches away from the use of active particles since they are categorized with every other type of particle ("inert" particles that are "fillers") that is not absorbent. *See* Ex. 1002 at 9, l. 36 – 10, l. 1. To a person of ordinary skill in the art, "active particles" are particles that are treated to have adsorptive properties. *See* Ex. 2002 (Rosato's Plastics Encyclopedia and Dictionary (1993)) at 8 ("activation 1. Basically it is any process whereby a substance is treated to develop adsorptive properties."). Dutta does not teach or disclose this.

75. Dutta certainly does not teach or disclose a "plurality of active particles comprising a second thickness." The entirety of Dutta is directed to super-hydrophilic, highly absorbent particles that swell to absorb water/moisture. That is the mechanism of the Dutta science. There is nothing about this that teaches adsorptive particles, adsorption, or using these as a second thickness to improve water transmission (or for any other purpose).

B. The Challenged Claims Would Not Have Been Obvious Based on Dutta and Haggquist.

76. As the Institution Decision states, "First, Petitioner argues, even if the Sephadex particles disclosed in Dutta are not active particles, Haggquist discloses active particles that can be substituted for the Sephadex particles used in Dutta's Example 1B." (Institution Decision at 21.)

77. Sephadex particles disclosed are not active particles. They are highly absorptive particles that swell dramatically and, in the process, absorb 24 gm/gm of water. That is the basis of the Dutta science.

78. The '287 Patented invention is exactly the opposite. Active particles under the '287 Patent do not absorb water; they *adsorb* it – they transport substances such as water by trapping the substances on the surface of the active particle and transporting them out of the membrane. *See* Ex. 1001 at 4:4-21. A person of ordinary skill in the art would understand these to be very different and mutually-exclusive processes.

79. For this reason, it cannot reasonably be said that there is any motivation to combine the references; it simply does not exist. In fact, Dutta teaches that particles that are *not* super-hydrophilic and highly absorptive are "inert." A person of ordinary skill in the art would not have been motivated to substitute particles that Dutta called "inert" for the hydrophilic absorbent particles that are the key to the Dutta science.

80. Other teachings in Dutta lead directly away from the '287 Patent invention. For example, Dutta teaches that the thickness of the non-porous polymer layer should be kept "at its minimum thickness to obtain maximum WVTR[.]" *See, e.g.,* Ex. 1002 at 3, ll. 15-22. Adding active (adsorbent) particles under Haggquist to the Dutta membrane would increase the thickness otherwise present in Dutta, which is what Dutta discourages. Similarly, Dutta teaches keeping the surface of the membrane smooth, without particles on the surface. *See* Ex. 1002 at 11, ll. 1-4. The '287 Patent, on the other hand, teaches exposing active particles on the surface of the membrane to increase WVTR. *See* Ex. 1004 at Figs. 2-5 (disclosing removing encapsulant from active particles on the surface). Again, a person of ordinary skill starting with Dutta would be led away from the invention of the '287 Patent.

81. Dr. Oelker misinterprets the use of an encapsulant in the '287 Patent. *See* Ex. 1005 at ¶¶ 100, 154. The '287 Patent (by incorporation of Haggquist) teaches using an encapsulant to protect the *pores* of an active particle. By covering the pores, the active particle is deactivated and cannot trap water vapor.

82. Dr. Oelker's statement that a POSITA would be motivated to combine Dutta and Haggquist because Haggquist teaches encapsulating active particles makes no sense and fails to article any reason to combine:

> Lastly, a POSITA would be motivated to substitute the active particles as disclosed in *Haggquist* with Sephadex particles disclosed in *Dutta* because *Haggquist* discloses systems and methods (encapsulants) for

protecting the performance enhancing characteristics of its particles, including moisture management.

This statement makes no sense and is pure hindsight. Dutta discourages the use of active particles (e.g., they are "inert" because they don't swell) and it surely doesn't disclose the use of encapsulated active particles. Nor does Dutta disclose the use of an encapsulant for any particles. Indeed, according to Dutta, an encapsulant would be another "inert" particle that plays no role in water vapor transport.

83. I understand from counsel that one of the things that must be considered in the obviousness analysis is whether the prior art teaches away from, discredits, or in other ways discourages the claimed invention. It is my opinion that a person of ordinary skill in the art would not be motivated to combine Dutta and Haggquist and arrive at the claimed inventions, as discussed below, for at least the reasons that Dutta teaches away from, discredits, and discourages, using adsorbent particles to increase the water vapor transmission rate as recited by claim 27 in at least: (1) Dutta relies on a completely different mechanism from the '287 Patent—absorbent particle swelling—in order to create pores in material through which water vapor can move; (2) Dutta, because of its science, refers to non-swelling particles—which would include active particles—as "inert" because according to Dutta they play no role in WVT; (3) adding active particles to Dutta as taught by the '287 Patent would contradict Dutta's objective of not adding thickness to the membrane; and (4) Dutta

teaches keeping its super-swelling particles away from the surface, whereas the '287 Patent teach exposing active particles on the member, decreasing the smoothness of the membrane.

84. In the same way, it is absolutely wrong that "one of ordinary skill in the art would have a reasonable expectation of success" and "would have reasonably expected the substitution of the active particles disclosed in Haggquist with Sephadex particles disclosed in Dutta to work." Any such suggestion is out of the pure 20-20 hindsight that comes with the benefit of the '287 Patent teachings.

85. In my view, the '287 Patent is a game-changer for the industry in that it achieves better water vapor transmission in a better way. It is a true inventive breakthrough over prior technologies such as Dutta and Halley and was not obvious.

C. Halley does not anticipate the Challenged '287 Claims.

86. The Halley analysis is similar to Dutta, with some additional issues. Petitioner contends that Halley discloses a liquid impermeable breathable cured base material comprising a first thickness, because Halley "uses a water-vapour-permeable hydrophilic material, such as a cured polyurethane solution," which polyurethane film has a thickness of 5 – 100 microns, or 10 – 200 microns, 70 – 140 microns and 80 – 100 microns. That is not correct.

87. The Halley construction contains a hydrophilic/hydrophobic screen matrix. The hydrophobic material is not relevant to the '287 Patent or, specifically,

the Challenged Claims. The hydrophilic material was manufactured using Patent 4,194,041 technology which specifically describes these "hydrophilic films [as] unique in transporting water solely by the absorption evaporation mechanism." Ex. 1025 at 3:54-56. The '287 Patent uses an adsorption evaporation mechanism, not an absorption evaporation mechanism.

88. It should be plain to see, then, that Halley does not anticipate the '287 claimed invention. There is no disclosure of active (*i.e.*, adsorptive) particles and definitely no "plurality of active particles comprising a second thickness." Ex. 1001 at Claim 27. The Halley science uses an absorption evaporation mechanism, akin to a painted window screen, whereas the '287 Patent uses active, adsorptive particles to trap substances in pores at the surface of the active particle and transport them out of the membrane. *See* Ex. 1001 at 4:4-21.

89. Also, contrary to statements by Petitioner, Halley's disclosure of particulate solids (including carbon particles) does not disclose the '287 invention. Carbon particles are not active particles. *Activated* carbon particles are active particles. Halley did not say "Activated Carbon Particles," and active particles are expressly forbidden to be used as Halley's "particulate solids" by Patent 4,194,041, Ex. 1025 at 3:54-56.

90. Given Halley's demands for only "absorbent" particles, Halley does not disclose the "plurality of *active* particles comprising a second thickness, with

Halley's disclosure of particulates having a thickness of 50 microns, 5 microns, 0.5 microns, 0.2 microns, 0.05 microns, 1 – 100 microns, 1 to 20 microns, or 1 to 5 micron particles sizes" (emphasis added) as required by Claim 27 and all of the Challenged Claims. Halley particulates are absorbent particles, not active particles. It does not matter what sizes they are. The '287 Patent materials and the Halley Patent materials are mutually exclusive. Haggquist and Halley science is mutually exclusive. One does not disclose the other and, in fact, they are entirely incompatible. That is, Halley specifically excludes use of "active particles" and demands use of absorbent particles, and the '287 Patent specifically excludes the use of absorbent particles and demands use of "active particles."

91. Also, in this regard, data from Halley does not support any argument that the Halley technology improves moisture vapor transport capacity, as shown by the decrease in MVTR in Halley Table 1 (Membrane) data and Halley Table 2 (fabric & membrane) data:

TABLE 1 (Membrane)

Sample	Particle % wt	MVTR (mean) g/m²/d	Wash to leak	Abrasion to leak (cycles)	Handle (mean)
Control	-	13406			
1	0.3	17274			
2	0.65	14196			
3	1.5	16635			

TABLE 2 (fabric & membrane)

Sample	Particle % wt	MVTR (mean) g/m²/d	Wash to leak hr	Abrasion to leak (cycles)	Handle (mean)
Control	-	13447	504-672	6000 (1155)	34.8 (1.30)
1	0.3	12851	672-864	26250 (9465)	
2	0.65	12127	504-672	32500 (8660)	30.2 (0.83)
3	1.5	13054	672-864	70,000 (34641)	31.6 (1.67)

Bracketted figures are standard deviations.

Ex. 1003 at Tables 1, 2. Moreover, data from Table 1 and Table 2 cannot be used because the claim is "from about 600 g/m^2/day to 11000 g/m^2/day. Results in Table 1 and Table 2 range from 12,127 to 17,274 g/m^2/day.

D. A Combination of Halley and Haggquist Would Not Have Made the '287 Patent Claims Obvious.

92. The Halley disclosures and the failure of Halley to show any actual increase in water vapor transmission rate as discussed above, *see also* Ex. 1003 at Table 2, shows that the challenged '287 claims are not only not anticipated in Halley; they are not obvious; rather Halley teaches against the invention claimed therein.

93. Contrary to Petitioner's arguments, a person of ordinary skill in the art at the time of the invention would not have been motivated to combine Halley and Haggquist, and no such combination would have made the '287 Patent obvious.

94. First, regarding Petitioner's argument that both references teach adding particles to a substrate to add performance enhancing characteristics, such as moisture management, for garments, such as clothing. That is incorrect. I have conducted thousands of materials analyses that have added particles to polymeric formulations to add performance enhancing characteristics. I have firsthand experience that "adding particles to a substrate to add performance enhancing characteristics, such as moisture management" is common to the entire polymer industry, including paint, molded parts, tires, gaskets, hoses, carpet, decking material, wood laminates, automotive body panels, shoes, cosmetics, paper, ink, computer terminals, garments, clothing, etc. Use of adding particles to a substrate to add performance characteristics to a polymer formulation does not provide a link between Halley and Haggquist, especially when Halley requires the use of "solely

absorptive particles" and Haggquist requires use of "active particles" specifically banned by Halley science.

95. Second, also contrary to statements at the basis of the Petition and the Institution Decision, Halley does not use activated carbon. Halley is very specific to describe at Page 1, line 28 (Background of the Invention) "finely dispersed carbon particles, especially soot particles." Soot is an amorphous form of carbon black, commonly known as Lamp Black. It is created by incomplete combustion of organic materials. Soot is not activated. I have firsthand experience with deformulations involving soot. Soot is not the same thing as activated carbon. Halley did not claim use of activated carbon in Patent WO 00/70975.

96. Similarly, Aluminum Oxide, Silica Gel, Zinc Oxide, and Titanium Dioxide are common additives used in thousands of products throughout the polymer industry. Adding Aluminum Oxide, Silica Gel, Zinc Oxide and Titanium Dioxide to a polymeric formulation does not provide obviousness to a link between Halley and Haggquist. Aside from the fact that they are just basic additives, there is no teaching that would lead a person of ordinary skill in the art to use them to combine Halley and Haggquist. Moreover, the Halley technology itself would not be considered by a person of ordinary skill in the art trying to increase water vapor transmission properties/rates. Halley is about abrasion resistance; it teaches nothing about increasing or enhancing WVTR.

97. Lastly, the Board's statement that "Haggquist discloses systems and methods for protecting the performance enhancing characteristics of the active particles specifically listed in Halley from premature deactivation" is misplaced and wrong. Halley particles are not activated, therefore cannot be deactivated.

98. One of ordinary skill in the art would not have considered active particle science explicitly forbidden by Halley to apply to a research path based on Halley. It is my opinion that there is no motivation to combine Halley and Haggquist, and multiple reasons not to. Thus in my opinion, the Challenged Claims of the '287 Patent are not obvious over Halley in view of Haggquist.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on this 6th day of September, 2018.

Stephen J. Callan

Stephen Callan

Expert in Polymer Chemistry

Prepared for Jason Jackson, Esq.
of Kutak Rock LLP

VF Outdoor LLC v. Cocona, Inc.

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Stephen Callan

Stephen Callan is the president of Polymer Testing of St. Louis, where he specializes in formulation, deformulation, research and development of polymers. He is a seasoned expert witness and has provided testimony in state and federal courts.

Relevant Experience

- More than 40 years of experience as a polymer chemist
- Extensive experience designing and testing waterproof materials, including waterproof garments for firefighters, as well as geomembranes and outdoor coatings
- Experienced in the chemical analysis of the Surfynol product line and offers moisture vapor transmission rate (MVTR) analyses
- Has analyzed polymeric materials that include water-soluble surfactants, sodium chloride, calcium chloride, polymer salts, polyvinyl alcohols, paraffin wax, carnuba wax, photo-reactive materials, degradable materials, and biodegradable materials
- He notes that U.S. Patent 8,945,287 B2 refers to stealth and military applications of the product at issue; he has conducted failure analysis on polymeric components of the stealth bomber, stealth tank, and stealth components of other military applications; has also conducted analysis of polymeric components from the Longbow missile, Patriot missile, Slammer missile, the International Space Station, and the Hubble Telescope

Litigation Support Summary

Mr. Callan has served as an expert witness in numerous cases. He estimates that he has been deposed 59 times, testified in two state supreme courts, and several federal court trials.

Education

- B.S. in chemistry/physics from Southwest Missouri State University
- M.S. in polymer chemistry from University of Missouri-Rolla
- M.S. in engineering management from University of Missouri-Rolla

Rate Schedule

(Valid until October 5, 2018)

$625 per hour for all work and travel time

$6,250 maximum per day

Anticipated professional support staff rates: TBD

Due upon engagement:

Refundable retainer:	$5,750
Minimum engagement amount:	9,250
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Upon conclusion of the project, after all invoices have been paid and after the minimum engagement amount has been satisfied in total, any refundable retainer amount remaining will be promptly returned to the client.

Contact your client manager to discuss this candidate or schedule an interview.

STEPHEN J CALLAN
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EDUCATION

B.S. Chemistry/Physics, Southwest Missouri State University
M.S. Polymer Chemistry, University of Missouri-Rolla
M.S. Engineering Management, University of Missouri-Rolla

EXPERIENCE

1989 - Present	President & Technical Director, Polymer Testing of St. Louis, Inc.
1988 - 1989	Analytical Chemist, Sigma Corporation, Saint Louis, Missouri
1986 - 1988	Manager, Polytech Laboratories, Brentwood, Missouri
1980 - 1985	Research/Teaching Assistant, University of Missouri-Rolla
1979 - 1980	Laboratory Instructor, Southwest Missouri State University, Springfield, Missouri
1977- 1980	Textile Research Technician, Dayco Corporation, Springfield, Missouri

AFFILIATIONS

MEMBER	ASTM	- American Society for Testing and Materials
	SPE	- Society of Plastics Engineers
	SPI	- Society of the Plastics Industry
	ANS	- American Nuclear Society

FSCT	- Federation of Societies for Coatings Technology
SAS	- Society for Applied Spectroscopy
AAAS	- American Association for the Advancement of Science
Sigma Xi	- The Scientific Research Society

Stephen J. Callan is President & Technical Director of Polymer Testing of Saint Louis, Incorporated. He began a career as a polymer analyst with Dayco Corporation, in 1977. Responsibilities at Dayco included sample preparation, rheology and physical testing of rubber compounding materials.

He received a Bachelor's Degree in Chemistry with a minor in Physics from Southwest Missouri State University in 1980. Undergraduate emphasis was in Analytical Chemistry. In 1980, he declined employment as a research chemist with Dayco to pursue graduate studies in Polymer Chemistry and Engineering Management.

His graduate research in Chemistry included development of new techniques for synthesis, chromatographic separation and Scanning Electron Microscopy/X-Ray analysis of polymers. His graduate research in Engineering Management included development of a mathematical model which describes personnel progression through pyramidal organizational systems.

He received a Master's Degree with Thesis in Polymer Chemistry and a Master's Degree with Thesis in Engineering Management from the University of Missouri-Rolla. In 1986 he was hired as the first employee and manager of Polytech Laboratories. His responsibilities included all operational details associated with start up of an independent polymer laboratory. In 1988 he accepted a position as an Analytical Chemist with Sigma Chemical Company of St. Louis. Responsibilities included analysis and methods development of hydrolyzed peptides using High Performance Liquid Chromatography and Ion Chromatography.

In 1989 Mr. Callan opened Polymer Testing of St. Louis, as a proprietorship. Polymer Testing of St. Louis was incorporated in August of 1990. Polymer Testing of St. Louis, Incorporated now offers more than 1,500 plastics and coatings test procedures. References are available upon request.

PREVIOUS CLIENTS: PARTIAL LIST
STEPHEN J. CALLAN
636-394-1480

TESTING LABORATORIES

ETL Inchcape Testing
Failure Analysis Associates
QC Metallurgical Laboratories
Lionheart-Mesa Laboratories
Bodycote Taussig
Texas Research Institute
Dynatech Laboratories
Systems Engineering Labs
Inspectorate America
Midwest Laboratories
MOCON
Thompson Engineering
Heider Engineering Services
Argonne National Labs
Climax Research Services
Gaynes Testing Labs
Ramtech Laboratories
American Standards Testing
CME Associates
Lucent Bell Labs
Galbraith Laboratories
Thoratech Laboratories
Trace Labortories
Tri-State Testing
Bowser Morner
Eltek International
Crawford Laboratories
Mohawk Laboratories
International Testing Labs
Mid-South Testing
Permean Research
Cortec Laboratories
Hazen Research
Anderson Laboratories
AmTest, Inc.
Elma Engineering
Dynatech Laboratories
Atlantic Research
Buffalo Testing Laboratores
Monarch Analytical
KTA Tator
Batelle Polymer Center
St. Louis Testing
Testwell Craig
Gaynes Laboratories
Alt & Witzig Laboratories
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Betec Laboratories
Alcon Lab
Construction Technology
Corning Laboratories
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Siebert Materials Engineering
Monacrh Analytical Labs
Intertek Testing Services
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Sullivan Engineering
Metallurgical Services of KY
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Textron
T.G. USA
Automotive Technology Inc.
United Technologies
Ford
Honda
Dexter Axle
MOOG/Cooper
Husky
Borg Warner Automotive
Midas
Von Weise
Dexter Axle
Lubrizol
Nascote Industries
Carter Automotive
Midland Brake
Permea/Air Products
Jingmei Automotive
Oshkosh Truck Corp.
Standard Motor Products
Design Engineering Research
TRW
Permacel Automotive
ATRO Engineering
MOCAP
Textron
TI Automotive Group
Nanya Plastics
Gerard Daniel Worldwide
Zellerbach

COATINGS/INKS/ADHESIVES

BASF
US Paint
Park Mark Flooring
Precoat Metals
Tnemic Co., Inc.
Purethane
Coilcraft
Bidco Sealants
Marsh Ink
Duriron
Steelcote
Mid States Paint
PPI Adhesives
Cobalt Boats
Canam Steel
Cangene
National Graphics
PFS Thermoplastic Coatings
UPACO Adhesives
King Adhesives
HSC Industrial Coatings
Sherwin Williams
Nesco Containers
Mirro-Wearever
Marsh Company
American Coating Systems
Con-Tact

PAPER

Southeast Paper Mfg.
Star Paper Tube, Inc.
Ahlstrom Paper Group

MEDICAL

Nu Pharm
ROHO
US Surgical
bioMerieux
Ortho Clinical
Philips Medical Systems
Paragon Optical
AKZO-Nobel
Boston Scientific
MMG Healthcare
Ni-Med, Inc.
Sherwood Medical
Rhone Poulenc
Sola Optical
Boston Medical
Par Pharmaceutical
Nova Biomedical
PS Medical
Mallinckrodt
Survival Technologies
Monsanto
ORBUS Medical Technologies
Karl Storz Endovision
MMG Healthcare

MEDICAL: CONTINUED

Merit Medical	Insituform Technologies	ICP Medical	Tri-Med Specialties
SmithKline Beecham	MPI Medical Products	KV Pharmaceutical	Althea Therapeutics
Aventis Pharmaceuticals	Alstate Dental	Althin Medical	JRS Pharma
Endocare	Hanford Pharmaceuticals	Fresenius USA	R2 Medical Systems, Inc.
Richard Allan Medical	Zassi Medical Evolutions	Young Dental Mfg.	Winfield Medical

COMPOSITES/AEROSPACE/MILITARY

McDonnell Douglas	Zoltek	Adtran	Curtiss Wright Flight Systems
Clark Engineering	Rockwell Int.	Utility Vault	Boeing
NASA	Raytheon	U.S. Navy	SEI
Survival Technology	Support Services Engineering	Inflight Resources	Illinois Power Company
U.S. Precision Lens	U.S. Army	Composite Technology	Service Support Solutions
Moll Industries	Aerospace Systems, Inc.	American Ordnance	Camelbak Products
Enduro Composite Systems	Compression Engineering	Mason & Hanger Corp.	Kaneka High Tech Materials
Lee Aerospace, Inc.	LEAR Corporation		

ENVIRONMENTAL/AGRICULTURAL

Ogden Environmental	TRI Environmental	Thiele Geotech, Inc.	Agro K
Monsanto	Novartis Crop Protection	Clayton Environmental	Alt & Witzig Engineering
GeoSyntec	Ecologic, Inc.		

PACKAGING

Parade Packaging	Packaging Concepts	Packageering, Inc.	Nupak
Orbseal	Pacific Packaging	Jones Packaging	Mid-Atlantic Packaging
ICB Mfg. Co.	Optima Graphics	Bulldog Packaging	Matrix Packaging
Gateway Packagnig	Semi-Bulk Systems	SEDA Specialty Packaging	Sealtite Corp.
Sealmaster, Inc.	Frontier Bag, Inc.	Electro-Seal Corp.	Precision Printing & Packaging
Axess Packaging	Better Containers Mfg.	LINPAC Packaging	

ELECTRONICS

IRC	IBM	LG Electronics	PD Wire & Cable
BICC Cable	Potter Electric Signal	Pacific Electric Motors	Zenith Electronics
Intel	MEMC Electronics	Teletronics	Ricoh Electronics
IWG	Biocircuits Corp.		

MOLD AND DIE

Anson Mold, Inc.	Perry Machine and Die	Marquette Tool & Die	Le Park Mold & Tool
E & O Tool & Plastics			

PLASTIC MANUFACTURERS/RAW MATERIAL SUPPLIERS

Flexcon	Ferro	Thermal Components	Traingle Plastics
Deltech Polymers		American Chemical	Micro Plastics
Semco Plastics	Plano Molding	Falcon Belting	Westec Barrier Technologies
Greenstreak Plastics	CMC, Inc.	Keysor-Century	OZ-Gedney
Mitroflow	C-K Plastics	Sealtite	Fort Wayne Plastics
Spartech Compounding	REHAU	Altrista Industrial Plastics	Cuyahoga Plastics
Kleerdex	Phillips Chemical	Columbus Industries	Angeles Group
Millitech	American Showa	Monmouth Plastics	Hardigg Industries
BP Chemicals	Clearwater, Inc.	Seneca Sports	Barry-Wehmiller
Whirlpool	Crescent Industries	Universal Polymers	Aerovox
RAM Polymers	Norge-Maytag	Hager Hinge	Phillips Petroleum
Grain Systems, Inc.	AT&T	Carleton Technologies	Du Pont
Essex Petroleum	Atapco	Chevron	Alfacel
Great Plains Plastics	Wilsonart	Borden	

US Borax
Petrolite
Becton Dickinson
Ingersol Rand
Sweetheart Cup Company
Odorite International
W.R. Grace
O-Z/Gedney
Owens Illinois
North State Flexibles
Omni Products
Penn Fibre
Paramount Headware

SENOPLAST
Sondad Tuckpointing
Stogsdill Tile Co.
Myers House of Color
Monarch Restoration
Keco Inc.
KI, Inc.
KLA Instruments
Intermetro Industries
Brentwood Plastics
Mark Products Corp.
Nalco Chemical
MIRA, Inc.
National Technical Systems
MFP, Inc.
Technimet Corp.
Therapak Corp.
Torginol
Troutman Industries
Webster Industries
Clairson Industries
Continental International
Deckorators
Cyro Industries
Custom Resins
Crane National Vendors
HumiSeal
Hi-Tech Hose
M.A. Hanna Color
Green Tokai Corp.
Grass America, Inc.
Micro Plastics
Tracklite Systems
Aristech Chemical
Hancor, Inc.
Breen Color Concentrates
Chemco Water Technology
Capitol Vial
Cantex
Catalyst Engineering
Addax, Inc.
Applied Polymer Science
Burrell Leder Beltech
Allsafe Service & Materials
Zurn Chemical Drainage
Seagrave Fire Apparatus
Sagian
Static Control Components
Georgia Pacific Resins
Esschem
Enhancement Technologies
Encor Technologies, Inc.
Federal Mogul
F.N. Anderson & Assoc.
Flexcon
Franklin International

Western Plastics
Sulfatreat
ITW/DEVCON
Cangene
O'Sullivan
Pella Corp.
Kleerdex Co.
Nadel Industries
Nifco
nCore
Orbseal
Chemtrol
Parker EPS
Permea, Inc.
Settles Precision Mfg.
Photometrics
Sun Coast Industries
Monmouth Plastics
JPS Elastomers
Keddig Co.
Keihl Engineering Co.
ACF Industries
Hussman
Intralox, Inc.
MOCAP Plastics
Matsushita Compressor
Metro Plastics
Nellcor Puritan Bennett
Micro Mold Plastics
Sieler Instrument
Thermal Components
Triangle Plastics
Viking Products
Insul-8 Corp.
Country Companies
Continental Products
DAW Technologies
Cygnus, Inc.
Crown Cork & Seal
Home Builders Supply
Hunter Fan Co.
Herrmidifier Co.
Hancor, Inc.
Guard Industries
Granite Tech Ltd.
Soluol, Inc.
Arnold Magnetics
Aquanautics
Accum-Matic Systems
Filtrec North America
Capitol Specialty Plastics
American Steel Foundries
Chemi-Flex
Colorite Specialty Resins
American Chemical Co.
Amoco Exploration
SP Technology
Alphaflex Industries
Best Harvest Bakeries
Seadog Marine Rigging
Sage Products
Goulden Products, Inc.
General Chemical
Engineered Polymer Solutions
Engineered Products, Inc.
Emerson Climate Controls
Exxon Mobil Research
Fluid Quip
Fisher Hamilton
Fugro-McClelland

Better Containers
Novartis
Lear
United Plastics
OzarkGas
Total Petrochemicals
American Railcar
Nabisco
Nomax
National Plastics
NUPLASCO
Patell Industrial
Pyramid Plastics
THP Limited
Simmons Furniture
Polymer Engineering Co.
M-Pact
Morbern, Inc.
The J & P Group
Keysor Century
The Creo Co.
Johnson Controls
A.L. Hyde
Kaiser International
Molex Fiber Optics
Meramec Group
Specialty Plastics
Broadley James
Midland Grau
SEMCO Plastics
Thermo-Tex Polymers
Trident, Inc.
Vycom
Concrete Classics
Corfine, Inc.
Contech Construction
Dayton T. Brown
Cuyahoga Plastics
Creative Data Services
Hutchens Industries
Hollister, Inc.
Haynes International
Hammers Plastic Recycling
Green Products Co.
Grain Systems, Inc.
Atapco
FuelCell Energy
Custom Resins
Champion Polymer Recycling
Georgia Pacific
Huntsman
American Showa
Chem-Rex
Cool Polymers
Aztec Concrete
American Railcar
American Steel Foundries
Alpha Magnetics
Orion Fittings, Inc.
Saneck International
St. Louis Pneumatics
Gill Sports Equipment
Gencorp Polymer Products
E-Poxy Engineered Systems
Fisher Hamilton
EMS American Grilon
Everson Electric Co.
Flo Control
Gasket Engineering
Foster Mfg.

Metaphase
Universal Air Filter
Orbseal
Sunnen Products
Nike
TRW Fasteners
PET, Inc.
Talent Sport
Norment Industries
Orincon Corp.
Oasis Plastics
Paul Flum Ideas
Porth Plastics
T.H. Russel Co.
Skale One
Polyvinyl Co.
Multiphase Solutions
Nu-Chem
Kawneer Co.
Kerr-McGee
King Plastics
Inter-Pac
Marley Moldings
J.W. Pet Co.
Saint-Gobain
Meta-Phase
Square D Company
NEO Plastics
Millitech
Tetra Plastics
The Testor Co.
Trim-Tex
Von Weise
Clayco Construction
Cooling Tower Fabrication
DelMonte Foods
Dayton Superior
Cereform USA
Crown Vantage
Gerber Foods
Hopkins Mfg.
Hardigg Industries
Hager Hinge Co.
Great Plains Plastics
GP Plastics
ABB Power
Advanced Optical Components
Catalyst Engineering
Bunn-O-Matic
Bufete Industrial
Community Coffee
Camie-Campbell, Inc.
Grain Systems, Inc.
Alternative Recycling Systems
Atlantas Plastics
Amber Product Co.
ADDAX
Alliant Tech Systems
S.C. Johnson & Sons
Sanden International
St. Genevieve Building & Stone
GHSP
Essex Group
E.N. Murray Co.
Ferguson
Encor Poly Corp.
Essex Industries
Flex-O-Lite
Hart Enterprises
Fort Wayne Plastics

Fortune Plastics
ECC International
The Roberts Group
RHC Associates
Plastic Processing Co.
Pinnacle Technologies
Pulsar Plastics
Quality Rubber Resources
Race Plastics
Rehrig Pacific Co.
RAM Polymers
Durawear Corp.
John C. Dolph Co.
Design Plastics, Inc.
Deltech Polymers

Formica Corporation
Rust-Oleum
Rich Industries
Rexnord Corp.
Plastic Engineered Components
Pinnacle Polymers
Prime Polymers
QTR, Inc.
R M Plastics
Replas, Inc.
Race Corp.
The Duriron Co.
Ronald T. Dodge Co.
DeNovis
Delta Design

Foam Enterprises
Roentgen Industrial
Rhone-Poulenc
Plexmar
PlasTec
Phillips Chemical
Prestige Plastics
Precon Marine
Rain Bird
Reemay, Inc.
Racal Datacom
DuPont Polymer Products
Doble Engineering Co.
Dennis Chemical Co.
DYNEPCO

Electrolux Home Products
Rockwood Pigments
Rheodyne
Plastiprint of Ohio
Piqua Technologies
Publix Supermarkets
Integrity Products
Premier Shielding
Public Safety Equipment Co.
Raskas Foods
Dymax
Dong-A America
Digisonix
DEMA Engineering
DynaGen, Inc.

Corning, Inc.
CEW Enterprises
Zero Mfg.
United Plastics
Variform
Warrenton Products
Wirsbo Co.
Emerson Electric
Atlantis Plastics
Maxdem, Inc.
E.J. Welch Co.
Aerovox, Inc.
Urethane Soy Systems
Green Products Co.
Automated Production
American Showa
Carsonite International
Briggs Associaes
Capitol Specialty Plastics
Carter Technologies
Blue Diamond Industries
Bartlett-Collins
Bradrock Industries
Dayton T. Brown
Aerovox
Labtech Corp.
Brady Precision Tape
Korte & Luitjohan Contractors
Koch Supplies
Lambda Advanced Analog
KYDEX Thermoplastics
Lynn Plastics

Con Agra
Consolidated Plastic
Universal Air Filter
Tyton Corp.
Utility Vault Corp.
Walker Mfg.
Windsor Plastics
The Wine Group
Arrow Group
Martin Engineering
Merit Fastener Corp.
Leggett & Platt
Key Polymer Corp.
Linpac Materials Handling
Ausco Products
Anderson Carbolon
Central States Diversified
Breen Color Concentrates
Cambridge Industries
Max Buchanan Co.
Bonset America
Barry-Wehmiller Co.
Barton Nelson, Inc.
Biomet, Inc.
Adtran
Lubrizol
All-Plastics Molding
Littlefuse, Inc.
KSH, Inc.
Lang Mekra
Kysor Westran
MDA, Inc.

Chevron Chemical
Coil Construction
UCC Corp.
Valentec International
Universal Polymers
Westvaco
Whitney Home Products
Terracon
Agro K
Material Interface
Abrasive Technology
Diamond Plastics
The J.M. Smucker Co.
Vanguard Piping Systems
Atapco
Carleton Technologies
Bridon Cordage
Brown Shoe Company
C-K Plastics
Bertke Resins
Bancroft Construction
BP Chemicals
Becton Dickenson
Biowhittaker
Action Technologies
Broadley James Corp.
Allegheny Printed Plastics
Louisiana-Pacific Corp.
M & R Marketing
Lawter International
Kydex Co.
K WM. Beach Mfg.

Chamberlain Group
Cerdec Corp.
U.S. Borax, Inc.
Vector USA
Universal Frozen Foods
Wescon Products
Wilsonart Laminates
Atlanta Plastic Equipment
A & B Ceramics
The Mazer Corp.
Advanced Pedestal, Inc.
Auto Meter Instruments
Angeles Group
Austin Powder Co.
Anheuser-Busch, Inc.
Carr Textile
BJK Industries
MXL Industries
Ch2M Hill
Saigan
Christy Concrete
Borden, Inc.
Bemis Co.
Bunn-O-Matic
Laminations, Inc.
Alltrista
Alfacel
Klockner Pentaplast
Magnatek
G. Leblanc Corp.
Kappler, Inc.

GOVERNMENTAL

Ohio DOT
DNR Seattle, WA

City of St. Cloud, MN

City of Moberly, MO

City of St. Peters, MO

Stephen J. Callan, President & Technical Director of Polymer Testing of St. Louis, Inc. has been used as an expert in the following legal cases. Mr. Callan's clients are presented in bold text.

Partial List

Chatham County Board of Education vs. Carpenter Company – Insulation Failure
Fishbach vs. **Black & Decker** – Hand injury from electric saw
Falcon Belting vs. RTP – Rubber Belt Failure
Cochran vs. Kellwood, Walmart – Tent Stake Failure, child eye injury
Crutcher vs. **BIC Lighter Co.** – Fatality involving Bic Lighter
Heck vs. Leisure Industries – Boat Explosion Fatality
Pallanes vs. CHI Energy – Multiple fatality natural gas explosion
Lopez, Stratton, Ruden vs. **Owens Corning** - Residential Roof Tile Failure
North American Lighting vs. **Fiber Winders** – Acid Tank Leaks contaminating Residential neighborhood
Majoulet vs. **Toyota** – Automotive Paint Failure
Kimberly James vs. Amscan – Yo Yo Patent Infringement
McGrath vs. Grosflex Holiday Isle Resort – PVC chair failure injury
City of Moberly vs. **Combs Construction –** Citywide failure of PVC water Drain system
Park Mark Flooring vs. DFW Airport Authority – Airport runway failure
Clayton Mobile Homes vs. BBC – Interior paint failure
Kathryn Fox vs. Arthrex – bio interference screw failure
Tupelo Coliseum Commission vs. Niser Polymer Floor Co. Flooring Failure
M&M Poultry Equipment Co. vs. VLH, Inc. d/b/a P.M. Machine-Wheel Failure
Vinyl Building Products vs. Ferro – Window Frame Failure
Paul E. Randen et al vs. Home Rubber – Rubber Pipe Failure
Gore vs. **Cosco –** Child Safety Seat Involved In Accident
Green Edge Enterprises vs. Rubber Mulch L.L.C. et al – Patent Infringement
Mack Cali Realty vs. Everfoam Insulation Systems – Foam Insulation Failure
Agrium Nu West vs. Capstone – Phosphate Entrainment Separator Failure
Trademark Medical vs. Birchwood Laboratories – Mouthwash Contaminant

Expert Testimony of Stephen J. Callan, President and Technical Director Polymer Testing of St. Louis, Inc.

Federal Court Testimony

CMH v. BBC Distribution, LLC v. Diversified Polymer Industries: No. 3.05-CV-456 In The United States Court For The Eastern District Of Tennessee Knoxville Division

Supreme Court of The State of New York

Mack-Cali Realty, L.P. Mack-Cali Realty Corporation and So. Westchester Realty Associates, L.L.C. against Everfoam Insulation Systems, Inc.

Index No. 15778/08

In Missouri

Paul E. Randen, et. Al. vs. Home Rubber
Cause No. CV301-7454-CC-J4
Circuit Court of Jefferson County, Missouri Twenty Third Judicial Circult

Green Edge Enterprises, LLC vx. Rubber Mulch Etc., LLC, et. Al.
Case No. 4:02CV566TIA
United States District Court Eastern District of Missouri Eastern Division

Trademark Medical, LLC. v. Birchwood Laboratories, Inc.
Court File No. 4:12-cv-01890-JAR
United States District Court Eastern District of Missouri Eastern Division

New Jersey

Vinyl Building Products v. Ferro
Docket No. L-9768-02
Superior Court of New Jersey Law Division – Bergen County

Arkansas

VLH, Inc. d/b/a P.M. Machine Company vs. M&M Poultry Equipment Co.
Case No. CIV 2003-521-2
Circuit Court of Washington County, Arkansas

Texas

Park Mark, Inc. v. DFW International Airport Board, and Pacific Polymers International
In The District Court of Dallas County, Texas

Mississippi

Tupelo Coliseum Commission vs. Niser Polymer Floor Co.
Cause No. CV05-066(PF)L
In The Circuit Court of Lee County, Mississippi

Our searches produce the best results when you provide us prompt feedback, positive or negative, on the experts we present. Please contact your client manager if you wish to interview this candidate or give feedback.

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