

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF SOUTH CAROLINA  
AIKEN DIVISION**

Devon Davenport, )  
)  
Plaintiff, )  
)  
v. )  
)  
Goodyear Dunlop Tires North America, Ltd. )  
and the Goodyear Tire and Rubber Company, )  
)  
Defendants. )  
\_\_\_\_\_ )

Civil Action No.: 1:15-cv-03752-JMC

**ORDER AND OPINION**

This matter is before the court pursuant to Defendants Goodyear Dunlop Tires North America, Ltd. and The Goodyear Tire and Rubber Company’s (“Goodyear”) (collectively “Defendants”) Motion to Exclude Testimony of Plaintiffs’ Expert Witness, Dennis P. Carlson, Jr. (ECF No. 100). Plaintiff Devon Davenport (“Plaintiff”) filed a response in opposition to Defendants’ Motion (ECF No. 119). For the reasons set forth below, the court **GRANTS IN PART** and **DENIES IN PART** Defendants’ Motion to Exclude Testimony of Dennis P. Carlson, Jr. (ECF No. 100).

**I. RELEVANT FACTUAL AND PROCEDURAL BACKGROUND**

On September 18, 2015, Plaintiffs Maria Davenport, Arnold Davenport, and Demorio Davenport filed a Complaint against Defendants. (ECF No. 1.) Plaintiff Maria Davenport alleged she suffered injuries while she was driving a 1996 Ford Explorer when the tread on the left rear tire (“Subject Tire”) separated from the car, causing it to overturn. (*Id.*) Plaintiff Demorio Davenport was a passenger in the car and he also alleges that he suffered injuries during the incident. (*Id.*) Plaintiff Arnold Davenport alleges loss of consortium. (*Id.* at 2.)

Plaintiffs Maria Davenport, Arnold Davenport, and Demorio Davenport initially filed a Complaint in the Aiken County Court of Common Pleas (“Aiken County”). (ECF Nos. 34-1, 34- 3.) Plaintiff Devon Davenport filed a separate Complaint relating to the alleged incident in Aiken

County. (*Id.*) These Plaintiffs voluntarily dismissed the Aiken County Complaints on September 10, 2015, and re-filed their Complaints in this court on September 18, 2015, with Plaintiffs Maria Davenport, Arnold Davenport, and Demorio Davenport joined in one Complaint. (ECF No. 34-4.) Plaintiff Devon Davenport individually filed a second Complaint in this court (*Devon Davenport v. Goodyear Dunlop Tires North America, Ltd. and The Goodyear Tire and Rubber Company*, Civil Action No.: 1:15-cv-03752-JMC). (*Id.*) On August 2, 2016, Defendants filed a Motion to Consolidate both cases. (ECF No. 34.) On October 25, 2016, the court granted Defendants' Motion to Consolidate for all purposes, including trial. (ECF No. 46 at 5.)

In the present Motion, Defendants contend that Mr. Carlson's testimony should be excluded because his testimony lacks the requisite reliability and relevance required under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 589 (1993).<sup>1</sup> (ECF No. 100 at 1.) Mr. Carlson intends to offer the following opinions:

1. the Subject Tire was defectively designed due to a lack of a full nylon cap ply;
2. the Subject Tire was defectively designed due to inadequate aging resistance, and was defectively manufactured as there was reduced adhesion between the wire and rubber and a defective belt joint;
3. the Subject Tire was defectively designed due to an inadequate wedge;
4. alternative designs existed for the Subject Tire at the time of its manufacture that were "practical and safer;"
5. wheel weight clip marks on the Subject Tire do not indicate over-deflection;
6. Plaintiffs' use of tires on the Subject Vehicle other than as recommended by the Owner's Manual "made no difference;"
7. the pounds per square inch of pressure in the Subject Tire was over 20 ten milliseconds prior to the Subject Accident;
8. the amount of road rash on the wheel is insignificant for purposes of accident reconstruction; and
9. the cracking seen on the Subject Tire at the time of the accident was not of the same magnitude at the time of its purchase by Plaintiff Arnold Davenport.

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<sup>1</sup> The court notes that it has already found that Mr. Carlson's knowledge, education, training, and experience generally qualify him to provide expert testimony in this case. (ECF No. 137 at 7.)

(ECF No. 73-3 at 14-17; ECF No. 73-2 at 24, 28, 29, 30, 34, 38, 42.) Defendants espouse that Mr. Carlson is not qualified to render these opinions “as they are the result of unsupported assumptions and insufficient facts and data, making them inherently speculative and failing to comport with the mandatory threshold for admissibility of expert testimony.” (ECF No. 100 at 3.) On December 1, 2017, Plaintiffs filed a joint response positing that each of Mr. Carlson’s opinions indeed satisfy the *Daubert* standard. (ECF No. 119.)

## II. LEGAL STANDARD

Pursuant to Federal Rule of Evidence (“Fed. R. Evid.”) 104(a), the court must determine “[p]reliminary questions concerning the qualification of a person to be a witness . . . or the admissibility of evidence,” including the admissibility of expert testimony under Fed. R. Evid. 702. *Daubert*, 509 U.S. at 587–88. A party offering an expert’s opinion “bears the burden of establishing that the ‘pertinent admissibility requirements are met by a preponderance of the evidence.’” *Cantrell v. Wirtgen Am., Inc.*, No.: CCB–07–2778, 2011 WL 915324, at \*2 (D. Md. Mar. 15, 2011) (quoting Fed. R. Evid. 702 advisory committee notes (citing *Bourjaily v. United States*, 483 U.S. 171, 107 (1987))). In determining the admissibility of an expert’s opinion, the court must reconcile the intent for Rule 702 “to liberalize the introduction of relevant expert testimony” with “the high potential for expert opinions to mislead, rather than enlighten, a jury.” *Id.*

The admissibility of expert witness testimony is specifically governed by Fed. R. Evid. 702, which provides that an expert may offer an opinion if:

- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

In determining whether expert witness testimony is admissible, the court evaluates whether it is relevant and reliable. *Daubert*, 509 U.S. at 589. Under Fed. R. Evid. 401, evidence is relevant if (1)

“it has a tendency to make a fact more or less probable than it would be without the evidence” and (2) “the fact is of consequence in determining the action.”

In making an assessment of relevance and reliability, courts acting as a “gatekeeper” in determining the admissibility of expert testimony, may consider a number of factors, including: (1) “whether the theory or technique in question can be and has been tested; (2) whether it has been subjected to peer review and publication; (3) the known or potential error rate; (4) the existence and maintenance of standards controlling its operation; and (5) whether it has attracted widespread acceptance within a relevant scientific community.” *Daubert*, 509 U.S. at 589, 592–595. *Daubert*’s list of factors is “meant to be helpful, not definitive” and “do not all necessarily apply even in every instance in which the reliability of scientific testimony is challenged.” *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 151 (1999). The United States Court of Appeals for the Fourth Circuit adopted this standard for the admissibility of expert witness testimony. *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 261 (4th Cir. 1999). The Fourth Circuit stated that “the touchstone of admissibility is whether the testimony will assist the trier of fact.” *Wehling v. Sandoz Pharm. Corp.*, 162 F.3d 1158, 1998 WL 546097, at \*3 (4th Cir. 1998) (table decision).

### **III. ANALYSIS**

#### **A. Subject Tire: Lack of Full Nylon Cap Ply**

##### **1. The Parties’ Arguments**

Mr. Carlson intends on testifying that the Subject Tire was defective in that it failed to incorporate a full nylon cap ply. (ECF No. 100 at 7.) Defendants contend that Mr. Carlson’s nylon cap theory is unreliable and must be excluded because: (1) Mr. Carlson improperly relies on post-manufacture evidence and on evidence regarding tires not substantially similar to the Subject Tire, and (2) Mr. Carlson has no additional support for his defect theory regarding the absence of a nylon

cap ply. (*Id.* at 8-13.) Plaintiffs respond by stating that Mr. Carlson’s nylon cap defect opinion is reliable and admissible because: (1) Mr. Carlson properly references a shearography study on other tires, and (2) Mr. Carlson provides ample support for his nylon cap ply defect opinion. (ECF No. 119.)

## 2. The Court’s Review

As an initial matter, the court notes that Goodyear overstates the holding of the South Carolina court in *Branham v. Ford Motor Co.*, 390 S.C. 203 (2010). The Supreme Court did not hold, as Goodyear advances, that all post-distribution evidence is inadmissible. The Court specifically held the contrary:

The dissent asserts that our opinion “may be read as barring any evidence created after the date of manufacture.” **We do not intend our holding to reach that far.** As defined above, post-distribution evidence is “evidence of facts neither known nor available at the time of distribution.” The RESTATEMENT (THIRD) of TORTS: Products Liability section 2, cmt. a speaks in terms of “reasonably attainable” knowledge at the time of distribution. If information on a product is reasonably attainable, then a manufacturer is charged with such knowledge at the time of manufacture. The rule prohibiting the introduction of post-distribution evidence does not permit a manufacturer to turn a blind eye to reasonably available information regarding the safety or danger of its product.

*Id.* at 227 n.17 (emphasis added).

Mr. Carlson’s reference materials, relied upon by him and cited in his expert report, contain documents attesting to the validity and reliability of his nylon cap ply design defect theory. Significantly, two of the reference materials are deposition transcripts of Goodyear tire engineers who testified that Goodyear used nylon cap plies prior to the manufacture of the Subject Tire and that nylon cap plies reduce tread separation:

Q. . . . and specifically for one type of tire, a nylon overlay was being used to try and reduce tread separations, correct?

A. Right.

...

Q. . . . Did the application of nylon overlays to these tires across the Load Range E allow you to reduce the tread throw problem significantly?

A. You're backing up taking a macro view of this whole issue?

Q. Right.

A. Yes, it does.

Q. So would it be fair to say that the ultimate ability of the tires to withstand stresses from whatever conditions, including their manufacture and their use, has improved significantly with the use of the nylon overlay?

A. Yes.

...

Q. . . . is it correct that you did recognize that the nylon overlays provided reinforcement and helped prevent tread separation?

A. We know that was a benefit of overlays, yes.

(ECF No. 85-4 at 14, 50-51, 99-100.) Similarly, a second Goodyear employee testified:

Q. As a matter of fact, tread belt separations on Kelly-Springfield and Goodyear tires have been substantially reduced as a result of double nylon overlays on light truck tires, is that correct, sir?

A. Yes, that's true.

(ECF No. 101-1 at 14.) In addition to Goodyear's own words, Mr. Carlson relies on numerous publications to support his theory. An article in Modern Tire Dealer of an interview of Jacques Bajer, who worked at Ford from 1955 to 1970, and later formed Tire Systems Engineering, Inc., discusses nylon overlays:

***The primary role of the nylon overlay is to improve the tires resistance to belt-edge separation, a condition that can develop from the effects of a combination of adverse tire operational factors such as flexural strains, stresses, intra-carcass pressure and heat build-ups concentrated at the tire belt-edge zones, the most vulnerable part of a radial-ply tire. This important tire construction detail should be incorporated into all radial-ply tires produced.***

(ECF No. 101-2 at 2-3) (emphasis added). A December 2000 Los Angeles Times article entitled

“Proven Safety Features Not Used on Many Tires; Automobiles: Devices known as Wraps Can Prevent Belt Separation, The Industry Says They’re Not Necessary” states: “The devices are designed to prevent the steel belts in radial tires from separating, which can lead to the treads peeling off. Most prominent among them are cap plies made of nylon or other materials, which are stretched like a tourniquet over the top of the belts to keep them in place . . . Manufacturers know the safety wraps are effective, records show. But they add cost and weight to tires, and tire makers in most cases have done without them.” (ECF No. 119-4 at 1.)

A Modern Tire Dealer article discusses the fact that Pirelli used nylon cap plies as early as 1969 and that “radial-ply tires with the [nylon cap ply] design feature experienced much less tread/belt separations, and were working more coherently, as they should.” (ECF No. 119-4 at 2.) Further, an article entitled “Design Elements of Steel Belted Radial Tires to Improve Belt Durability” contains a finite element analysis conducted by three experts. (ECF No. 100-2.) The article discusses using full nylon cap plies and belt edge strips to improve belt durability. (*Id.* at 1.) It states: “Nylon edge covers overlay the edge of the belts with minimum width covering belt end steps, while a nylon full cover covers the entire belt and *is more effective in retarding crack propagation in the belt width direction.*” (*Id.* at 4) (emphasis added). The article is not subject to the post-distribution evidence rule because, as the article expressly states, that design element has existed “since the late 1960s,” decades before the manufacture of the Subject Tire. (ECF No. 100-2 at 4 ¶ 1.) *See Branham*, 390 S.C. at 227 (“[P]ost- distribution evidence is evidence of facts neither known nor available at the time of distribution.”). These articles demonstrate the nylon cap ply theory is widespread in the tire industry, and has been since at least 1969. Additionally, it is reliable based on the numerous publications and references cited by Mr. Carlson as well as his own experience in tire design and testing.

Further, Goodyear misstates the law on the substantial similarity requirement. Defendants present the argument that Mr. Carlson is using the other tires he references to show that those tires

caused an accident and, therefore, the Subject Tire caused the accident at issue in this case. (ECF No. 100 at 6.) Mr. Carlson uses other tires to compare tire “construction in three areas. I’m looking at whether they have a nylon, full nylon cap plies, whether they have a sufficient wedge, and the innerliner thickness.” (ECF No. 73-2 at 16.) He is comparing the construction of the tires, and presents no evidence of any incident or injury caused by any of these tires. *See Branham*, 390 S.C. at 203 (“[I]f the cause of an accident is known and the cause is not substantially similar to the accident at issue, evidence of the other accident should be excluded. Yet, where the precise cause of an accident is not known, [] data has relevance when compared to [] data of other vehicles.”). The evidence of other tires is not subject to the substantial similarity requirement.

The first table of tires in Goodyear’s Motion is a shearography study conducted by Paul Maurer, an independent contractor who performs tire cuts and x-rays. (ECF No. 73-2 at 5.) The table “shows the presence or absence of nylon cap plies, and [Mr. Maurer] provided the study that he did previously, which correlates [tread] separations and cap ply usage.” (*Id.* at 11.) Mr. Carlson testified the study is relevant to this case to show that Goodyear knew how to design tires with a full nylon cap but did not do so in the Subject Tire. (*Id.* at 16.) The study also supports a direct relationship between an absence of a full nylon cap ply and tread separation:

Q: What is the significance of this study for the purposes of the Davenport case?

A: Well, talking about cap ply – it’s a comparison of tires with cap ply and no cap ply and whether they had separation in the shearography. And we are – here we have no cap ply and the belt has separations, no belt edge separations, two with cap plies with no separations, or three, and then no with separations. Yes, with no separation, and four with no, and we have some separations. So it is a one-to-one correlation between putting the cap lie [sic] in there and having separations as shown by the shearography.

(*Id.* at 20.)

Finally, this testimony is not subject to the post-distribution evidence rule because “post-distribution evidence is evidence of facts neither known nor available at the time of distribution.”



*Branham*, 390 S.C. at 227. It is undisputed that the nylon cap ply design existed at least by 1969 and Goodyear used it at least by the mid-1990s. Therefore, evidence of tires with and without a nylon cap ply is evidence of facts known or available to Goodyear at the time of distribution of the Subject Tire in 2001. Therefore, the evidence is not “post-distribution evidence” and may be properly relied upon and used by Mr. Carlson.

As discussed previously, Mr. Carlson provides adequate support for his nylon cap ply defect opinion. He reviewed dozens of reference materials cited in his expert report, including deposition testimony of Goodyear’s own employees, industry publications, and manufacturer documents, which support his theory. Further, Mr. Carlson conducted a physical examination of the tire and reviewed x-rays of the Subject Tire.

Goodyear misstates Mr. Carlson’s testimony as “a conclusory statement that because the Subject Tire did not have a nylon cap ply, it was defective.” (ECF No. 100 at 13.) Mr. Carlson plainly testified at his deposition that he evaluates each tire individually:

*Q. Is it your opinion that any passenger or light truck tire from the time frame of the Subject Tire, which is 2001 up until the time we sit here today, unless it has a full nylon cap, that it is defective?*

*A. No, I evaluate them each one individually. I believe that with -- that the nylon cap ply is necessary for most tires, and it is one of the best and most effective ways to prevent separation which is the most dangerous failure mode of a tire, of a radial tire.*

(ECF No. 73-2 at 9.) (emphasis added). Mr. Carlson follows a reliable and widely used methodology in examining the tire and reaching his opinions. Therefore, the court finds that Mr. Carlson’s qualifications, analysis, methodology, and nylon cap ply opinion are reliable.

## **B. Subject Tire: Improper Adhesion, Inadequate Aging Resistance, and Defective Joint Belt Theories**

### **1. The Parties' Arguments**

Mr. Carlson has offered the opinion in his deposition and expert report that the Subject Tire is defective due to a lack of adhesion of the second belt to the rubber, and a defective belt joint, caused by lack of “antiozonants” and inadequate aging resistance. (ECF No. 100 at 13.) Defendants argue that Mr. Carlson fails to: (1) provide any explanation as to what specific aspect of the design of the tire, and/or the specific act within the manufacturing process of the tire, affected the adhesion of the belt to rubber; (2) identify how the tire aging properties of the tire were deficient; and (3) provide evidence as to how this alleged manufacturing defect occurred. (*Id.* at 14-16.) Plaintiffs disagree stating that Mr. Carlson’s improper adhesion, inadequate aging resistance and defective joint belt theories are supported by ample and reliable evidence. (ECF No. 119 at 14.)

### **2. The Court’s Review**

Mr. Carlson’s improper adhesion, inadequate aging resistance, and defective joint belt opinions are supported by the evidence and are reliable. He explains the following in his expert report:

Steel belts are made from wires that are coated with brass to greatly improve their adhesion to rubber.

...

The adhesion between the steel and the rubber was a critical factor in the early radials. Most manufacturers have learned to control the wire drawing operation and the creel room operation as well as found the proper additives that promote good adhesion. However, careless manufacturing and controls can still cause this failure.

...

A tire depends on the adhesion between its components and the physical strength of these components to withstand the normal stresses it experiences in use. Each piece of rubber must bond to its neighbor during curing, and each wire in the belts or plies must

bond to the adjacent rubber. Each piece of rubber must be manufactured correctly, have the correct antidegradants mixed in and be cured properly. When these processes are not correctly accomplished, premature failures will occur during normal and expected usage . . . Tiny cracks form soon after the tire is first used. In most tires these cracks do not grow significantly but when there are defects in adhesion or design, the cracks will begin to grow.

(ECF No. 73-3 at 5, 7, 14.) In his expert report, Mr. Carlson cites to over twenty reference materials regarding adhesion. (*Id.* at 35-37.) Mr. Carlson explained the basis for his improper adhesion opinion in his deposition:

A. There is a defective joint, belt joint at 240, at the area where the separation progressed across the tire, and there's a lot of bare cable.

Q. And what does bare cable tell you?

A. You have bare cable and the failure surface which indicates improper – inadequate adhesion between the wire and the rubber. It is related to aging and manufacturing.

...

Q. And with regard to the manufacturing defect, the 240 defective belt joint, and the bare cable with improper, inadequate adhesion, were those both causative of the accident and the injury in this case?

A. The joint, the spread joint at the edge of 240 was. The bare cable is more of an indication of the aging, but it is a defect when it shows up.

Q. And it's causative?

A. I believe so.

...

Q. So with regard to those opinions of manufacturing and design defect that we just listed and the causative nature of those, can you make that statement with regard to all of those defects and them being causative within a reasonable degree of engineering probability?

A. Yes.

...

Q. With regard to the belt joint, was that a manufacturing or design defect?

A. Manufacturing.

...

Q. . . . with regard to the tire aging characteristics of the tire, what do you find – that's a design defect, right?

A. I believe so, yes.

Q. And what do you find to be defective about the tire aging characteristics of the tire?

A. Essentially that the tire had tread left on it. And that is the criteria people use to look, when they get that, when they don't have a guideline from the tire company. And this thing failed before the tread wore out. So it has inadequate aging resistance.

Q. And do you have an alternative design for a tire that you believe in 2001, that would have been a non-defective tire with regard to the aging characteristics of the rubber of the tire itself?

A. Yes.

Q. And what tire is that?

A. You have a full nylon cap ply, you have an adequate wedge, adequate innerliner, adequate AO package, no manufacturing defects to start with.

Q. So nylon cap -- full nylon cap, a wedge, an aging characteristic, what else?

A. Good innerliner.

Q. Innerliner, what else?

A. No manufacturing defects and increase stress, like this one, and increase oxidation.

Q. Any other characteristics, other than those?

A. That's all I can think of.

Q. What tire was on the market in 2001 or earlier that met your definition of non-defective with regard to those design characteristics?

A. Well, the Michelin tires and that single Goodyear tire that I was talking about were those that I can say were successful designs from that time period. There are a number of light truck tires that already had nylon cap plies and they appear to be quite effective.

Q. If you'll just tell me the name and the model of tires that were on the market in 2001 that did not have those design defects in them, that would answer my question. So you said –

A. Michelin LTS series, the Goodyear GTS system.

(ECF No. 73-2 at 8, 38, 45.) Mr. Carlson identified the defects, explained them, provided alternative designs, and identified specific products on the market at the time of manufacture of the Subject Tire that had alternative designs and correct manufacturing.

Further, and contrary to Goodyear's assertions, Mr. Carlson cites to reference materials containing the compounds for the adhesion process and detailed explanations for the process. (ECF No. 119-5.) He also cites to reference materials discussing the science of aging resistance. (ECF No. 73-3 at 26-29; ECF No. 119-6.) This demonstrates his knowledge of and reliance on scientific publications regarding the subject defects. Mr. Carlson's opinions are supported by the evidence and he used reliable methodology to reach his opinions, which are supported by his knowledge and experience as well as widely accepted scientific publications.

As to the defective joint belt theory, Mr. Carlson testified the defective belt joint occurred "almost certainly [due to] him making the joint and letting it not be a butt joint in the belt." (ECF No. 73-2 at 37.) The majority of Goodyear's argument on this issue focuses on Mr. Carlson's use of the word "almost" before the word "certainly" when explaining in his deposition how the defective belt joint occurred. (ECF No. 100 at 16.) There is no authority stating that an expert must state his opinions with 100% certainty. "Rule 702 does not require that an expert's opinion testimony be expressed in terms of a reasonable scientific certainty in order to be admissible . . . An expert's lack of absolute certainty goes to the weight of that testimony, not its admissibility" *Samuel v. Ford Motor Co.*, 112 F. Supp. 2d 460, 472 n.16 (D. Md. 2000) (quoting *Stutzman v. CRST, Inc.*, 997 F.2d 291, 296 (7th Cir. 1993)) (internal quotation marks omitted). An expert opinion is reliable when "it is supported by adequate validation to render it trustworthy." *Westberry v. Gislaved Gummi AB*, 178 F.3d 257, 260 (4th Cir. 1999). "[T]he court need not determine that the expert testimony a litigant seeks to offer into evidence is irrefutable or certainly correct." *Id.* at 261.

Finally, Goodyear’s argument that Mr. Carlson “ignores authoritative research” that supports Goodyear’s position is an argument proper for cross-examination but not for exclusion of an expert’s opinion. *See Westberry*, 178 F.3d at 261 (“As with all other admissible evidence, expert testimony is subject to being tested by vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof.”) (internal quotation marks omitted). Mr. Carlson’s testimony is sufficiently reliable expert opinion testimony under Fed. R. Evid. 702 and the cases interpreting the Rule.<sup>2</sup>

### **C. Subject Tire: Inadequate Wedge**

#### **1. The Parties’ Arguments**

Mr. Carlson intends to opine that the Subject Tire was designed defectively as it had an inadequate wedge. (ECF No. 100 at 17.) Defendants contend, however, that “Mr. Carlson: (1) does not articulate what exactly is defective regarding the wedge or what the characteristics of a non-defective wedge would be; (2) has failed to provide any support for this assertion; (3) has not conducted any applicable testing; and (4) has failed to provide any support for his opinion, other than the opinion itself.” (*Id.*) Plaintiffs respond by stating that Mr. Carlson’s inadequate wedge opinion is supported by the evidence and will assist the jury; Goodyear “merely ignores that testimony.” (ECF No. 119 at 19.)

#### **2. The Court’s Review**

Mr. Carlson provided ample explanation and support for his opinion regarding the Subject Tire’s inadequate wedge:

A. And I have to have an aid to show you. As you can see, when you’re coming in

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<sup>2</sup> The court rejects Goodyear’s attempt to exclude Mr. Carlson’s opinions in this case because his opinion has previously been excluded by another court. (ECF No. 100 at 15.) The issue is not what occurred in another case, but rather, Mr. Carlson’s work and methodology as applied to the facts of this case.

here, you see the distance between these wires here. It maintains approximately the same thickness all the way to the edge. So you have no wedge, but it actually gets thinner and that's what pinching is. So when you don't have a wedge, there's a natural tendency for the wedges to -- if you go to the DOT report, which is EA0-023 in my references, it will talk about pinching. And you see what you want is you want a lot of thickness here because this is where separations start.

...

A. Well, I know that the Goodyear GTS, which was the Explorer tire, did not have nylon, but it had a wedge that was very high and it was a successful tire.

...

Q. Are the tires that you gave me, the Michelin LTs and the G670 P245 tire as alternative designs, would those be alternative designs to the Subject Tire in 2001 as to the inadequate wedge? In other words, do they have an appropriate wedge?

A. Yes.

(ECF No. 73-2 at 17, 33, 47.) This testimony shows Mr. Carlson explained the defectiveness of an inadequate wedge—pinching that occurs where the tire separations start—and identified specific tires that had safe wedge designs at the time of manufacture. In his expert report, Mr. Carlson explained as follows:

The wedge rubber [of the Subject Tire] appears thin at both belt edges.

...

[In tire design], [t]he edge of the steel belts is the most critical area of a steel belted radial tire. This is because they are located at a hinge point at the junction between the very stiff tread/steel belt structure and the flexible radial sidewalls . . . Several design measures are available in order to reduce the stresses concentrated in this vulnerable area. These include: . . .

2. Layers of extra skim stock rubber laid near the edges of the belt or between the belt edges to provide more cushioning and adherence at the belt edges and to reduce the intra-ply stresses. These components are called insulators or wedges.

...

The Subject Tire is defective in design for inadequate wedging between the belts at their edges. Belt edge wedging, or gum strips, provide resistance at the belt edges to the initiation and propagation of tread and outer belt separations by reducing the inter-ply shear stress. The invention of the belt edge wedge design occurred in the later part

of the 1960s. Since the 1980s, the wedge has been a standard component in steel belted radial tires. I tested wedge designs when I worked for Michelin between 1977 and 1987. Stress at the edge of the belts is a critical element, and belt edge wedges reduce the belt edge stress. Use of an adequate belt edge wedge or gum strip and a nylon overlay have proven to be two of the most important countermeasures to tread belt separations.

(ECF No. 73-3 at 3, 7, 16-17.) Mr. Carlson explained the purpose of the wedge in the design and overall safety of the tire, as well as his experience spending 10 years testing wedge designs for Michelin tires.

Goodyear appears to challenge Mr. Carlson's qualifications to testify about wedges by asserting that he does not provide enough detail about the wedge testing he conducted while at Michelin. (ECF No. 100 at 18.) This is inaccurate. Mr. Carlson explained he conducted testing on tire wedge designs from 1977-1987 at Michelin, thus providing a time and place of testing. (ECF No. 73-3 at 16-17.) Mr. Carlson's CV contains further explanation of his experience at Michelin from 1977-1987: "Four years in truck and light truck tire design including concept, testing and evaluation at MARC. Developed and put into production the XDA and XDL tires, the XM+S4 in pilot sizes and several light truck tires. Experience in cold and hot recapping procedures." (ECF No. 73-1). This testing experience is sufficient.

Mr. Carlson's opinion is supported by the x-rays and photographs of the Subject Tire in which he identifies the inadequate wedges, as well as his knowledge and experience working on and testing wedge designs at Michelin, and the numerous wedge scientific reference materials cited in his expert report. Therefore, the court finds his opinion will assist the jury on this issue.

## **D. Alternative Designs**

### **1. The Parties' Arguments**

Mr. Carlson states that practical and safer alternative designs were available at the time this tire was made, and which included "adequate wedging." (ECF No. 73-3 at 17.) However, Defendants



believe that because Mr. Carlson cannot provide specific information as to what tires, if any, existed that in his opinion would be alternative and non-defective designs to the Subject Tire, Mr. Carlson's opinion must be excluded as unreliable and not based on sufficient evidence. (ECF No. 100 at 21.) Plaintiffs oppose Defendants' statements and espouse that the fact that "Goodyear [does] not want testimony that the alternative designs have been known to and used in the tire industry for decades is not a basis for exclusion." (ECF No. 119 at 21.)

## **2. The Court's Review**

Mr. Carlson identified manufacturers and tires that employed feasible alternative designs:

Q. Do you know of any 245/70R15 in 2001 or earlier that you believe to be non-defective?

A. No, the Goodyear-like truck tires in that size, which is not a P, had nylon by that time.

Q. And do you believe that the Goodyear 245 in that size with the nylon is an alternative design for this tire?

A. Yes.

...

Q. And do you have an alternative design for a tire that you believe in 2001, that would have been a non-defective tire with regard to the aging characteristics of the rubber of the tire itself?

A. Yes.

...

Q. What tire was on the market in 2001 or earlier that met your definition of non-defective with regard to those design characteristics?

A. Well, the Michelin tires and that single Goodyear tire that I was talking about were those that I can say were successful designs from that time period. There are a number of light truck tires that already had nylon cap plies and they appear to be quite effective.

Q. If you'll just tell me the name and the model of tires that were on the market in 2001 that did not have those design defects in them, that would answer my question. So you said --

A. Michelin LTS series, the Goodyear GTS system.

Q. Hold on. The Michelin LTS, did it have the P245/70R15?

A. It was an LT, they did have a P series.

Q. 70R15?

A. Yes, and the Goodyears.

Q. 70, P245/70R15?

A. Yes. Of course, I consider the P235/75 equivalent, because it is the same load rating and is virtually the same size.

(ECF No. 73-2 at 33, 45.) Mr. Carlson specifically testified that the difference in the tire size does not make a difference in his testimony because “it is the same load rating and is virtually the same size.” (ECF No. 73-32 at 45.) *See Marshall v. Lowe’s Home Ctrs., LLC*, No. 4:14-cv-04585-RBH, 2016 WL 4208090, at \*5 (D.S.C. Aug. 10, 2016) (holding that a plaintiff must “present evidence of a reasonable alternative design, which includes consideration of the (1) costs, (2) safety, and (3) functionality associated with the alternative design.”).

Identification of the alternative design used by another manufacturer is sufficient proof of feasible alternative design. *See Wickersham v. Ford Motor Co.*, 194 F. Supp. 3d 434, 439 (D.S.C. 2016) (stating plaintiff’s expert’s “testimony clearly indicates that other manufacturers have utilized the raised threshold approach [alternative design] in the past. *See Caruso Depo.* 137:19-138:24 (explaining that designs created by Delco—Caruso’s former employer— incorporated such a system and would not have deployed the airbag if used in this case). The fact that this approach was used in the past certainly suggests that it is feasible from a cost, safety, and functional perspective.”)). Further, in *Wickersham*, the design was used in other vehicles and this did not render it insufficient. The relevant point is that the design and technology existed at the time of manufacture and other manufacturers used it. Accordingly, the court finds that this refutes Goodyear’s argument that Mr.

Carlson's opinion is insufficient because it does not identify the alternative design used in the same tire size. Mr. Carlson's opinion on this subject is admissible.

## **E. Over-Deflection**

### **1. The Parties' Arguments**

Mr. Carlson intends to offer the opinion that the Subject Tire was not run in an underinflated or overloaded state (i.e., over-deflection). (ECF No. 100 at 21.) Defendants contend, however, that Mr. Carlson has no evidence as to the weights of the occupants of the vehicles or the weight of the vehicle at the time of the accident, performed no testing to determine the weight of the vehicle at the time of the accident or before, has no record of the historical tire pressure of the tire on the Subject Vehicle, and possessed no other evidence to indicate whether the vehicle was overloaded and/or if the tire were run underinflated. (*Id.*) Plaintiffs discredit this argument by stating that Mr. Carlson's physical examination of the Subject Tire in conjunction with scientific publications and studies that over-deflection does not cause tread-belt separations renders his opinion admissible. (ECF No. 119 at 24.)

### **2. The Court's Review**

The court acknowledges the scientific publication presented to the court by Plaintiffs which states that "over-deflection does not produce tread-belt separation failures even in aged tires." (ECF No. 119 at 24.) However, it also acknowledges the article presented by Defendants which states "over-deflection . . . can be evidenced by conditions such as balance weight impressions." (ECF No. 100 at 23.) Mr. Carlson testified that "there are wheel weight marks (also referred to as balance weight impressions) on the tire . . . which do not indicate over-deflection." (ECF No. 119 at 25.) While the court understands that wheel weight impressions don't *always* indicate over-deflection, Mr. Carlson's testimony is clearly at odds with other interpretations on this matter.

The court notes that Plaintiffs' challenge to the conflicting scientific authority on the subject of over-deflections' effect on tread-belt separation can be cross examined during trial. *See Daubert*, 509 U.S. at 596 (“[v]igorous cross- examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.”); *see also McCulloch v. H.B. Fuller Co.*, 61 F.3d 1038, 1044 (2d Cir. 1995) (“[d]isputes as to . . . faults in [the expert’s] use of differential etiology as a methodology, or lack of textual authority for his opinion, go to the weight, not the admissibility, of his testimony.”). The plausibility of alternative explanations of an expert’s testimony is a weight issue that should go to the jury and not the admissibility. *Westberry*, 178 F.3d at 265. The court need not determine that a proffered expert’s testimony is irrefutable or certainly correct. *See Cavallo v. Star Enter.*, 100 F.3d 1150, 1158-59 (4th Cir. 1996). However, a trial court must mind the high potential for expert opinions to mislead, rather than enlighten, a jury. *Westberry*, 178 F.3d at 261. Therefore, because the court finds that Mr. Carlson’s testimony consists of scientific knowledge and will assist the jury in determining a fact in issue, Mr. Carlson’s opinion regarding the effects of over-deflection on tread-belt separation has met the requirements set forth by *Daubert*.

However, because Mr. Carlson has no evidence as to the weights of the occupants of the vehicles or the weight of the vehicle at the time of the accident, performed no testing to determine the weight of the vehicle at the time of the accident or before, has no record of the historical tire pressure of the tire on the Subject Vehicle, and possessed no other evidence to indicate whether the vehicle was overloaded and/or if the tire were run underinflated, the court finds that Mr. Carlson’s opinion as to whether the Subject Tire itself was over-deflected would not be reliable and therefore may not be admitted.

## **F. Different Size Tires**

### **1. The Parties' Arguments**

Defendants contend that Mr. Carlson's opinion that the presence of tires of a different size on the Subject Vehicle than that recommended for use by the Owner's Manual "made no difference" is unsubstantiated and should be excluded. (ECF No. 100 at 25.) Plaintiffs respond by stating that Mr. Carlson testimony is supported by his knowledge and experience, common practice in the industry, and the testimony of the owner of H&B tires who sold Mr. Davenport the tire who also commented that the different size tires "made no difference." (ECF No. 119 at 28.)

### **2. The Court's Review**

Pursuant to Fed. R. Evid. 702's requirements, the expert testimony must be "based on sufficient facts or data," "the product of reliable principles and methods," and that the expert "reliably appl[y] the principles and methods to the facts of the case." Mr. Carlson does not produce sufficient facts or data for his contention that the varying sizes of tires on the Subject Vehicle "made no difference." Mr. Carlson has not performed on-vehicle testing and does not cite any authority to support this opinion besides that "manufacturers provide procedures for how to use different size tires than those originally provided with the car and that the size difference in this case was minimal." (ECF No. 119 at 27.) As such, the court cannot allow testimony that amounts to personal speculation. *See In re Bausch & Lomb Contact Lens Sol. Prods. Liab. Litig.*, No. 1785, 2009 WL 2750462, at \*9 (D.S.C. Aug. 26, 2009) ("An expert's subjective, personal beliefs or speculation fail to satisfy the requirement of reliability.").

## **G. Subject Tire Pressure**

### **1. The Parties' Arguments**

Mr. Carlson proposes to offer the opinion that the pounds per square inch (PSI) in the Subject Tire before the Subject Accident was over 20 PSI ten milliseconds. (ECF No. 100 at 26.) Defendants

argue that this opinion is speculative and not supported by data or evidence requiring exclusion. (*Id.*) However, Plaintiffs counter that Mr. Carlson's testimony is supported by scientific principles, industry tire pressure specifications, and his education and knowledge. (ECF No. 119 at 28.)

## **2. The Court's Review**

Under Fed. R. Evid. 702, the court's role in considering the admissibility of expert testimony is to assess whether the evidence is sufficiently reliable and relevant. *Kumho Tire Co.*, 526 U.S. at 152. The court finds that Mr. Carlson's opinion on this issue achieves both aims of reliability and relevancy. Mr. Carlson explained in his report that "tire companies know that their tires are frequently subject to under-inflation in highway use and build a safety factor of approximately 20% into their tires over the published load-inflation tables." (ECF No. 73-3 at 6.) He further explained in his deposition that:

A. . . . The tires' load capacity is dependent upon the pressure. This has a maximum 35 PSI, but from my multiple calculations of the rear axle loading on Explorers, you don't really get to low pressure even at gross vehicle weight ratings until about 20 PSI, because of what is called a tire margin . . . Margin. It's a safety margin. That is built in to vehicles, and in other words, if the manufacturer in this case specified 26 PSI as the pressure in the tire, then the tire probably will not be overloaded until it gets to under 20 PSI. So you have a margin of six PSI.

Q. Do you know what the PSI was ten milliseconds before this accident sequence started?

A. Right now it was more than 20, because the tire shows no indication of overloading.

(ECF No. 73-2 at 28.) This testimony explains that, in the tire industry, manufacturers build in an inflation safety margin of six PSI. Mr. Carlson then explains that the Subject Tire had a maximum PSI of 35, but based on his testing calculations on Explorers, the rear tire loading does not get to low pressure until about 20 PSI. Based on this industry knowledge and testing calculations of an Explorer, Mr. Carlson testified the Subject Tire PSI was more than 20. This is not personal speculation, but is supported by the industry science and design, as well as Mr. Carlson's calculations and observations. Consequently, Mr. Carlson's opinion on this matter is admissible.

## H. Road Rash

### 1. The Parties' Arguments

Mr. Carlson intends to offer an opinion regarding the meaning of the lack of “road rash” on the wheel. (ECF No. 100 at 27.) However, because Mr. Carlson is not an expert in accident reconstruction, Defendants state that he is not qualified to render this opinion and thus it should be excluded. (*Id.*) Plaintiffs assert that whether or not road rash exists on the wheel is a fact based on physical observation, not opinion, and therefore Mr. Carlson is qualified to analyze the absence or presence of physical marking and characteristics of a wheel and any implications of such. (ECF No. 119 at 29.)

### 2. The Court's Review

Mr. Carlson offered the following opinion in his deposition:

- A. [A]ll the rest shows there's a Ford wheel that is OE on the Explorer, and you can tell that by the design, and the only thing important, I guess you might say, on this, is that there's very little, what we call road rash, which means several things. **Mickey Gilbert will handle this a lot better**, but to me it shows that the tire was either inflated on the road before there was a slip angle or it got off the road before there was a big slip angle, which is probably the way the accident happened, according to what I've seen. So the tire failed, the tire failed, protected the rim from touching the ground, and then when it went off the road, then there was the side force. And I have a little bit of a scrape mark on the rim flange.

(ECF No. 73-2 at 42) (emphasis added).

The United States Supreme Court held that the trial court's gatekeeping function applies to all kinds of specialized knowledge, not only scientific knowledge. *See Daubert*, 509 U.S. 579. The trial court must “make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.” *Kumho Tire Co.*, 526 U.S. at 152. As Mr. Carlson himself admitted, Mickey Gilbert, Plaintiffs' designated accident reconstruction expert, is better suited to testify regarding the accident sequence. Mr. Carlson did not reconstruct this accident (ECF No. 73-

2 at 23) regarding the sequence of events occurring during the accident. In addition, in Mr. Carlson's deposition, he went on to say that "[I]f you got an accident recon guy, they may be able to tell you from the evidence on the road. I can't tell you from the tire when it deflated." (ECF No. 73-2 at 42.) Mr. Carlson admits that he is unable to conclude with any certainty when the tire deflated. Accordingly, this opinion will be excluded as unreliable and based on insufficient facts and evidence.

## **I. Tire Cracking**

### **1. The Parties' Arguments**

Mr. Carlson plans to opine that, at the time Arnold Davenport purchased the Subject Tire, it likely had some cracking present, but that the cracking would not have been as noticeable as it was at the time of Mr. Carlson's deposition. (ECF No. 100 at 28.) Defendants contend, however, that Mr. Carlson has no evidence to support this opinion. (*Id.*) Plaintiffs invalidate this argument by stating that Mr. Carlson's knowledge and experience in the tire industry, along with his personal testing experience, qualify him to testify about when the cracking appeared. (ECF No. 119 at 30.) Further, they argue that his testimony is supported by other evidence in the record that the cracking, at the time Mr. Davenport purchased the Subject Tire, was not of the magnitude as it was when Mr. Carlson examined the tire. (*Id.*)

### **2. The Court's Review**

At his deposition, Mr. Carlson testified as follows:

Q. And during -- at that time, do you believe this cracking occurred and showed up for the first time after the purchase of the tire, or do you believe it was present when he purchased it approximately six months before the accident?

A. **I have no engineering opinion on that**, but I will tell you most likely there was some cracking there, but it may not be of the magnitude that we see now.

(ECF No. 73-2 at 29) (emphasis added). Mr. Carlson concedes that he does not have an opinion to offer within his field of expertise and does not present information or testing to support this



contention. While Mr. Carlson has tested tire cracking, his opinion that the cracking on the tire at the time Mr. Davenport purchased it was less than the cracking on the tire when he examined it is not supported with any facts or evidence, and is therefore excluded from trial.

#### **IV. CONCLUSION**

Based on the foregoing, the court **GRANTS IN PART** and **DENIES IN PART** Defendants' Motion to Exclude Testimony of Dennis P. Carlson, Jr. (ECF No. 100).

**IT IS SO ORDERED.**



United States District Judge

January 23, 2018  
Columbia, South Carolina