

IN THE SUPREME COURT OF TEXAS

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No. 04-1039
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COOPER TIRE & RUBBER COMPANY, PETITIONER,

v.

OSCAR MENDEZ, JR., ET AL., RESPONDENTS

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ON PETITION FOR REVIEW FROM THE
COURT OF APPEALS FOR THE EIGHTH DISTRICT OF TEXAS
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Argued January 24, 2006

JUSTICE WILLETT delivered the opinion of the Court.

In this products liability case, we hold that plaintiffs' expert testimony was legally insufficient to establish a manufacturing defect, and accordingly reverse and render judgment in favor of petitioner Cooper Tire & Rubber Company.

I. Background

In June 1997, Oscar Mendez was driving a Mazda minivan carrying six passengers down Interstate 25 in New Mexico. The left rear tire, a steel-belted radial tire manufactured by Cooper Tire, lost its tread. Mendez lost control of the vehicle, and it rolled several times, ejecting all six passengers. Mendez, the only occupant wearing a seat belt, was not ejected. Four of the passengers

died at the scene or shortly thereafter. When the tire was examined a nail hole was found in the tread. The nail had penetrated completely through the tire.

Mendez and the survivors and estate administrators of three of those killed in the accident were plaintiffs below. They sued Cooper Tire and proceeded to trial on the theory that the tire tread separated due to a manufacturing defect, and the tread separation in turn caused the rollover and the resulting deaths and injuries. The jury found a manufacturing defect and awarded over \$11 million in damages. The trial court entered judgment on this verdict. The court of appeals affirmed. 155 S.W.3d 382.

II. Discussion

Cooper Tire argues that the evidence of a manufacturing defect was legally insufficient to support the judgment. We agree.

A. Expert Testimony and Proof of Manufacturing Defect

In products liability cases, we have recognized three types of defect: marketing, design, and manufacturing. *Am. Tobacco Co. v. Grinell*, 951 S.W.2d 420, 426 (Tex 1997). “A manufacturing defect exists when a product deviates, in its construction or quality, from the specifications or planned output in a manner that renders it unreasonably dangerous.” *Ford Motor Co. v. Ridgway*, 135 S.W.3d 598, 600 (Tex. 2004). “A plaintiff must prove that the product was defective when it left the hands of the manufacturer and that the defect was a producing cause of the plaintiff’s injuries.” *Id.*

To establish proof of a manufacturing defect that caused the tread separation, plaintiffs relied on the expert testimony of Richard Grogan, and to a lesser extent on the expert testimony of Alan

Milner and Jon Crate.¹ The theory presented by this trio was that the tire failed because the “skim stock” was contaminated with hydrocarbon wax at the plant where it was manufactured, causing the belts to separate. “Skim stock is a specially formulated rubber compound that coats the steel belts in a steel-belted radial tire and through vulcanization holds them together.” *In re Bridgestone/Firestone, Inc.*, 106 S.W.3d 730, 731 (Tex. 2003). Cooper Tire complains that the testimony of all three experts was inadmissible.

“If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education may testify thereto in the form of an opinion or otherwise.” TEX. R. EVID. 702.

Expert testimony is admissible if (1) the expert is qualified, and (2) the testimony is relevant and based on a reliable foundation. *Helena Chem. Co. v. Wilkins*, 47 S.W.3d 486, 499 (Tex. 2001); *E.I. du Pont de Nemours & Co. v. Robinson*, 923 S.W.2d 549, 556 (Tex. 1995). “If the expert’s scientific evidence is not reliable, it is not evidence.” *Merrell Dow Pharm., Inc. v. Havner*, 953 S.W.2d 706, 713 (1997). The trial court’s determination that these requirements are met is reviewed for abuse of discretion. *Wilkins*, 47 S.W.3d at 499. “The test for abuse of discretion is whether the trial court acted without reference to any guiding rules or principles.” *Robinson*, 923 S.W.2d at 558. Admission of expert testimony that does not meet the reliability requirement is an abuse of discretion. *Guadalupe-Blanco River Auth. v. Kraft*, 77 S.W.3d 805, 810 (Tex. 2002).

¹ Plaintiffs also presented testimony from other experts that the tire separation caused the accident. We do not reach Cooper Tire’s complaints regarding this testimony.

In deciding whether an expert is qualified, the trial court must “ensur[e] that those who purport to be experts truly have expertise concerning the actual subject about which they are offering an opinion.” *Gammill v. Jack Williams Chevrolet, Inc.*, 972 S.W.2d 713, 719 (Tex. 1998) (quoting *Broders v. Heise*, 924 S.W.2d 148, 152 (Tex. 1996)). Scientific testimony is unreliable if it is not grounded “in the methods and procedures of science,” and amounts to no more than a “subjective belief or unsupported speculation.” *Robinson*, 923 S.W.2d at 557 (quoting *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 590 (1993)). We have also recognized that expert testimony is unreliable if “there is simply too great an analytical gap between the data and the opinion proffered.” *Gammill*, 972 S.W.2d at 727 (quoting *Gen. Elec. Co. v. Joiner*, 522 U.S. 136, 146 (1997)). “We are not required . . . to ignore fatal gaps in an expert’s analysis or assertions that are simply incorrect.” *Volkswagen of Am., Inc. v. Ramirez*, 159 S.W.3d 897, 912 (Tex. 2004). “A flaw in the expert’s reasoning from the data may render reliance on a study unreasonable and render the inferences drawn therefrom dubious. Under that circumstance, the expert’s scientific testimony is unreliable and, legally, no evidence.” *Havner*, 953 S.W.2d at 714.

In *Robinson*, we identified six factors that trial courts may consider in determining whether expert testimony is reliable:

1. the extent to which the theory has been or can be tested;
2. the extent to which the technique relies upon the subjective interpretation of the expert;
3. whether the theory has been subjected to peer review and/or publication;
4. the technique’s potential rate of error;

5. whether the underlying theory or technique has been generally accepted as valid by the relevant scientific community; and
6. the non-judicial uses which have been made of the theory or technique.

Robinson, 923 S.W.2d at 557. We emphasized in *Robinson* that these factors are non-exclusive and that Rule 702 contemplates a flexible inquiry. *Id.*

In *Gammill*, we recognized that the *Robinson* factors cannot always be used in assessing an expert's reliability, but "there must be some basis for the opinion offered to show its reliability." 972 S.W.2d at 726. We further made clear in *Gammill* that the *Robinson* relevance and reliability requirements apply to all expert testimony. *Id.*

The trial court is not required "to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert." *Id.* at 727 (quoting *Joiner*, 522 U.S. at 146). If the expert brings only his credentials and a subjective opinion, his testimony is fundamentally unsupported and therefore of no assistance to the jury. *Havner*, 953 S.W.2d at 712. Rule 702, by its terms, only provides for the admission of expert testimony that actually assists the finder of fact.

Under these well-established standards, we review the testimony of plaintiffs' experts Grogan, Milner, and Crate.

B. Grogan

Richard Grogan conceded that he is not a chemist, an engineer, or a tire designer. He obtained an ordinary national certificate, the British equivalent of a high school diploma, and holds no post-secondary degrees. He does not consider himself an expert in accident reconstruction. He worked for many years for the Dunlop Tire Company in England, in its technical department, tire

examination lab, and technical service section, where he examined tires including tires that had failed. He left Dunlop in 1980. He has taught courses to police departments and independent accident investigators on tire failures. In 1987 he published a book entitled *An Investigator's Guide to Tire Failures*. This book was revised and expanded in 1999. He has also written many articles on tire failures.

Grogan opined that the tire separated because the skim stock was contaminated. He believed hydrocarbon wax was the contaminant. He testified that the tread separation did not originate at the nail hole because he detected “polishing” in other portions of the tire’s layers, indicating that the separation started elsewhere. He described his observation of polishing at one point in his testimony as seeing “how the rubber has been removed from the cords and then left quite bright and clean.” He also asserted that the presence of “liner marks,” left by the canvas or other material on which rubber is placed before vulcanization, was further visual proof of his theory.² The presence of these marks, in his opinion, indicated faulty adhesion. Grogan also offered reasons that the tire did not fail due to the nail, excessive vehicle weight, under-inflation, or ordinary wear.

Assuming that Grogan was generally qualified to testify on the subject of tire failures, he presented a theory of wax contamination that was unreliable and should not have been admitted.

Although the *Robinson* factors are not always useful in evaluating expert testimony in automobile accident cases, *see, e.g., Gammill*, 972 S.W.2d at 727, and although they do not provide a perfect template for evaluating the admissibility of Grogan’s testimony, we turn to them initially

² As an in-court demonstration of liner marks, Grogan pulled a piece of plastic away from a piece of unvulcanized rubber to show the jury the imprint on the rubber left by the plastic.

for some guidance. As to the first and third *Robinson* factors—the extent to which the theory has or can be tested, and whether the theory has been subjected to peer review and/or publication—the record is devoid of any scientific testing or peer-reviewed studies confirming the hypothesis that wax contamination causes radial tire belts to separate. *See Ramirez*, 159 S.W.3d at 905–06 (holding, in an automobile accident case, that expert testimony was unreliable because, among other reasons, the expert did not conduct tests or cite studies to support his theory). The only publication Grogan could cite as supporting his theory was his own book’s support for the proposition that liner marks are indicative of poor adhesion. It is unclear from the record whether he was referring to his first book or his second book; the first was not truly peer-reviewed,³ and the second was reviewed by a Mr. Sachs,⁴ who actually disagreed with the Grogan’s opinions regarding adhesion.

Considering the second *Robinson* factor—the extent to which the technique relies upon the subjective interpretation of the expert—we note that Grogan conducted nothing in the nature of a *quantitative* analysis of wax contamination, such as calculating the amount of wax improperly deposited on the skim stock or the amount necessary to cause a tire malfunction. He offered no testimony that the scientific community has determined the amount of wax needed to cause a tire failure. He admitted in his deposition that he had not “done any type of mathematical calculations with respect to anything in this case.” *See Ramirez*, 159 S.W.3d at 904 (noting that expert failed to

³ The first book was reviewed by two of Grogan’s students who had never been employed by a tire company and had no experience in the tire design.

⁴ We are unable to determine the qualifications of Sachs from the record, except to note that Grogan testified in his deposition that Sachs used to work for Dunlop Tire Company, and Grogan testified at trial that Sachs was knowledgeable about tires.

perform calculations in support of his theory); *Robinson*, 923 S.W.2d at 559 (holding that expert's testimony regarding contamination of fungicide was unreliable where expert had "no knowledge as to what amount or concentration of [contaminants] would damage pecan trees").

As to the fourth *Robinson* factor, the technique's potential rate of error is unknown because no testing of Grogan's wax contamination theory has been done.

The fifth *Robinson* factor asks whether the underlying theory or technique has been generally accepted as valid by the relevant scientific community. The record is devoid of proof that Grogan's theory has achieved such general acceptance. There is no evidence of a general acceptance in the scientific community that wax contamination is a cause of tire belt or tread separations, or that liner marks and polishing are accepted as proof of such a theory.

The sixth *Robinson* factor looks to the non-judicial uses which have been made of the theory or technique. Plaintiffs offered no proof that, outside of the world of litigation, the industry and expert community have recognized wax contamination as a cause of belt separation. The pending case stands in contrast to cases where plaintiffs successfully offered non-judicial evidence of the alleged defect. *E.g.*, *Torrington Co. v. Stutzman*, 46 S.W.3d 829, 844–45 (Tex. 2000) (evidence of helicopter bearing contamination included FAA report prepared after earlier crash, and manufacturer tests conducted after that crash); *Uniroyal Goodrich Tire Co. v. Martinez*, 977 S.W.2d 328, 333 (Tex. 1998) (alleged tire bead defect supported by patent application); *Gen. Motors Corp. v. Hopkins*, 548 S.W.2d 344, 347 (Tex. 1977) (internal manufacturer correspondence documented efforts to change carburetor design and indicated that engineers considered change an "urgent safety

matter”), *overruled in part on other grounds by Turner v. Gen. Motors Corp.*, 584 S.W.2d 844, 851 (Tex. 1979), and *Duncan v. Cessna Aircraft Co.*, 665 S.W.2d 414, 428 (Tex. 1984).

Grogan’s theory was also deficient because it postulated that the inner surfaces of the tire had been contaminated with wax, but the foundational proof of such contamination was lacking. *See Havner*, 953 S.W.2d at 714 (“If the foundational data underlying opinion testimony are unreliable, an expert will not be permitted to base an opinion on that data because any opinion drawn from that data is likewise unreliable.”). Plaintiffs failed to prove through direct evidence the occurrence of such contamination or a plausible basis for inferring that such wax contamination occurred.

Grogan relied on a report prepared by British testing company RAPRA Technology Ltd., although Grogan conceded that, not being a chemist, “I certainly don’t understand the chemistry” in the report and “[t]he detail of it passes me by.”⁵ The report, based on an examination of samples of the tire, found wax on the skim stock. The report, however, citing two published articles, notes “the migratory nature of hydrocarbon waxes” and postulates, in direct contradiction of Grogan’s theory, that the wax might have been present on the exterior surface of the tire and migrated over time into the areas tested. It expressly concludes that “the wax detected on the failure surfaces may have migrated through from the tread,” where wax is intentionally applied, and that further testing (which was not done) would assist in resolving this uncertainty. The report notes, and the experts on both sides agreed, that wax compounds are intentionally applied to the exterior tread and sidewall surfaces of tires to provide protection from ozone. One of Cooper Tire’s experts, Harold Herzlich,

⁵ Cooper Tire complains that the report itself should not have been admitted in evidence, an issue we do not reach.

a chemical engineer and former tire compounder,⁶ explained that the wax components identified in the RAPRA report included a compound known as 6PPD, an antiozonant Cooper Tire applies to exterior surfaces, thus indicating the migration of the wax compounds through the layers of the tire. Herzlich and two other Cooper Tire experts, Jerry Leyden, a chemist and former tire compounder,⁷ and Jean Hoffman, the chief chemist at the plant where the tire was manufactured,⁸ testified that wax migration is a normal, expected, and well-understood phenomenon, that it occurs during the manufacture and throughout the life of the tire, and that wax migration was not indicative of a defect. Weighing conflicting admissible evidence is of course a matter for the jury, but we may consider the testimony of these opposing experts because “an appellate court conducting a no-evidence review cannot consider only an expert’s bare opinion, but must also consider contrary evidence showing it has no scientific basis.” *City of Keller v. Wilson*, 168 S.W.3d 802, 813 (Tex. 2005). “[I]f an expert’s opinion is based on certain assumptions about the facts, we cannot disregard evidence showing those assumptions were unfounded.” *Id.* Grogan’s reliance on a report that undermines his hypothesis is

⁶ Herzlich has a degree in chemical engineering and worked for many years for two tire companies as a tire compounder, a specialized area of chemistry involving the formulation of compounds used in tire manufacturing. He was promoted to manager of compound research at one of the tire companies. While in the employ of these companies he personally conducted forensic examinations of tires and eventually became the Director of Tire Engineering and Product Liability and Safety at one of the companies. He is a technical editor of *Rubber and Plastics News*, the largest trade newspaper for the rubber industry.

⁷ Leyden has a degree in chemistry and has taught college-level courses in rubber compounding. He worked for six years as a tire compounder for a tire company. He is the president of the Akron Rubber Development Laboratory, a privately owned testing laboratory specializing in rubber and materials used in rubber.

⁸ Hoffman has a degree in chemistry and is the chief chemist at the Texarkana plant where the tire was manufactured. She has worked as a chemist for Cooper Tire for many years. As chief chemist she was the manager over all laboratory operations at the plant.

another reason for concluding that his testimony was unreliable. *Cf. Havner*, 953 S.W.2d at 730 (“Dr. Palmer’s testimony is based on epidemiological studies that conclude just the opposite.”).

Grogan postulated that the wax “contamination” found in the RAPRA report could have come from cutting machinery. This opinion was speculation on his part. He did not visit the Cooper Tire plant and has not visited an American manufacturing plant since leaving Dunlop in 1980. The RAPRA report on which he relied does not conclude that the wax was a form of contamination, but instead states that the wax could have migrated from other parts of the tire. Grogan purported to rely on testimony of Hoffman and Richard Angell⁹ for his conclusion that wax contamination originated with machinery at the Cooper Tire plant. However, Hoffman, the chief chemist at the plant, testified that the waxes found in the RAPRA are not used to lubricate machinery, that waxes make poor lubricants, and that stearic acid (essentially soap) is used instead. Stearic acid has a much shorter carbon chain than the waxes identified in the RAPRA report. Angell had referred to the use of “wax” on cutting machinery in his deposition, but Angell has no chemistry background and admitted that he did not know what the substance actually was. Hoffman explained that what employees sometimes refer to as wax is actually stearic acid. Other plant employees confirmed that the substance used to lubricate the machinery was stearic acid. Plaintiffs’ expert Jon Crate testified that the RAPRA report did not find stearic acid on the tire. There was no evidence that stearic acid causes adhesion problems in tires; Herzlich explained that stearic acid is “put in virtually every rubber stock that’s cured with sulfur, and 95–98 percent of the stocks in tires are sulfur cured.”

⁹ Cooper Tire separately argues that the trial court erred in admitting Angell’s testimony, an issue we do not reach.

Grogan's reliance on Angell and Hoffman for his wax contamination theory was as a factual matter unreliable. "We are not required . . . to ignore fatal gaps in an expert's analysis or assertions that are simply incorrect." *Ramirez*, 159 S.W.2d at 912. *See also Burroughs Wellcome Co. v. Cyre*, 907 S.W.2d 497, 499 (Tex. 1995) ("When an expert's opinion is based on assumed facts that vary materially from the actual, undisputed facts, the opinion is without probative value and cannot support a verdict or judgment.").

In addition, Grogan's testimony lacked proof that hydrocarbon wax will cause lack of adhesion between the components of the tire after the tire is "cooked" in the vulcanization process. He stated that he had not conducted testing nor was he aware of any testing of the effect of wax on tire adhesion. He admitted that he was not a chemist or chemical engineer, or a specialist in the area of rubber chemistry.

Further, Grogan offered no theory as to how the tire could be used for 30,000 miles, and suffer a nail puncture at some point, without failing if wax was improperly deposited on the skim stock during the manufacturing process and the tire was defective when it left Cooper Tire's plant.

For all of these reasons, we conclude that Grogan's wax contamination theory amounted to no more than "subjective belief or unsupported speculation." *Robinson*, 923 S.W.2d at 557. His explanation for the tire failure was a naked hypothesis untested and unconfirmed by the methods of science and was legally insufficient to establish a manufacturing defect that caused the failure.

C. Milner

Alan Milner is a professional engineer with degrees in metallurgy and engineering. He examined the tire microscopically and with x-rays. He describes his specialty as failure analysis, and

has conducted failure analyses of a wide variety of products. In *Martinez*, we discussed some of Milner’s testimony, *see* 977 S.W.2d at 332–34, but that decision does not address a challenge to Milner’s qualifications or a challenge to the reliability of his expert testimony.¹⁰

In the present case, Milner devoted most of his testimony to explaining why he did not believe the nail hole or under-inflation had caused the tire failure. This testimony is legally insufficient to establish, by a process of elimination, the existence of a manufacturing defect that caused the failure, as discussed further below.

At the end of his direct testimony, Milner specifically addressed the existence of a manufacturing defect. He briefly opined that, as evidenced by polishing, and through “[e]xamination of the fracture surface,” the tire “developed belt separation early in its life” and there were areas of the tire “which were never bonded initially when it was made.” This testimony, comprising about one and one-half pages of transcript including questions and an objection, is legally insufficient to establish a manufacturing defect.

These parting words relating to the cause of the tread separation were unreliable proof of a manufacturing defect. Milner did little more than throw out terms like “polishing” and “fracture surface” when stating, in conclusory fashion, that the belt separation must have originated at the plant. This testimony was subjective, and unsupported by any measurements, testing, references to peer-reviewed studies, proof that Milner’s observational techniques are generally accepted in the relevant scientific community as a valid method of identifying a manufacturing defect, or evidence

¹⁰ On the contrary, the petitioner tire company in that case argued to this Court that the jury should not have disregarded Milner’s testimony that the tire rim was defective. *Id.* at 338.

that his techniques are employed in non-judicial contexts. This testimony was fundamentally unsupported and therefore of no assistance to the jury. *See Havner*, 953 S.W.2d at 712. Essentially, the only basis for the link between the Milner’s observations and his conclusions was his own say-so. *See Ramirez*, 159 S.W.3d at 912–13 (Hecht, J., concurring).

D. Crate

Jon Crate testified that based on his review of several published articles, the wax on the skim stock identified in the RAPRA report was the result of contamination rather than migration before or after the accident from other parts of the tire where wax was intentionally applied. He so testified although RAPRA itself had concluded that it was unable to determine whether migration was the source of the wax. Crate also opined that the wax would adversely affect adhesion, though he could not identify “any testing that has been performed by anyone that addresses the effects that wax has on the bonding between the tread and the belt of a tire,” and offered no testimony as to the amount of wax needed to cause a belt or tread to separate. He had not personally conducted any tests on the tire at issue or any other tires, but knows how to conduct spectroscopy of the sort utilized in the preparation of the RAPRA report.¹¹

Crate works for the Georgia Tech Research Institute, which conducts testing for industrial and litigation clients, and works privately for a company called Failure Analysts, Inc. He has an undergraduate degree in chemistry and a master’s degree in polymer science and engineering. He describes polymers as including “all plastics, rubbers, coatings, paints, and composites made [of]

¹¹ The RAPRA report explains that infrared spectroscopy and gas chromatography/mass spectrometry were used to identify wax found on the tire samples. Crate testified that he was familiar with and regularly used the equipment that performs such testing.

different materials.” He has done work in molecular biology and biochemistry, but has no specialized expertise in tire chemistry. He has never worked for a tire company or published any articles on tire chemistry. He conceded at trial that he does not consider himself an expert in tire design, does not consider himself a forensic tire examiner, and does not hold himself out “as having any expertise in the field of tire manufacturing.” He has done no testing on the migration of wax in tires or the effect of wax on tire ply bonding. The San Antonio Court of Appeals has held that he was not qualified to testify in the field of tire failure analysis. *Goodyear Tire & Rubber Co. v. Rios*, 143 S.W.3d 107, 115–16 (Tex. App.—San Antonio 2004, pet. denied).

While Crate has a degree in chemistry, chemistry is an exceedingly vast science divided into several branches and is far beyond the capacity of one person to master. Tire chemistry and design and the adhesion properties of tire components is a highly specialized field. As we noted in *Bridgestone/Firestone, Inc.*, 106 S.W.3d at 731, skim stock formulas are closely guarded secrets in the tire industry. The “recipes” used in tires cannot be reverse engineered because the vulcanization process chemically alters the ingredients, nor can the physical properties be determined from an examination of the ingredients. *Id.* at 731–32. Instead, testing is required. *Id.* at 732. A Cooper Tire videotape about tire manufacturing, offered by plaintiffs and played at trial, explains that a tire is one of the most complex components of an automobile, and that a radial tire “is a composite of 200 different chemicals and raw materials combined by physics, chemistry, and craftsmanship.”

We conclude that without more specialized education, training, or experience in tire chemistry, Crate was not qualified to testify on the subject of wax migration and contamination in tires and their effect on tire adhesion. The trial court should have excluded his testimony.

E. Failure of Proof

In summary, Grogan presented a novel theory of a manufacturing defect that did not, for the reasons discussed above, meet the reliability standard we have established for the admission of expert testimony. Failure to meet this standard means that his testimony was legally no evidence of a manufacturing defect or a defect that caused the tire failure. Milner's testimony was also legally insufficient to establish the existence of a manufacturing defect. Crate was not qualified to testify as to the existence of wax contamination and its effect on tire ply adhesion. Without this expert testimony there was no expert testimony establishing the existence of a manufacturing defect when the tire left Cooper Tire's manufacturing plant, or proof by expert testimony that such a defect caused the tire to fail. Without reliable expert testimony establishing these essential elements of a manufacturing defect claim, plaintiffs' proof was legally insufficient to establish liability. *See Martinez*, 977 S.W.2d at 334 ("We will sustain a no evidence point of error when . . . the court is barred by rules of law or of evidence from giving weight to the only evidence offered to prove a vital fact.").

We also conclude that the mere fact that the tire failed in these circumstances is insufficient to establish a manufacturing defect of some sort. Such a failure could have been caused by design defect. A design defect claim requires proof and a jury finding of a safer alternative design. TEX. CIV. PRAC. & REM. CODE § 82.005. The jury was not asked to make and did not make such a finding.

Moreover, we have noted that Texas law does not generally recognize a product failure standing alone as proof of a product defect. "The inference of defect may not be drawn . . . from the

mere fact of a product-related accident.” *Ridgway*, 135 S.W.3d at 602 (quoting RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 3 reporters’ note to cmt. d (1998)). The mere fact that the tire failed would amount to evidence of a manufacturing defect “so slight as to make any inference a guess [and] is in legal effect no evidence.” *Id.* at 601. As we discussed in *Hopkins*, circumstantial evidence of a product defect may be offered, but where, in another case, “[t]he record contained no proof of the [product’s] defect except the malfunction itself,” and the product had been in use for years and subjected to many adjustments and changes, the cause of the product failure and proof of original defect “could not be answered except by speculation.” 548 S.W.2d at 349–50. Grogan too conceded at trial that “the mere fact that a tire has a tread belt separation does not mean that the tire is defective.”

Nor do we think that plaintiffs’ expert testimony attempting to eliminate other causes of the tire failure is legally sufficient to establish a manufacturing defect. The universe of possible causes for the tire failure is simply too large and too uncertain to allow an expert to prove a manufacturing defect merely by the process of elimination. As stated above, even if plaintiffs had eliminated every conceivable reason for the tire failure other than a product defect existing when the tire left Cooper Tire’s plant, they did not eliminate the possibility of a design defect.

Further, in *Ridgway*, we discussed section 3 of the *Restatement (Third) of Torts*, which provides:

It may be inferred that the harm sustained by the plaintiff was caused by a product defect existing at the time of sale or distribution, without proof of a specific defect, when the incident that harmed the plaintiff:
(a) was of the kind that ordinarily occurs as a result of a product defect; and

(b) was not, in the particular case, solely the result of causes other than the product defect existing at the time of sale or distribution.

135 S.W.3d at 601 (quoting RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 3 (1998)). This section contemplates proof of a defect by eliminating other possible causes. Without deciding whether section 3 accurately reflects Texas law, we held that even if such an inference of a product defect can be made, “it would generally apply only to new or almost new products.” *Ridgway*, 135 S.W.3d at 601. In the pending case, the tire had 30,000 miles on it and had a hole from a nail that had penetrated completely through the tire. Further, section 3 by its terms would only apply if a tire failure is an incident “that ordinarily occurs as a result of a product defect.” Tire failures, like the fire at issue in *Ridgway*, “ordinarily occur for all sorts of reasons.” *Id.* at 604 (Hecht, J., concurring). Grogan himself wrote an article stating that more than half of tire failures were the result of punctures. He testified at trial: “A nail puncture is a very common reason for a tire to fail. I think we very commonly get a puncture these days and quite often don’t notice it until the tire is destroyed and we see tire debris on the road.” He specifically agreed that “a nail hole or other puncture can lead to a tread separation.” Herzlich similarly opined that a nail hole “can easily cause the tread separation that we see,” and that the destruction of a tire through processes that originate with a nail puncture is “accepted by the industry.” In these circumstances we hold that plaintiffs’ attempts to eliminate other possible causes for the tire failure were legally insufficient to establish a manufacturing defect.

III. Conclusion

We reverse the judgment of the court of appeals, and render judgment in favor of Cooper Tire.

Don R. Willett
Justice

Opinion delivered: June 16, 2006