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The Impact of Very Severe Hail
on the Roofing Industry:
Are You Ready?

Q&A with Steve Kuhel,
FiberTite



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The Impact of Severe Hail on the Roofing Industry

MODERATOR:

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PANELISTS

Steve Kuhel, Fibertite, Senior Product Manager

Heidi Ellsworth: Hello, and welcome to Roofers Coffee Shop RLW, Read, Listen, Watch. Thank you so much for attending today. My name is Heidi Ellsworth, and I'm an RCS partner. And we are honored to welcome Steve Kuhel who is a senior product manager for FiberTite. And we're going to be talking about very severe hail. I think this is going to be an outstanding topic because the weather, just constantly, we're being bombarded everywhere, and the work that FiberTite and Steve has done on this is so interesting. I know you are going to love this Read Listen Watch today, and I want to thank you again for all being here.

Heidi Ellsworth: Before I do introductions, I would like to do a few housekeeping items. So all attendees will be muted, but feel free to ask questions or comment in the comment area of your webinar panel. So that panel over on the right-hand side, put in the chat or put in your questions, and I'll be able to ask those at the end. So please do it all the way throughout so you don't forget that question. And like I said, at the end of the webinar, we will leave about 10 minutes for a Q&A segment where we can really get into talking deeply about that very severe hail. This webinar is being recorded and will be available online to read, listen, or watch, and that will include video, podcast, and transcripts. So if you would like to share it with other roofing professionals, it will be available within the next 24 hours on Roofers Coffee Shop on YouTube and on your favorite podcast channels.

Heidi Ellsworth: So let's get started. Very severe hail. This is an important topic for roofing contractors all over. Today's presenter is Steve Kuhel who became the senior product manager for FiberTite in 2018. His responsibilities include product leadership, establishing pricing schedules, and defining strategic product roadmaps for FiberTite products. That is a handful. Steve also works with leadership, sales, and customers to identify products that will provide operational security for buildings and building owners worldwide. I have to tell you, I am very impressed. Steve, welcome to the show, and thank you for being here.

Steve Kuhel: Heidi, thanks a lot. This is great. And I've been in the roofing industry for only two years, and I just have to say the work that you all do and just the overall work that the industry brings, I mean, it's been so welcoming to somebody from outside the industry. And I've had tremendous mentors, I've had a blast, and I'm really, really excited today to talk to you and your audience about very severe hail, the importance of hail, why it's important, and what we all can do to influence the best decisions from a roofing practices perspective.

Heidi Ellsworth: I tell you what, Steve? Only two years, you know a lot about what's going on. And that is so... And how important it is to the contractors and to the building owners. So I say we get started. Let's really get into this because I know you have just so... after talking the other day, you have so much important information.

Steve Kuhel: Well, let's do it.

Heidi Ellsworth: Yeah, let's do it. So before we really get into a lot of things, I would love for you to share the hail and the commercial roofing industry. Kind of what's happening, what's up in commercial roofing and kind of figuring out the severity of hail?

Steve Kuhel: Yeah. I mean, if you even think about just hail in general, what's so amazing about it is that everybody has a hail story, right? Everyone has a hail story, because they really remember something very visceral, something very primal, but also something somewhat hopeless, right? If there's an emotional resonance around hail that contractors have, specifiers have, consultants, architects, and the building owners themselves. And if it's hopelessness, it's kind of rooted around what the heck could we have done differently when these events happen? And the events likely caused devastating damage to that building, that asset, and it also presented some obvious and more serious threats of personal injury.

Steve Kuhel: And everybody has that story that they immediately go to when they even think or start considering hail. And the roof itself is really both the first and last line of defense against weather events like hail. And so what's so amazing, just I mean, in the work and understanding of hail and hail events nationwide. There's a cost to hail events for the right roof. But ironically, the emotional elements of hail actually weigh more than the actual literal impact to the roof. Because, whatever's underneath that roof is so important to that building owner, and there's an emotional impact about that. And that that asset underneath it brings economic value to both themselves, but also brings economic impacts to the communities that that building is involved in.

Steve Kuhel: On the FiberTite side, we target specific segments around data centers and food processing. But the truth of the matter is that, everybody's facility is a critical facility to someone. And I think that's important to remember as we kind of go through this exercise, because roofing contractors, but I know there's other members of the value chain that are listening, we all play an important role in bringing value and bringing decisions and influencing decisions along the way. And then finally, one of the big things we're going to talk about today is the commercial roofing industry, specifically, Factory Mutual, which is one of the largest commercial roofing insurance providers. And they're a leader, in a lot of ways, in the roofing design acceptance in the market, they've raised the bar as it relates to classifications around the most severe hail events, including the introduction of new and aggressive test methods to evaluate roof systems for hail. There's a history and evolution that's happening right before our very eyes that it's just, it's extremely fascinating to be a part of.

Heidi Ellsworth: Yeah. And Steve, you know what? I think it's so important, what you just said about the emotional toll that the damage to roofs can take, whether it's commercial or residential, that's really important for roofing contractors to remember, as we go through this presentation, that as you are working with your building owners, there's more to it than just a damaged roof. There's everything underneath it. And like you said, I love that, every facility is critical to someone. Things in there are precious.

Steve Kuhel: Absolutely. And that's a reason why everybody has that hail story, whether it's commercial or residential. To your point, right?

Heidi Ellsworth: Yeah. Well, I have to tell you, this summer in Central Oregon, we had a couple of huge hail storms, which we've never had before, or I shouldn't say never, but not that I remember. And so really, we're going to see a lot of hail events in places that maybe are not as normal. Maybe you can tell us a little bit about what's going on in the United States and what you're seeing around hailstorms.

Steve Kuhel: Yeah. And, yeah, it's extremely interesting. And the more you dive into it, the more you get a better understanding. It's clear it happens in areas you wouldn't even expect it. So I'm not very surprised when you mentioned Oregon and the hail event that you remember. I wanted to just define hail. This is really silly, right? I think everybody knows what hail is, everybody has seen hail. But what hail is, hail is a byproduct of essentially thunderstorms. And what happens is, that precipitation in a thunderstorm gets generated upward with updrafts in the thunderstorm and it goes to extremely cold areas of the atmosphere, and that precipitation freezes into ice. And at a certain point, that ice and that weight of that ice pellet, stone, ball becomes greater than the force of that uplift, and that's when the hail falls and gravity wins, ultimately.

Steve Kuhel: And hail sizes we've seen across the country, the normal range of hail events are almost like pea size, which are around 0.2 inches, up to 4.5 inches in size. And the largest recorded hail event was an eight-inch wide hailstone that weighed two pounds that they discovered in South Dakota in 2010. So I mean, just think about it, two-pound hailstone in South Dakota in 2010.

Heidi Ellsworth: That's scary.

Steve Kuhel: It is. And the truth of the matter is, to use a cliché, the bigger they are, the harder they fall. And depending on the size of the hailstone is equal to the speed that it actually comes down. So a one-inch hailstone, for all intents and purposes, usually reaches around a 25 mile per hour drop speed. But that you also need to consider kind of the environment, the wind, the temperature of that environment. But in generality speaking, a one-inch hailstone reaches around 25 miles per hour, but a large hailstone up to four inches in diameter hits speeds of 100 miles per hour coming down. Yeah. And in terms of, again, in terms of occurrences, 2019 was one of our highest years ever from hail events. There were 5,300, almost 5,400 hail events, as classified by the National Oceanic Atmospheric Administration, which is the NOAA. And if you're a hail nerd, I highly recommend going to that website. It's really, really interesting, or just a weather nerd in general.

Steve Kuhel: And the current predictions for 2020 around 4,500 hail events. And these hail events have a real economic impact, and routinely, we've seen over the last decade, routinely hits around \$10 billion plus per year in losses, with some estimates in 2019 had it closer to \$22 billion of losses that occur. And on an average annual basis, you're looking at anywhere between 1 million to 2 million

hail claims that are actually made. And as we note here, the hail event, the size of the hail events are growing in terms of the overall size. So the events of greater than one-inch diameter have increased as a share of all hail events by 2% since 1990. So these larger hail events are becoming more and more frequent, more and more regular portion of all the hail events that occur.

Heidi Ellsworth:

And I have seen this from my days of Eagle View, and watching all of the hail, and the weather nerd, my husband's that way. You're right, this 2% annual growth doesn't surprise me at all. So let's talk a little bit about those areas that are really prone to hail events.

Steve Kuhel:

Yeah. The way, and we'll talk about very severe hail from an FM perspective here in a little bit. But just from a meteorological/weather review in terms of how the government or weather body agencies look at it, there's almost three classifications within the U.S. There is what they call the hail belt, hail prone areas, and hail alley, and I'll quickly touch on all those. The hail belt is what we traditionally know is kind of like a hail zone, and that's North Texas, Oklahoma, Kansas, Nebraska,, Eastern Colorado, Wyoming, the Dakotas, and then part of the western half of Iowa, Missouri, Minnesota. That's traditionally called the hail belt.

Steve Kuhel:

However, as you can see on the slide here, there's actually areas classified as hail prone regions. And this encompasses a way larger map of what we just discussed. You're looking at getting into hail prone areas in Virginia, and Carolinas, you're seeing parts of central Florida, as you can see on this picture, and even parts of mid-state New York up into the Massachusetts area. And those are really classified as hail prone. That just gives you kind of the broad scope of how hail events go across the entire country. And it makes sense because hail is a byproduct of thunderstorms. Thunderstorms, we know happen all over the place.

Steve Kuhel:

And then when you think about hail alley, this is a hail rich area, and that's where three states meet, Nebraska, Colorado, and Wyoming. And hail alley is really defined by those three states, where those three states meet. And there are likely between seven to nine hail days per year. So they have seven to nine hail days that happen in a given year in that area called hail alley. And it's just crazy numbers, crazy impact. I mean, if you look at the eastern part of Colorado, where Denver lives, a few years back, it had a major hail event, even though it's on the outer perimeter of what we call the hail belt, and it had one of the costliest natural disasters on record of around \$2.3 billion in losses.

Steve Kuhel:

And if you look at time of year that these events occur, I mean, if you look at commercial roofing, it's 70% of hail events happen in the heart of the commercial roofing busy season with May, June, July, and August capturing 70% of the share of all hail events that occur. And the final point, I just want to note, this is not just a U.S. thing, this is a global thing as well. There are notable damaging hail events in Germany, Russia, China, and northern Italy every year.

Our focus obviously is on the U.S. and Factory Mutual focuses on the U.S. But it is not by any means just a U.S. thing.

Heidi Ellsworth:

Yeah. We're hearing about these huge weather events all over the globe. And it really is making everyone look at it in a way that we need to kind of change our classifications on weather because it just seems to be getting more extreme. So I'd love you... I mean, and here's another map kind of showing exactly what you just talked about. Let's talk about those hail classifications.

Steve Kuhel:

Yeah. So this is... and we're going to go a little bit of, to coin a term, inside baseball for everybody, but more inside commercial roofing. In order to understand very severe hail, and what you see here is actually the current very severe hail map, which includes moderate hail, severe hail, and very severe hail, published by Factory Mutual, in terms of how they define hail areas and hail zones in the U.S. And when we started this conversation, we mentioned everyone has a hail story, and so too does one of the largest property insurance companies, FM Global, and their testing agency and subsidiary FM Approvals. But what makes FM unique is that they examine loss prevention through engineering, meaning, they look at past performance but they also rely heavily on testing and design as a relative measure or an index of performance, and they're successful in their industry and they have billion dollars of premiums. They have a third of the Fortune 1000 companies within their portfolio of clientele. They are a monster and they're definitely a leader in the roofing industry.

Steve Kuhel:

But to give you kind of the history of the hail classifications, I want to go back to way back in 2014. Long time ago, long time ago. And I mean, really, that's how long this discussion has been formally going on in the roofing industry around very severe hail. And it's relatively recent in terms of the history of commercial roofing, right? 2014 is not that long ago. Pre 2014, FM only classified two areas, they classified as moderate hail and severe hail, and that was really it. And it wasn't necessarily based on the size of the hail events. They classified what they called hail days. So anything that had less than three days was considered, less than three hail days per year was considered moderate hail. Anything over three hail days per year was considered severe hail, and that was it. It was based on... and a hail day was classified as a hail event greater than 0.75 inches. So anything in that range was either severe hail or moderate hail zones.

Steve Kuhel:

Fast forward to October 2014. FM issued, this is really inside baseball for you, but. They issued the FM loss prevention data sheet 1-34, in which they introduced a new very severe hail zone, and it only encompassed Oklahoma, Kansas, and three northern Texas counties. And that was the first time the industry has ever seen a classification known as very severe hail. However, there were no roof systems established to meet very severe hail at this time. So FM made recommendations on how to handle and support the market with the intent of providing something into the future. And like all evolving trends in an industry and decisions, it was very much an iterative process for them.

Steve Kuhel:

Fast forward two years, 2016. Very severe hail is added to what is essentially the preeminent standard for commercial roofing within FM classifications of FM 4470. And the first test report was issued, the first evaluation report was issued. But there was a level of clarity that was just, it was less than, I think, the industry expected, but they understood, listen, this is something new FM is introducing and it's evolving. Then in March 2018, and this is where hail takes a big leap in terms of the classifications. A new loss prevention datasheet was introduced. And at that time, the very severe hail zone took over 25% of the country. So as you can see in the map, that large swath on the presentation slide, that became classified as a very severe hail zone. And at that time, the classification then became about the size of the hail. No longer was it around just the regular occurrences of it, very severe hail zones were classified as two-inch hail events that happened, at least, on average, once every 15 years. And that's kind of the evolving aspect from a history perspective of the classification.

Steve Kuhel:

Other notable moments were, at that time when I was introduced, 2019 comes around in April 2019, and the words around alternate systems or recommended systems by FM were removed, and very severe health systems in FM Approvals RoofNav became mandatory from a very severe hail perspective. Which is just extremely interesting because if you think about when the very severe hail classification came to be in 2018, March 2018, the very severe hail that we know that covers 25% of the industry, 25% of the U.S. Only 44 systems existed in and around that time that actually met the very severe hail classification. Today, they're close to 6,300, which we'll touch on here in a little bit as well. But that was one of the big takeaways is that, not only did these detail classifications in a relatively short period of time become transformed and change, that's how the commercial roofing industry looks at it through the lens of FM Global and FM Approval, but it also became about size, more predominant, than necessarily the sheer number of events for hail, hail events.

Heidi Ellsworth:

That makes a lot of sense. And realizing this is all on the commercial side with FM, because I know a lot of listeners may be very familiar with class 4 hail resistance, which is more on the residential side. So those two things have, really understanding the hail is, and that it's about the size, when you look at some of hail walls you showed in the past pictures, that makes a huge difference.

Steve Kuhel:

It does. And I think, to the audience that's listening that is focused on residential primarily, at least in my experience in the markets. Nothing happens in a bubble. Every industry looks at what's going on in other segments, and they beg, borrow, and steal certain decisions and classifications. And trends in one side of the segment on the commercial side eventually in some way, shape, or fashion end up in the residential, and the same is true on the residential and commercial. There's always this ambiguous flow of decisions that occur when things happen in industry.

Heidi Ellsworth:

Exactly. And hail really doesn't discriminate. It hits them all.

Steve Kuhel: No, it does not. No.

Heidi Ellsworth: And so the testing is so critical. So let's talk about this FM testing.

Steve Kuhel: Yeah. And I think the question I've always asked myself is, why really is testing important? Why is it important? And I think it's important because of this, because ultimately, it's everyone's job in any industry, particularly in the commercial roofing industry, that we set reasonable expectations for the owner. I mean, that's really the value that we all bring. And testing is an indicator of success. But to your point, it's not Mother Nature, right? Mother Nature kind of decides what's going to happen. So it's important for everybody to understand the test methods and kind of the testing protocols and how they've evolved as well, because that's really what's unique about this as well is that, it's not just the classification, from a very severe hail's perspective, actually a new test method as well. So we're going to talk real high level on three areas from a testing perspective, we're going to look at impact, we're going to look at the conditioning that the sample takes, and we're going to look at, very briefly, on the examination side of it.

Steve Kuhel: So if you look at how hail was previously classified with moderate and severe hail. What they would do, and forgive me, this is a gross generalization, but I'm going to do it just from a simplicity standpoint. For moderate hail and severe hail, they would take a two-inch diameter steel ball weighing around a little bit over a pound, and they drop it down the tube, and they do it from different heights. For moderate hail, they do it at 81 inches, from a severe hail perspective, they would do it at 141 inches, they do it 10 times, they examine the membrane, and they would create their classification by that. So they would drop a ball down a tube, measure it, ta da. On a very severe hail side, what happens is that a pre formed ice ball, that is two-inch diameters in width, is propelled with an ice ball launcher at the roofing specimen, the test specimen overall.

Steve Kuhel: And the ice ball launcher sends that ball going at speeds of anywhere between 104 to 109 miles per hour, and results in around 53 to 58 feet pounds of surface impact on that specimen. So the difference between the impact for very severe hail is almost four times that of the two-inch steel ball drop that is used for severe hail. And that's just on the impact side of things. So again, it's a new test method that is being developed as it relates to classifying severe hail, moderate hail to very severe hail.

Steve Kuhel: On the conditioning side of it, because, again, when you're looking at tests, you want to try to simulate the best you can real world simulations. Both samples for severe hail, moderate hail, and very severe hail are both unconditioned. And what they call it is UV weathering, which is basically accelerating the ultraviolet weathering of the same ply in the system. The third sample, which is now part of the very severe hail test qualification, is both weathered and heat aged to significantly high levels, which we'll talk here a little bit later. So there's a new heat aging that occurs to the sampling that doesn't occur on severe hail and

moderate hail. And this is a bit of a controversial topic, so I'll try to address it the best I can. The membranes are classified as, two ways, they are classified asphaltic and non-asphaltic based products. And asphaltic based products are tested at 160 degrees Fahrenheit, the non-asphaltic based membranes, which would include a traditional PVC, a TPO, and absolutely our KEE membrane that meets the preeminent standard in single plies, which is ASTM D 6754. They are tested at 240 degrees. So you have the asphaltic test at 160, you have the non-asphaltic products tested 240 degrees.

Steve Kuhel:

And the reason why that's controversial, because how the test is designed, you can make the argument that it was designed favorably for TPOs but unfavorably for PVCs. And by no means was it intentional, it was just kind of how the test evolution occurred. And unselfishly, I think the most important point in all that that I want to make is that FiberTite is not a PVC. And that's fundamentally why we have listings with nominal 36 mils meeting very severe hail listings. And I encourage people on the call today, if you want to get up on a 25-year-old roof or learn about our 25-plus year-old roofs of nominal 36 mil roof offering, go to our website, reach out to our sales representatives. The testing protocol is extreme from a FiberTite perspective, we're up to the challenge. But it's something just a note, when we're looking at the test protocols being employed for very severe hail classifications, so that everybody understands some of the nuances of it... Yeah, go ahead.

Heidi Ellsworth:

Oh, I was just going to say, the conditioning part of it, Steve, I think is, that is so good to hear. Because we all know that roofs change. So being able to test in that way, that's huge.

Steve Kuhel:

Yeah. And ultimately, what FM is trying to do is have extremely high bar of products that can pass, and we'll touch on this a little bit later. Because I think ultimately, like I kind of teed this up in terms of why testing is important. Though it is being conditioned, extremely high, we do need to also be able to set the expectations reasonably for owners, because it is only a test method in the end. But I agree with you. I mean, for me, from an insider baseball perspective, it's very interesting, in terms of how things are qualified and tested and gauged and insured and understood.

Heidi Ellsworth:

Right. Very good. Sorry I interrupted you. Did you have one more point?

Steve Kuhel:

No, no, no. That's awesome. And just, on the examination side, there are some nuances on the examination side on the moderate to severe hail, they only literally look at the membrane, but on the very severe hail classifications, they look at everything including, and primarily focused on the substrate in the board itself. So in summary, you have 0.6 of all FM approved assemblies meet very severe hail, that's 0.6, so it's 6,300 assemblies. 1,400 on the single ply side, 4,900 on the multi-ply side, you have various substrates that are passing from OSB, plywood, recycle content boards, you're starting to see enhanced gypsum boards pass, and you have also gypsum and asphalt glass systems on the multi-ply side.

Steve Kuhel: But I do want to note that FiberTite has the only very severe hail approved KEE system, which obviously is extremely important for the industry. Because, again, we feel this is the preeminent standard in the single ply industry. And so to have the only KEE system is something that we're very, very proud of.

Heidi Ellsworth: Wow. That was it. And then, as you were looking at this too, kind of going back to exactly what all these things, but there's just so many things that influence those roofing systems. So let's talk a little bit about that.

Steve Kuhel: Yeah. I mean, there are a number of factors that make a roof system more prone to hail damage, or really kind of any kind of damage. I mean, how old is the roof? These are questions that we all need to kind of ask when we're kind of assessing the system and what we're doing and why we're doing it. What type of weathering has occurred? How much degradation has occurred on the system? What's the environment like? What are the components being used? How is the system designed to support the roof and the building for all that stuff that is going to come at it yesterday, today, tomorrow and into the future. So those are all real critical things to remember. From a hail perspective, obviously, the waterproofing layer's ability to perform long term is the most critical, but after that, the substrate is key.

Steve Kuhel: And consider this, I've seen market data that has shown that 70% of the market does not even use a traditional cover board of any kind, 70% of the market. And based on the test results of very severe hail, it was clear that the rigidity of the cover board impacts the hail performance and the passing of very severe hail testing. High density cover boards are extremely beneficial for impact performance. But it's not the only thing by any means. And even beyond the very severe hail testing, the physical performance of the membrane as relates to UV, weathering, erosion, they're all keys to long term hail resistance in a roof. And that system needs the proper components from a long-term hail perspective, typically requiring protection board, adhere to roof cover, all those systems need to be expected to perform and remain, that's the part big part, they need to remain watertight to resist even the most common hail.

Heidi Ellsworth: Excellent. Well, okay. So then as you're taking that and putting it into really the next step of the roofing systems that withstand the elements, talk, I mean, this whole issue around resiliency, I think, is so important. Tell us about that.

Steve Kuhel: Yeah. So when I look at very severe hail, and I look at the test methods being performed, and the materials that are predominantly passing. And the simple truth, there's one simple truth, Mother Nature is consistently inconsistent. But there is a risk to all that, right? And if I was in a building owner's shoes, or FM shoes, or anybody who is working on very severe hail systems, the question I would ask is, are we unreasonably setting the expectations of performance for our building owners that we serve? It's a big question. It's a real gut check question, I think, for everybody in the industry. In FM's loss prevention datasheet 1-34 in March 2020, FM noted that the average life expectancy of most single plies, and multi-ply roofs cover between 14 to 18 years.

Steve Kuhel: So my answer to your question in terms of like how important is resiliency and what really makes it important. I mean, when an architect and the specifier consultant, what they need to do is they need to outline what your building needs to do to be resilient. I mean, what does it need to be resilient too? Is it impact? Is it wind uplift? Is it chemicals? Is it weathering? Is it all the above? Because really roofs do not usually perform in the face of one of these performance attributes, they usually perform some multiple of these needs. If the life expectancy of a roof is between 14 to 18 years, and the expectation is that a hail event, a two-inch hail event in these areas only happens once every 15 years. That means that hail event is only going to happen in the average life expectancy of that roof once, that's it.

Steve Kuhel: But the challenges that roofs face from wind, chemical, and weathering, those are ongoing, those are happening all the time. And I think that's fundamentally what we need to ask ourselves is, how long do we want the roof to last? And then how do we want to design that roof? And it needs to look at a balance of properties, how it absorbs impact energy, kinetic energy, how it handles chemicals, how it handles wind, how it handles UV. Hail is just one aspect of it. But being a truly resilient product is able to face all those attributes and still meet the expectations for the building owner.

Heidi Ellsworth: Yeah. And don't you think building owners are expecting that even more and more that they are looking for really long-term solutions? So it kind of goes back to the very beginning, when you were saying, this isn't always just a financial decision, this can be an emotional decision too, overall. And so really looking at how long can it perform, and what's it going to offer to the building owner is really important for roofing contractors.

Steve Kuhel: Absolutely, absolutely. And on a related note, I encourage everybody to go check out FiberTite's 25, 30 plus 35-year history of roofs on fibertite.com. Because, Heidi, we completely, that's a shameless plug, but we completely agree with you. It's just a matter of having that meaningful conversation with the influencers who are making the decisions, particularly on the building side.

Heidi Ellsworth: Yeah. I think building owners are looking for it. And we are hearing this a lot. We're hearing this come back to us that they want sustainable, resilient roofing systems that are going to protect, because data, and property, and lives, obviously, it's just critical with the severe weather that we're having to make sure that that building can withstand it, and last.

Steve Kuhel: Yeah, for sure. Absolutely.

Heidi Ellsworth: Yeah. And so as contractors are looking out there at all of this, let's talk about some of the resources of where they can go to get answers to really look more into different material selections, all the different codes and testings that are out there. Talk about this.

Steve Kuhel:

Yeah. And I think all these bullet points here are actually excellent resources. And there's so much changeover in industries, every industry faces it. In which, somebody is in the industry, now they're no longer in it. On the architect side, the contractor side, all these things. And particularly on the FM Global's RoofNav and SPRI's DORA, it really creates a great foundational design piece for both people who have been in the industry and newcomers to the industry. But by all means, they are not a surefire match for everything that you're looking for and what your roofing needs are. FM Global's RoofNav is a very comprehensive database of roof systems that meet FM requirements. But there's a tremendous website developed by the Single-ply Roofing Institute, SPRI's DORA, which is directory of roofing assemblies, which is a tremendous website. To be able to give anybody who's working in the roofing side of the building envelope tools to be able to understand what type of component parts and pieces will meet their needs. Miami Dade, Florida building code have useful tools and technology UL.

Steve Kuhel:

And honestly, I highly encourage everybody to go to fibertite.com. We have tremendous resources. Whether if it's around very severe hail, whether it's around understanding what KEE membranes are, and the differences between all those. And there's some great thought pieces and thought leadership pieces that have been developed by the team here, going back several years, tremendous work. And there's also a real cool nerd app, if you want to really get into hail called mPING. And it's developed in conjunction with the NOAA that you're able to report and actually participate in hail coverage. So if you see a hail event, go on your mPING app, record it, take a picture, it's really, it's actually a great kind of underground weather chaser type tool if you want to get involved in just hail. Because there may be people listening that just wanted to learn more about hail. And last but not least, the best resource, and I would be really damned if I don't mention this. Jerry Beall at FiberTite.

Steve Kuhel:

I don't know how many of your listeners know him. But he's a legend, and he's been a tremendous mentor to me. You mentioned earlier, "Hey, Steve, you seem like you've learned a ton." I've had great mentors here at FiberTite, including Mr. Jerry Beall. And I won't give out his cell phone number. So if there's any chat questions on it, please ignore those chat questions.

Heidi Ellsworth:

But they probably can find him on LinkedIn or [crosstalk 00:37:43]. There you go. Well, one of the things that really brings to mind to me on the resources too is, the importance for roofing contractors to actually take the time and share these resources with their building owners. With so much negotiated work out there, this is a great conversation to have with your facility mentors. Yeah.

Steve Kuhel:

Yeah, and I recommend using those websites, using us as well. I mean, like I said, there's so much changeover in the industry. Don't be scared, you have the resources at your fingertips, you just need to ask. And you can look really, really intelligent if you come with those things. And everybody wants to look good when they do something, when they present something to somebody, you can really influence their career, their decisions that influence their business. But I

100% agree, such great tools and resources to be able to present this information as well.

Heidi Ellsworth: Yeah. And to be able to actually show the building owners the mPING, and to really show them what's happening with hail and why they should care about making sure that they have a very severe hail roof. I think that all goes hand in hand in great sales, and in being able to really take care of your commercial building owners. Yeah. And so when you're looking at that, what are you seeing, Steve, and from your resources and experts at FiberTite about the future of commercial roofing and very severe hail?

Steve Kuhel: Yeah. I mean, that's a great question. And obviously, I'm not Nostradamus here. But it's crystal clear to me that you're going to start seeing the use of very severe hail systems outside the very severe hail territory, you're going to see, with the increase of hail sizes, that territory likely expanding. Like I mentioned, between the two-year periods, just in two states in three counties in Texas, now takes up 25% of the country. But I think the risk in all of it, as I talked about earlier, we just can't be so myopic and look only at hail, it has to be looking at all the attributes that the building needs to be able to withstand. I think if you look at some of the growing areas in the country.

Steve Kuhel: If you look at like Dallas, Fort Worth, and Denver and Oklahoma City, these markets are growing from a population perspective, that's even pre-COVID, as people kind of move from major metropolises and kind of go more inward, and kind of expand in these geographic footprints that are more of the middle of the country. As that expansion happens, there's going to be commercial buildings that are going to go up in those areas, there's going to be residential buildings. And so with this urban sprawl that's happening in these areas that are in the very severe hail region, it's likely you're going to see more and more claims and more and more requirements that needs to meet that hail protection. And that's internationally too. I mean, Munich, Germany was impacted by hail events. And Munich is a growing, growing city in Germany.

Steve Kuhel: And part of the reason why the hail incidences went up is because of the increased populations in Munich. So it's an absolutely global phenomenon. And it's becoming an industry term. People are starting to throw out the term VSH, which is the acronym for very severe hail. But again, I just encourage everybody to really identify what those resiliency needs are. Don't be so myopic and focused on one thing, focus on the whole, all the elements that a commercial roof will experience and face and don't just focus on the membrane, or substrate, all the components matter. But the system design really matters in the success or failure of the roof system.

Heidi Ellsworth: That is great advice. And really, when you're looking at the building owners and the roofing contractors, commercial roofing contractors who take care of them, and really understanding this weather, maybe, I know we talked about it a little bit, but maybe just to kind of bring it all together. Yes, very severe hail is huge, but it's also winds, it's also everything else, rains, everything else that's

happening out there. So having the high-quality roofing systems for your building owners is so important.

Steve Kuhel: Chemicals, foot traffic. I mean, think about the other trades that have to get up on a roof. And God bless them, there's knuckle-headedness that occurs too, it just does. It's unavoidable, I mean, it really is. But you do need to think about all those elements when designing a roof system.

Heidi Ellsworth: And Steve, from what you've been seeing, and what the experts at FiberTite. Are you seeing, as we're saying the future of commercial roofing, are you seeing building owners saying yes, we're going to put this kind of money into the right roofing system for resiliency? What are you hearing that way?

Steve Kuhel: We are seeing that. And what's interesting, when the economy gets tight, like kind of how it is right now, right? We kind of, it can go two ways, it can go really towards valued engineer, or it could go to actually an area in which people are more selective of their materials. And that's our audience is the people that understand the value of their facility. And I think that if you're able to reach the true owner of that facility, the owner absolutely values that facility, but then you just need to make them aware and understand the important role that the roof plays in the building envelope and in protecting that facility. Whether if it's in a very severe hail region or otherwise.

Heidi Ellsworth: Yeah, that's great. Steve, such great knowledge, such great information, and I'm just really happy to see these standards changing, what FM has been doing, and the fact that FiberTite is just embracing and really getting it out there. Thank you so much for all this information. It's just amazing. So we're going to take some questions from our listeners. And we have a couple questions out there. We have one gentleman who's actually an RCS influencer, Mike Hicks, who says he has a soccer ball sized hail and FiberTite success story. So I was thinking, we could probably bring him on, Steve, and just let him know?

Steve Kuhel: Bring him on.

Heidi Ellsworth: Yeah? Okay. So Mike, hopefully you're still out there and you're going to be coming in as a presenter. And hopefully I'll be able to, wait, not a presenter, as a panelist. Hold on my friend. We're going to be bringing you on here in just two seconds. So make sure you're unmuted. There you are, Mike.

Mike Hicks: Okay. Hi, Steve. Hi, Heidi.

Steve Kuhel: Hi, sir. How are you doing?

Mike Hicks: I'm doing very well. I've had so much experience with FiberTite and hail. I really wanted to listen to this because I just don't know much about the VSH. But I'm looking at the slide that's up on the board and what rings in my ear is this history of performance is the best indicator for future success. And I know in my case, the one nagging question that I still can't answer 39 years after my first

install, is how long does FiberTite last? I've simply never had a failure of the membrane itself. And I have replaced one hail damaged roof. I'm replacing another one right now. But the roof we're replacing right now, the owner had no idea they had any problems. And that hail event, I believe was six years old, and we just happened to discover these hail strikes that were showing on the top of the membrane during a leak call.

Mike Hicks:

But the story I wanted to share. In Akron, Ohio, somewhere in the mid-2000s, we had a softball sized event. All windows in cars, buildings, et cetera, were gone. And literally every roof in a kind of one square mile area got replaced, except for this one customer I had that was self-insured, and the roofs weren't leaking, and they didn't want to replace it. And softball sized hail is just, it's rare, and the damage that it does is incredible. And yet the only damage we had on the roof was where you have a non-reinforced membrane around the drains, and it penetrated those. We fixed them. And we had three FiberTite roofs on that facility, two on warehouses and one on their office. 10 years later, they finally replace the office roof because there were the periodic leaks that were showing up and the owner just got tired of it. But that roof is almost 25 years old now. It's been, I think, close to 15 years since the original event, and those two warehouse roofs are still in place.

Mike Hicks:

And FiberTite has been a great product for us, but it's been even better for my customers. I just, I've never seen anything that's that good a value. And I won't name names out of respect to Roofers Coffee Shop and their advertisers. But I know, three years ago, we replaced 2000 squares of 1 PVC membrane that was 20 years old, had been hit by hail, not severe hail. But it was damaged to the point it was useless. And right beside it, they had an almost 20-year-old FiberTite roof, 780 squares that wasn't leaking. And the roof was almost 40 years old. When I, sorry, I said it was 20, it was over 30 years old at the time of the hail event and it was 40 years old when we replaced the other roof. So it is good stuff. And those were all just roofs were installed over ISO, they didn't have any hardboard. So I wanted to throw in that plug and say thanks for the informational session here.

Steve Kuhel:

Thank you.

Heidi Ellsworth:

Mike, thank you. And I want everyone to know out there that this came up on my questions, and I was so excited to see Mike Hicks. But this was totally unplanned. And so Steve, wow, pretty cool.

Steve Kuhel:

Such a guy. If we can do things over again, I think you guys can listen to Mike Hicks for 45 minutes. Thank you, sir. Thank you, sir.

Heidi Ellsworth:

Thank you.

Mike Hicks:

You're very welcome.

Heidi Ellsworth: Thank you so much. Well, thank you. And Mike is an influencer on the site. So if people want to read on kind of some of the things he's seen and what he's done, we have articles on Roofers Coffee Shop where he talks about a lot of this stuff that he's doing with commercial building owners and really taking care of the customer like he said. But, Steve, we have a couple more questions. So let's get some...

Steve Kuhel: What you got?

Heidi Ellsworth: So what are some of the key aspects of resiliency, and what value does it bring to a building? So I think this is something that you think for building owners. People are looking to have this fuel to be able to share with their customers.

Steve Kuhel: Yeah. So I think if you think about, again, we talked about resiliency, it really comes down to the ability to perform regardless of the circumstances, right? Because roofs face all sorts of circumstances. You have food processing facilities that have animal fats that are exposing the waterproofing membrane, you have hail, you have wind, you have other chemicals, you have trades. A roof system really needs to be able to be designed and be resilient and overcome all those aspects. And to be able to rebound when faced with those. And in terms of, I think the second part was around the value, did you say?

Heidi Ellsworth: Mm-hmm (affirmative). Yes.

Steve Kuhel: I think what Mike just said, right? There is tremendous value knowing that you installed something, and you don't need to go back and worry about it, right? If you're involved in a roofing system, and you install it, if you're the architect, or specifier, or the contractor, and you install the roofing system, and you're not sure if it's resilient. In the back of your mind, you can never really leave that job site you just did, because there's like a part of you kind of thinking about that still, right? There is tremendous value to be able to walk away from something and knowing that you used the right products and right materials, so you can go focus on the next work in hand. Does that make sense?

Heidi Ellsworth: Yes.

Steve Kuhel: So it's tremendous value. I don't know if I were to put a dollar figure to it, but there's tremendous value in that.

Heidi Ellsworth: And I think as contractors are working with their building owners, and really talking about this testing, it makes sense, right? It makes sense for them to think, "Okay, we have a third party who has tested these products." And how many systems did you say are out there that are approved right now for very severe?

Steve Kuhel: Right now, 6,300 very severe hail systems that are approved.

Heidi Ellsworth: Yeah. So there's some research that our contractors need to be doing. And all those resources we talked about before, that really makes a difference. But when you talk about those 6,300 systems, the next question that came up, and I think this ties right into it, is, you talked about FiberTite via 36 mil that has passed the VSH test. But I know there's a lot of thicker systems out there. And how can FiberTite do that? Can you talk to us a little bit more about that, what's the makeup of your membrane? And why is it doing so well that way?

Steve Kuhel: Yeah. I mean, I think one of the biggest... not one of the biggest misconceptions, but we're constantly faced with this battle that thicker is better, right? And if you look at evolution of products from other industries, products get thinner, and they perform better. They perform better, so they made them thinner. But the 36 mil, or 36 mil product has been in the market for, I mean, since 1979, 1980. But the reason why it is the way it is, is that the predominant polymer is ketone ethylene ester, which was developed by DuPont, its street name is known as Elvaloy. And it is a high molecular weight polymer that just doesn't migrate out of the product. And it's a tremendous polymer. As Mike was talking about, it's borderline magic in terms of how it performs. And I encourage everybody, if you go to fibertite.com/keemembranes, one word, you'll learn the full history of the evolution of FiberTite, what makes FiberTite different, and really get an understanding of the product differences between our product and the products that we compete against in the space.

Heidi Ellsworth: Yeah, I think that's important. Doing your own research and being able to really take that in to your building owners makes, just creates that validity. But also, I love the fact of, talking to other contractors who have been using these, reusing membranes that now are testing for very severe hail before anybody even really knew but just saw the performance of them. So networking and talking to other contractors about this too, I think, is important to be able to get out there and share that.

Steve Kuhel: Yeah, absolutely. And, again, I can't just reiterate this enough, but FM has their classifications, but the truth of the matter is, hail events happen all over the country, and I highly encourage everybody to understand what their... really take the time to understand what their building needs are, even beyond hail. Because I think. For example, there are areas of the country we didn't know experienced hail, we now have better understanding of that. But they also experience chemicals, they also experience wind, abrasion, traffic on the roof, all those other things. Really take that design seriously, and I'm not saying that you don't, but really kind of look at it holistically as much as possible. Because the people on this call today have such tremendous influence on building owners and building owners' decisions. And we're excited, and Heidi, thank you, this is great. This is great. Thank you.

Heidi Ellsworth: That is perfect. So Steve, as we get to the end of this, up on the screen, we have the fibertite.com/vsh where they can find information on this. We have the FiberTite KEE membranes, which you said is the history. So I really recommend going to those and looking to get that information that the building owners that

you can share with them because it's a great sales tool. Also, FiberTite is on Coffee Shop, obviously. They have a full directory, some great articles, videos, you name it. So I really recommend everybody out there too as another place of research, check out all that information on Roofers Coffee Shop in the directories in the Read Listen Watch section. So Steve, go ahead.

Steve Kuhel:

Real quick, just a real shout out to the work that you guys do. I mean, really. I mean, you all really make... The roofing industry is a cool industry. It's awesome. And you all just do such a great job bringing light to that, just really great work. Heidi and the team, it's really awesome.

Heidi Ellsworth:

Thank you, Steve. You are a delight. I'm so happy the roofing industry has you. This is great.

Steve Kuhel:

Thank you.

Heidi Ellsworth:

Thank you. And thank you everyone for watching today. We had a great crowd. Special thanks to Mike Hicks for coming on so unexpectedly just kind of made our day. And I want to, again, recommend that everybody visit rooferscoffeeshop.com, to the Read Listen Watch section. And on there, you're going to be able to read everything you want, or you can listen to it through our podcasts and audio presentations, or you can watch it through our video both on the site and on YouTube. But that's really what we want. We want the materials, the research materials you need when and how you want to get them.

Heidi Ellsworth:

So be sure to listen to our podcasts, blogs, directories and articles. And be sure to join us every other week for our Coffee Conversations where we have these kinds of conversations. And for our next RLW, which will be November 18th. And we are going to have the experts from Java who are going to be discussing contractor-driven development. I know, isn't that cool? Contractor-driven development of software. So how can you, as roofing contractors, be a part of the softwares that are solving problems for your business? It's going to be really good.

Heidi Ellsworth:

So again, Steve, thank you so much for being with us today.

Steve Kuhel:

Thank you.

Heidi Ellsworth:

Thank you. And thank you everybody for listening. Have a wonderful day and we'll see you at the next RLW, November 18th, and the next Coffee Conversations on November 5th. Thank you so much and have a great day.