Build With TAMKO - Virtual Series-20250813_205816UTC-Meeting Recording

August 13, 2025, 8:00PM

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Brian Dunn 0:09

Hey, good afternoon and welcome to Tamco's Build Tamco event. We're just giving just one more minute for everybody to get settled in for the call and then we'll kick off here in just a minute.

All right. Appreciate your time guys. So, so yeah, so welcome back to our our virtual series. Just to kick us off, you know we'll do the quick legal notice. So we do record these sessions. We are, we are working for those of you who have been in attendance before working on making these things available through the Edge portal. So this session will be recorded today and.

And just -A note here that what we're gonna be presenting, this is all TAMCO material today. So this is not to be copied, distributed or used without permission. And this is just for informational purposes only. It's not legal or professional advice. We do collect everybody's information for follow up e-mail, so just like.

Invite that you got here to join today. We'll have -A follow up e-mail for you and then we'll use that for future attendance. So appreciate that. As far as the agenda for today, I'll do -A quick introduction of the team that we have on board. We are recording this session as I had mentioned and you'll notice that from -A participation standpoint we do have.

Chat turned off for this meeting, but we do have Q&A available. So I definitely encourage all of you to leverage that Q&A session to raise questions to this team and then I'll I'll work to moderate that throughout the call once we get through the end of the presentation. So yeah, again, appreciate everybody's attendance.

As far as the lineup of who we have today, obviously we have John. John's our, he's our, he's always here for for these sessions as our contractor, excuse me, our Director of contractor engagement and then we're joined by both Chris Freeborg and Josh Bandy, so.

Chris is our Chief Marketing and Product Development Officer and Josh is on Chris's team and represents both our product development side as well as our Technical Services team. So excited to have these guys join us today and rip through you know some content covering.

All of the details on product performance at Tamco and why we feel like we have an edge in the product space. So with that guys, yeah, appreciate you, you joining on and I'll hand it over to you, Chris.

Chris Freeborg 2:32

Yeah, thanks, Brian. Appreciate it. And again, good afternoon. I'm excited to have those on today. And just to kind of kick it off, I think the main take away and what we're going to talk through quite -A bit in terms of the product technology and kind of how it's really built. But I think as -A common take away or an easy take away, the easiest way to remember it is.

Is really our goal here with product tech is this idea of -A system of systems, OK. And so when we look at shingles, they're really -A system of different functions and different components that give the the various performance targets, whether that's an impact rating, whether that's high wind performance, whether that's granular retention.

Et cetera. We're going to walk through each of those. And what you're going to see is that those things are intended, they're built in layers. And so they're intended to kind of build on each other as you go really from good, better, best up through our product offering. And then the idea of -A system of systems is the fact that the shingle really is part of -A system that we put on the floor.

Right. And that's really what we'll start talking about at the end, very briefly, just the idea of the Tanco complete and the accessory offerings and how they're intentionally built and engineered to interact and really give that complete protection and coverage for the homeowner and what we've kind of talked about in -A lot of our. Marketing the Peace of Mind and really -A combination of those two things. So Brian, if you want to move on to the first slide, we'll really just kind of get into the heart of where this starts, right? And so when we start looking at the design of -A shingle, um.

You know, I'm going to kind of go back to to to where we were trying to design this and and what the thought process was to kind of understand why we built it the way that we did. So about 5 or 10 years ago, what we really saw in the industry was an opportunity to to to upgrade in terms of technology and there's -A lot of growth in terms.

In terms of different equipment that allows us to see -A lot of different characteristics and -A lot of different information that's very useful when we're building shingles. So

TAMCO made -A pretty significant investment in -A lot of that technology as we looked at the landscape of things and really where we sat.
And where the industry was going and really the need to continue to improve the performance and the quality of our shingles out in the market, OK. And so, so -A lot of this development, the things that we've been seeing have been implemented really over the last decade.
And I'm going to kind of simplify it with some of the terms that we're starting to to roll out with and some of the nomenclature that we're going to be using more commonly. And so the first part of that to really understand is this new, you know, proprietary tri-shield technology, which is really just -A simple way of talking about really the three core elements.
That we view for quality. This is the quality, you know, expectations, the quality that we really want to be able to meet in every shingle that we make, whether it's in our good offering, which is heritage all the way up through flex and we're going to kind of see how that builds and so you know we really.
As we came out and talked to guys like John Abernathy and others, you know, one of the things that we noticed whenever we give -A roofing contractor or really anybody in the industry -A shingle, there's three things that they do, right? The first thing is you rub the granules. Second thing is you touch the sealant to see how tacky and strong it is. And the third is you try to pull it out.
This middle common bond area to see if it, you know, it should feel like your shoulder's pulling out and that's really the moniker for quality. I think for -A lot of us in the industry as -A base, if it doesn't meet that initial quality test in -A lot of ways, it's not worth looking at any of the other stuff.
And fundamentally, I think that's true as you start looking at high wind performance, right? You know, you can have the strongest seal in the world, but if your granules aren't going to hold firm, the sealant quality really doesn't matter, right? If I'm going to put it on -A roof and I've got this beautiful architectural design and I've got, you know, beautiful colors and all that, but the shim lane.
Falls out from underneath the dragon tooth. It doesn't really matter, right? And so when we start looking at the total roof system, these are really the three core components. And so as we look back, you know, 5 or 10 years ago, this became the focus and the the emphasis and so.
The starting point with the trishield technology really is that asphalt technology and we spent quite -A bit of time developing -A lot of different investment in technology

to allow us to see, you know, how do we really ensure.
Both granular adhesion and long-term weather ability, that's really driven by what we term here, the advanced asphalt technology. And so when we look at that, you know, granular adhesion really starts with our ability to take -A look and actually directly measure.
The strength and the capability of various asphalts to hold on -A grain. So as it turns out, not all asphalts are created the same, shocking as that may be, but just to give you kind of an idea of of why that's unique and -A little bit important if if you.
Look at the landscape of the US and if you ever get -A chance to come by our R&D lab, we'd love to show you. We've got -A map that's up in our conference room and it kind of maps out all the different locations of asphalts across the country that are available for use and it's roughly 40 to 50 locations across the US.
The challenge though, is when you start really getting into and peeling apart the different characteristics of it, when it comes to things like granular adhesion, weatherability and all that kind of, you know, there's really only about 10 in our estimation that you can use and there's really three primary ones.
That we put in and what we consider our anchor plots. And so there's -A lot of science and technology that really goes into ensuring that we're only using the top asphalts that are really going to allow us to give you and the homeowner -A shingle that's going to last and it's really going to uphold to the standards that we are talking about with these warranties, whether that be.
You know, 30 years, 40 years or 50 years. So to give you an idea of what we mean by that, so granule adhesion quite literally is -A measurement of how much force does it take to pull -A -A granule out of asphalt and so we can directly measure that.
But then we can also measure it after various aging conditions. And there's four main things that we look at. When we define weather ability, we look at it in four ways.
First is just your general rooftop oxidation, you know, so you put it up on the roof. There's -A standard aging that you're going to get.
Just from spending time on -A roof and that's going to vary based on location, but that's, you know, based on temperature and and sunlight, those kind of things, you're going to get variation there. But the second one is UV erosion. As you all know, you know the sun is not -A friend of asphalt. It will literally erode it out.
And so we've invested in various equipment and various technologies that allow us to directly measure that and amplify it in some some accelerated testing to really understand exactly the the sun's impact on our shingles long term and then

therefore allows us to really design and tweak.
The formulations of asphalts and different additives that we use to help elongate against that and create resistance against UV erosion. So the third element, you've got oxidation, you've got UV exposure. The third element is going to be moisture susceptibility.
Right. So things like ice, rain, snow, etcetera. Again, moisture is not -A friend of of asphalt, really anything. Think about the Grand Canyon, you know, very easy example of how water is not really rocks friends.
But it does give a good illustration, something that we want to specifically test for. And there are certain additives and there are certain specific types of asphalts that you can use that are actually much more resistant to to asphalt and they help to keep some hydrophobic properties that we really want to do. So it pushes that.
That water, especially when it's on a rooftop, maybe in a sanding setting away from the grains. And then the 4th element is hot cold cycle, OK. And so you know, a lot of the environments that we ship into across the United States.
You know, you can see very wide ranges of temperatures. And so again, the asphalts that we utilize and design and develop are intended to be able to compensate for that and to not get rid of crack under those conditions, so.
As a recap, you know there's four levels of weatherability, normal rooftop oxidation, UV erosion, moisture susceptibility and hot cold cycling. And that's really what we mean when we say granules hold firm.
Advanced asphalt technology, that's really what we're addressing. The heart and our ability to do that is based in that asphalt technology. So that's the first element. The 2nd element of Tri Shield is the seal in the sealants. When we develop those, we those are formulations that we developed largely in house in our R&D lab.
And we can actually make them out of one of our facilities in Columbus, KS.
And you know, as we looked at sealant and we kind of tried to understand, OK, what is it that we really want sealant to be able to do? We we were very much intentional to try to separate out sealant and laminate.
One of the things that we've noticed over the last maybe 10 plus years is that there was this.
Push to to have a concept called a dual laminate sealer, OK. And so you know from a manufacturing perspective, it makes a lot of sense to be able to utilize the same material for laminate sealer. It helps ease the process. There's some cost reduction opportunities there.

Some continuity of of production and things like that. And so we looked at it for probably 12 to 18 months and and looking at our ability to potentially utilize that concept. But one of the challenges that we found is that at the end of the day. When you look at sealant and you look at laminate, even though both are really asphalt based glue, functionally they actually do two very different things on the roof, right? And we could never get them both to perform at the level that we wanted without having to compromise. And so at the end of the day we.
We're very intentional to say we're going to utilize two separate materials and two separate formulations to do both, which makes sense when you think about it. If you think about laminate, right, laminate is applied hot in the process.
And then it cools down to seal. And basically after it cools, you want that to just turn into concrete and never move. You want to make sure that that dragon tooth and that chimelane never move, never adjust at all, ever. Once it's combined in production. Sealant, however, applies hot, but then at some point.
It's got to soften again in order to be able to grab the granules when it's on the rooftop and then you want it to turn into concrete and the challenge that you'll see and this is oftentimes as we were evaluating you know other products and trying to see how maybe others did it in the market.
Usually you have to err on the side of laminate. If you're going to do a dual laminate sealant, you have to kind of err on the side of laminate because you need that strength, otherwise it'll immediately fail root, which is why a lot of sealants nowadays don't feel very tacky. The problem with the strength of laminate is good, but it's it's been very has to get to much hotter temperature.
in order to be able to soften the grav grains. And so just to give you kind of an idea, when we developed the sealant, there's three aspects that we want. Strength is obviously a key component. That's the first element that you want. Once it bonds, you never want it to be able to break.
Needs to have a significant amount of strength and that's something that we can direct.
But the second component is compressibility, right? We also don't want it to completely flatten out, which can be a challenge over the summer. So we specifically designed some of the materials that we put in and some of the additives that are added into that polymer modified sealant and then we can directly measure in the lab under certain temperature or certain.
Pressure, certain conditions, things that we would expect to see even in like you

know, hot Phoenix weather over the summer. What is it going to look like after it's in packaging and he gets up on the roof? We want to make sure that that material is not going to completely flatten out. We still wanted to have.
A good amount of depth and robustness thickness so that when you lay those shingles down, it's going to grab onto the shingle below it. It's going to hit those granules, be able to wrap around the granules and hold strong, right? You can have the strongest seal in the world, but if it's totally flat, it's a pancake when you get up there.
It's touching air. It really doesn't matter, right? So that's the concept there. So strength, compressibility. And then the third is kind of what we alluded to earlier. We want it to be able to soften and we want it to be tacky. That's that adhesion that you feel, right? So when you, if you ever touch our, you know, tighten or flex or heritage sealant.
You're going to notice that it's really, really tacky and that's intentional, right? We want that material to be able to bond and make adhesive contact in as colder temperatures as possible, in as many environments as possible. And so we specifically test and design our sealants to be able to bond.
At temperatures at 60 degrees Fahrenheit and below, OK. And so that's that's not an ambient temperature, that's actually a rooftop temperature. And So what you'll find is that, you know, usually the sun is going to add 40 to 50 or more degrees to the actual surface temperature of the sheet.
So with our sealants, we found that you can get it to adhere even below freezing temperatures, which is why we're able to, and I'll kind of allude to it later. With flex, you can have that 25 degrees. And so that's an intentional component that we designed into the shingles by contrast, if you look at some of those.
Other.
You know, sealants, if you will, kind of like what we talked about with dual laminate sealant. Those oftentimes will not soften or have bond. There's a test that we do called a bond initiation test. It won't actually bond until it gets north of 100 to 110 meters.
So it's a pretty significant delta and that can oftentimes be the difference between whether it actually seals in the winter time going into the spring and some of those early storms or doesn't and then you run the risk of of wind damage in the spring.
So when we look at the three elements, we've got granules hold firm, we've got sealant, that's that advanced fusion sealants that you'll see noted. And then the last

element of course is laminate, right. We want that to be able to to stay strong really no matter if it's hot.
You know, summer temp, seat, roof conditions, etcetera. And again, we design it specifically to do that. Just to give you an idea, won't run through the specifics of it, but the testing mechanism for that is actually pretty simple for us. So what we do is we've taken a look at IVHS and some of their temperature data. 90C is about the hottest that.
You'll see rooftop temperature wise in the summer depending on where United States you can get there anywhere from you know 1 to 40 hours a year. And so the test that we do and Josh and his team do this for all of our laminate development before we ever put it on a shingle in production.
We take full shingles, we put them on a 2112 pitch, we high nail all of them and we put it in an oven at 90 C, which is 194 F for a week. And then what we're looking for is to see if the shim moves at all. If we see any movement, we'll reformulate.
And so that, you know, in general is the test standard. So it effectively we can have it withstand a Mansard setting at 90C for a week. We feel very confident that it's going to be able to withstand the conditions that you're going to see in real life.
Out there on this. So again, the Tri shield technology, Tri being three, these are the three core elements of quality that we believe should and need to be in every single shingle that are made. OK, so that's why this is the base. You're going to see these inheritage and then like we're about to talk about, it then builds up.
Into tighten and into flex. So Brian, if you want to move forward one slide.
So like we just alluded to, Titan then takes that tri-shield technology and it builds on. OK, and it adds on to it some additional technology, specifically that anchor lot protection, which is that poly mat that you'd notice on the back. It's a 2 inch poly strip that we specifically designed some proprietary engineering.
Again out of one of our plants in Columbus, KS and what that does, you know when we looked at the market, obviously there are other polymats out there, a couple other products that have it that came out before ours did. And so we had the opportunity to kind of take a look at how they did it, what that design looked like. And see if there are any fire modes or some ways that we might be able to do it. And so the poly mat there that you see on the back of the sheet is intentionally designed to do a few things. So first and foremost, you'll notice that it's a non woven versus a woven material.
And one of the challenges that we've noticed when you have a woven material,

which is that grid like material, a lot of times you'll see it kind of looks like a tarp or sometimes it just looks like a like a common weave.
You know that material in and of itself. If you were to just take the strength of a woven, it will generally speaking be stronger than a nonwoven by itself. The challenge though, is that the is that the woven doesn't necessarily want to bond with asphalt.
OK. And so when we were doing testing, we noticed that despite the fact that the tensile strength of the Poly mat itself on a woven was higher, the overall strength, particularly when it comes to nail pools in different wind related tests, was significantly low. And the reason was, is that the failure mode on that wasn't the. Poly mat, it was that the poly mat would delaminate from the asphalt. So you'll notice on certain shingles you can actually kind of pick it off and it'll peel off cleanly. So when we designed the the the shingle, we intentionally chose a non woven.
And then one of the things you'll notice about the material on the back, it tightens that it feels a little fuzzy and that's also an intentional add that's called texturing. And So what that does is it, it's intentionally allowing that polyester to have some what I would call.
So that polyester is not highly counted. It's not going to be very paper-like. It's intentionally allowing some of those polyester strands to kind of leak out. And what that does is it gives something for the asphalt to actually grab onto. I like to think about it. It's easier to pick up a barbell than it is to pick up a sandbag.
Right. So if I have something to grab onto, I the asphalt can wrap itself in and around and through and it creates this really locked coherent system that is much more difficult to pull, right? Because our intent here, again, it's not about the individual strength of the polyester, it's about the strength of the overall shingle and what it's going to do on the.
Roof to help ensure that that shingle never leaves the rooftop even in 160 mile an hour. So that's the first advantage of anchor lock. The second is you'll notice it's on the backside and that's also intentional because that allows us.
Even though it's an inch and a half nail zone, it's actually a 2 inch wide polystrip and because it's on the backside, it allows us to start that inside the common bond area and so it starts in the common bond and runs up into the nail zone.
Which allows us to take advantage of the same kind of system approach that we discussed with the asphalt. We allow the laminate to do that as well. So now because the polyester mat is anchored to the asphalt, the laminate can then take advantage

of the fact that the polyester is also textured and now.
So it has an even stronger anchor point to be able to grab into, wrap itself in and around and through, which allows us to really be confident about allowing for an expanded mail zone and and extended mail zone.
So if you want to move forward one slide. So here's a small video. Most of you have probably seen this. If you've ever come to any Tamko event, you know you can see the demo and and the shingle pull test and you go to hit play Brian if you want. Pretty common test. I think it's just a really easy.

Brian Dunn 23:16
Yeah.

Chris Freeborg 23:32
Way to be able to show the strength of what that polyester does. You know, you'll notice that specifically if you have a shingle that is is not polyester reinforced, it's pretty easy to get it off of the deck. A lot of times people can't get tighten off of the deck. Flex is even harder.
And so in, you know, in simple terms, if you look at the amount of force it takes to pull one nail out, you know you're looking at for tight and roughly 50 lbs of force, OK.
Now the interesting thing is because it's a system and we're going to talk about it a little bit more with Flex, that actually will increase the colder that it gets. And so that's one of those things that's an advantage at the system. Even if it gets hot or even if it gets cold, we're able to maintain a consistent level of performance throughout. It's not just.
An ambient temperature event. The other question that I get a lot, though, is like, yeah, that's cool. Like, yeah, I can't pull the nail out, but who cares, right? A sealant's more important and B, at the end of the day, I don't think that's a great moniker of. You know, wind testing, right? Well, if you look at the pictures on the right, both of those are from Testex when we were developing this shingle. You know, the joke that we always make about TAMCO is that we're a law firm that happens to make shingles. And in this case, that's a good thing because.
It means that if if I'm going to state from a marketing perspective that hey listen, you know 160 mile an hour wind warranty with four nails. When we tested it, we did 180 mile an hour winds with three and that's what you're seeing here. One of these decks

is with tighten and the others with flex just to show that we did it for both.
Products during development in multiple tests. Josh actually was the one that was out there at the facility doing doing the testing. But one of the things and this is this would be my kind of argument about why do you need Polymat versus SIM?
Right. The short answer is you really need both. OK, I'm not going to argue that sealant is not important. And if I had to pick one, I think sealant is the most important aspect, right? I don't even want the shingle to move ever if I can avoid it. But there's two main reasons that you want to have the polyester mat that we found and you you see it particularly when you.
To have these much higher wind testing and from the stability stand, right. One of the challenge when you don't have polyester mat is that not all wind, particularly in hurricanes and high, you know, extreme weather events if you will, it's not all frontline, straight line winds. You get side winds, you get winds that come in from different directions.
And then depending upon the deck and the house is built in different airflow channels, you can get air flows that come up from underneath and can put a lot of pressure, particularly on that center point of a shingle. And so the polyester is really designed to help ensure.
That you don't get any kind of weird air bubbles that even if the sealant locks in, the backside of the shingle can **** up, OK? And what that'll end up doing is that'll knock out the nails if it's not polyester reinforced, and then it'll start seesawing back and forth and it'll rip up a shingle even if the sealant is super strong.
It puts a whole lot of strain. You start to get, not to get overly nerdy, but you start to get a much higher lever, OK, which even the strongest sealant in the world and even the strongest grain cohesion isn't necessarily going to be able to withstand. So in order to give us even more robustness to extreme wind and extreme weather.
We wanted to add that polyester, right? The second reason is that it just gives us robustness. Even in the event that something happens with the sealant, something, you know, when you're installing it, there's some dirt or debris that happens to get underneath it. It doesn't completely seal for some reason.
You can be confident that that shingle is never going to lead to death. In fact, when we were doing the testing, we actually intentionally taped off the sealant just to see how strong the poly Poly mat was, particularly in 110 to 130 mile an hour sustained test. We would hold it for two hours.
And we were checking to make sure that the shingle didn't actually leave the deck, in

which case it actually didn't right. And so that gave us a lot of confidence that the Poly mat, the way that it was designed to the weight that it was designed, the the method and the way that the nonwoven was put together was going to be strong. It was going to be able to perform to the specifications that we really.
What is it?
All right. So let's move forward and we're gonna talk a bit about Flex. Um.
Sorry, the the other aspect of this that we would then culminate and I think is worth just kind of mentioning from a selling point. This will be true for Titan and for Flex, but you know you got the wind aspect of it, you've got the direct wind testing. Ultimately that's what culminates in our real world experience and real world.
Uh.
You know, testimonials that we've gotten from a number of contractors where you see things like this, this is actually a drone footage, almost unedited, you know, pretty much just a straight drone picture. The main thing we did is kind of crop out some of the other houses in the area.
From the most recent storm out there in Florida, Hurricane Milton that hit last year. And So what we saw with this neighborhood, if you took a more expanded view, you'd actually see a lot more blue tarps in the area that again, the Titan House.
As you can see, completely undamaged while one of our competitor, Brian's was was significantly damaged 5 feet away. And so that's kind of the practical realization of of what we're seeing and that's really the intent here is that we want to design it.
You know, and we start talking about what is true Peace of Mind. True Peace of Mind is that the event never happens, right? You can have coverage, you can have warranties. Ultimately, the homeowner can be made whole, whether through insurance, whether through manufacturing warranties and all that kind of stuff. But nobody enjoys going through that. Nobody wants to have.
To worry about it, have to go through the pain of getting it redone. And so when we think of true Peace of Mind, we think about performance first, coverage second. We'll get into that a little bit more when we talk about the tango.
OK. So the last element that we'll talk about in terms of the offering, again you've got Heritage which then builds into Titan and then on the back end really our best offering, you've got Stormfighter Flex and and you'll notice that we're we're talking about Flex, it's built different and that is flight literally.
True. OK. If you look at Flex, Flex is literally built on a Titan chassis and then we augment it with our polymer modified technology. And what I mean by that is if any

of us were to go out to Phillipsburg, KS where we produce this product and we were to stand on the production line.
We could stand there and go from tighten to flex and back to tighten and none of us would know it changed and that's intentional, OK. And the main reason for that is that we want to be able to utilize all of the good long-term weather ability.
You know, high wind performance and capabilities that we have with Titan and then just layer on top of it the additional performance enhancements that you get from polymer modification, which is enhanced elasticity and flexibility that impact performance that elevates it from a class 3 to a class 4 and the ability to install it in a variety of temperature.
Of conditions that you may not be able to do with some of the non polymer monoxide problems. OK. So when we talk about build differently, I just want to kind of go into that. You'll see up there in the top, it talks about better asphalt, better polymers and better avenues. These are not just marketing tag lines.
OK. These are actually founded in real science. And I'm just going to kind of give you a quick overview of again, one of the advantages that we had frankly coming out with Flex is that we were 15 to 20 years late to this party, right, which allowed us to kind of see, OK, there's a lot of other products on the market, how are they performing?
Are there any gaps in thermos and how would we want to do that? And so if you look at the standard polymer modified shingling market, most of them are made with a non oxidized asphalt and an SBS polymer. And the reason for that is is simple. I mean SBS is.
Is a fairly common polymer, relatively cheap at this point to to get and you pair it with a non oxidized coating because it's easy to blend together. They're very compatible, they go together easily. You can make them well and they run, but there are some certain failure modes.
That if you're not very careful with the asphalt or you you run into certain conditions that can flare up and those are really the things that we want to. So when you look at a non oxidized asphalt, not to get overly technical, but just to kind of help you understand what that means and why better asphalt, what that really means potentially for a homeowner.
So a non-oxidized asphalt literally just means it comes in as a flux and you just put it in to the coater. What oxidation is, is typically it's this process where you're just blowing a whole lot of air at a whole lot of temperature at a high temperature to

really drive out what we would call light ends or easily oxidizable fluids.
OK. You're basically pre-aging the material. And the reason for that is there's some materials that will physically leave the asphalt in relatively, you know, short order and that can make up anywhere from 3 to 5% of the actual mass of machine and so.
One of the challenges that we've seen in our testing with a non-oxide asphalt is that again, it's not pre-aged. So all the aging that it's doing is up there on the roof. And when we say easily oxidizable, they will usually leave within depending upon the asphalt, you know, 12 to 18 months of being exposed that kind of normal.
Rooftop oxidation. And what you can see with that is, you know, some of these phenomenons that we like to be referred to as spider cracking. If you've ever seen, you know, it looks like a like a like somebody hit it with a like a bulking hammer and it kind of cracked out.
Or blistering up their own roof. OK. And so in order to be able to mitigate that, we start with a fully oxidized base, which is the same base asphalts that we use for Titan and for Heritage. And it gives us the ability to really avoid that type of failure mode altogether. So we're able to capsulate all of the long-term weather ability, all those good.

Jon Abernathy 33:57
8.

Chris Freeborg 34:05
You know, oxidation, UV erosion, moisture susceptibility, hot cold cycling, all those good characteristics that we talked about at the beginning with with try shield technology, we can capture all those and maintain them and continue to utilize them even in our polymer modified materials.
We don't have to worry about things like spider cracking and blistering. OK. In order to do that though, in order to be able to pair it, we had to then upgrade our polymer, OK. And so when you look at the polymers, again, most use an SBS. What we utilize is called an SEBS.
OK, there's an E in there. And the difference is, is that an SEBS is essentially an SBS polymer that's just gone through one more step. They take all the double bonds and they make them into single bonds. And if you remember 8th grade chemistry.
Which I'm getting to go through with my oldest daughter and get, you know, kind of these updated chemistry lessons every year. Essentially what that means is a a single

bond is going to be much more stable and much stronger than a double bond. And So what that does is it helps to ensure.
That the asphalt itself is much more thermally stable. OK, to give you an example, if you look at an SBS, it will degrade at at any temperature north of 400F. SEBS by contrast has to be north of 700 before it will start to degrade.
So in our testing, what we've seen is that utilizing that more advanced polymer, even if I hold everything else the same, even if I hold the asphalt the same or use the lower asphalt, it gives us a significantly longer time in in the weatherometer and aging characteristics.
That we wanted to be able to capture. OK, so better asphalt is referring to non oxidized or oxidized versus non oxidized. Better polymers is referring to SEBS versus SPS. And then better additives is this third element that we found when we're developing it. There's actually a proprietary additive that we put in there.
Which really is what gives us our unique flexibility and what is allows us to get down to those 25 degrees. And I'll kind of show that in a video here in a second. But all three of those things then combine into what we believe and have seen to be better.
And so performance is really characterized by two elements. And Brian, if you want to move forward one slide.
When we're talking about here, right? So the first thing, what do we care about? You care about impact performance, right? If you ever come to any of our demos, we do these live. We either let you throw baseballs at the deck or we in in a lot of cases we'll have a hail cannon or an ice cannon that's that's there.
OK. And the video that you're seeing here, one of the things we started to do, that's the picture on the right there shows you.
The setup, one of the setups that we have there at R&D, that's a baseball machine that can go up to 100 miles an hour, pro-level baseball machine. And So what we do there is we'll we'll hit it in the video on the left that's kind of on replay. It's just a slow-mo of what it looks like when you hit the deck at 100 miles an hour.
And then that middle picture is effectively hitting the same location four times at 100 miles an hour. And so one of the tests that we look at is how many times can we hit the shingle before we start to see any damage. And what we're looking for are dents, we're looking for granular loss and we're looking for cracking.
Generally speaking, we need to break the deck first before the shingle will actually. So the shingle is actually not the weak point in the system. In general, it's the deck, so.

You know, in 3/8 OSB versus half-inch plywood versus 3/4, all those things matter, the amount of space, but that's how we wanted to design it. Our shingle, we want to to not be the weak point in this overall system and so we're continuing to kind of push forward in that.
Similar to this, I'm not we didn't show a picture or video, but that same set up we can replace the the baseball machine and we actually have an ice cannon that we shoot and in the development particularly for this product which Flex was about a two-year development cycle tightening.
Was about the same. I think we shot several thousand, maybe up to 10,000 ice balls in preparation and in in various settings and intestines on flux before we ever launched the product.
And again, focus there was any kind of dent, any kind of granular loss, any kind of tear. We want to be able to understand the conditions, tweak and update the not only the asphalt formula, but the the substrate, the fiberglass mat, all the different properties.
That ultimately make that shingle what it is. The other aspect that you know obviously the impact rating and the impact performance was was one of the key elements, but the other and you'll notice and.
We discovered as we were adding in some of these properties in order to tune it in that we got quite a bit of flexibility out of the product and in fact uniquely flexible product that allowed us to then be able to install it at very cool temperatures.
So Brian, if you want to show that video.
Are you able to share audio on that, Brian, or no?

Brian Dunn 39:47
Uh, let me take a look. Let me, uh, let me unshare and see if I can change the audio setting. Give me one second.

Chris Freeborg 39:54
There's some sweet background music to it. I wouldn't want anybody to miss the the sweet background music.

Brian Dunn 40:01
Absolutely.

Chris Freeborg 40:02
John, John, I think because so.

Brian Dunn 40:34
But.

Chris Freeborg 40:48
So what you're seeing there is, is again, if you've ever come to any of our events, it's it's basically a videotaping of one of our demos that we do live quite a bit. We had it at at IRE and pretty much any of our product demos, you'll see our sales team do that and.

Brian Dunn 40:50
You.

Chris Freeborg 41:05
And do that live, you know, sometimes we kind of get, well, I think you know, maybe you cupped it or maybe you kind of manipulated the shingles. So the other thing, just to kind of give an idea and Brian, this is a hidden slide that I think's after this one. So there's actually 2 versions of this.
When we were developing it, and this just kind of gives you an idea of some of the internal testing that we do. If you want to go to the, yeah, that one right there. This gives some insight in terms of how we really look at it from a lab.
Bending it over a warning angle is the standard test that we use. Are we needing flexibility?
So kind of like we were talking about just to kind of wrap that flex into kind of a bow. You know, I made the joke earlier that we're a law firm that happens to sell shingles, you know, and so Titan, we, you know, it's a 160 with four nails, 160 on our wind warranty, 4 nails. We tested it 180 with three.
With Flex, it's a 25 degree install. When we were doing the developing, we actually installed that at -2. There was a strong winter storm that came through here in Joplin around Christmas time and we.
We knew that it was going to come in and so we had some material shipped in from some of the initial kind of final prototypes that we had made before launch. And

Josh, another gentleman named Carter and I went out. We had some some large sheds and some test roofs that were were set up.
In preparation and we really wanted to understand going from pallet all the way up to rooftop how the product would perform. And so the the pallet sat overnight. I think it got down to about -8 that night by the time we showed up around 8:00 AM.

Brian Dunn 43:28
Christ

Chris Freeborg 43:31
It was up to, I think -2 and sunny. And so we were able to take it from the pallet, crack the, crack the bundles open. First thing we're looking for was, you know, we want to make sure that you didn't have to handle it with kid books, right? So are you able to easily get it up there on the roof, easily handle it? It's not going to break. It's not going to bend.
Whether it's going over a need or a Ridge or anything like that, get it installed and then we wanted to and so that's kind of that where that advanced flexibility comes in. You notice the fact that it's built on the Titan chassis. Part of that intentionality is the fact that the polyester helps to ensure that you never have to worry about nail blow throughs even.
Even at those cold temperatures, though we were installing, didn't see any nail blow throughs. I kind of alluded to it earlier, but one of the things that we found afterwards when we did testing is that, like I mentioned, you get about, you know, 50 lbs, 50 to 60 lbs of force is what it takes at ambient temperature.
To pull a single nail, you know the tight and flex design that actually goes up to north of 80 when you go down to 0 degrees. And that's again because that polyester is woven in as a system. It's able to anchor into the asphalt and you can take advantage of the fact that asphalt naturally gets stronger the colder it gets.
Especially if you're able to maintain some of the pliability and it's not brittle. And so that was the 2nd component. And then the third was actually an element we hadn't even thought about, but we mentioned the fact that you know our sealant again intentionally designed to be able to to seal down in cooler temperatures.
One of the things that was actually really interesting that we found. So I think it, you know, when we installed it, it was -2. By the time we got done, it had gotten up to about zero and I think it peaked out around 4 degrees ambient that afternoon.

And what we found when we went back around 3:00 was that all the shingles had had sealed down. So it was about four degrees and sunny and all the shingles had initially tacked down, which was good. We did that on a Friday that weekend.
A pretty significant storm came through again, about 50-60 mile an hour winds, went back and checked on Monday, hadn't lost -A shame. So those three elements are really what?
You know, made us very, very confident that we could offer and and guarantee the 25 degree.
All right. So the last element that we'll talk about and I think you know we've got about 10 minutes left. I won't go, you know, too long on this. I'll try to be -A little bit more succinct. Brian knows it's -A challenge for me, but I just want to kind of recap here on, you know, the Tamco complete system.

Brian Dunn 46:12
Uh.

Chris Freeborg 46:17
And I alluded to it earlier and and you know, again, the the shingles themselves are -A system, but they're also designed to be part of -A -A system of systems. And really, you know, there's as much intentionality put into the accessories that we offer as.
OK. And so we're very selective. We do significant amount of testing whether it be our you know synthetic guard, whether it be the moisture guard development which we make out of Joplin area, whether it's on hip and Ridge of the starter, all of those things have those same components and same technology fused within them, whether it be the sealant.
Or some of the polymer modified technologies, particularly for your your moisture guard type products that allow us to like you see here, protect, perform and prolong through. And the note that I would make here just to kind of end it is again, Peace of Mind is all about protection and coverage.
And the emphasis for us here is protection. We don't want the event to ever happen. We design it so that there is as much robustness, there's as much resistance to those kind of things happening, even in severe weather. The coverage, though, is an acknowledgment that.
Nothing's perfect. Mother Nature wins sometimes, and at the end of the day, we don't want you or the homeowner to be left standing. So the coverage is designed to

protect in the event of one of those areas.
So with that, Brian, I don't know if you have any questions or anything else, but that's kind of the recap for for product technology.


Brian Dunn 47:51
Yeah, totally. No.
No, Chris, really appreciate it, man. I've got it. Yeah, go ahead, John.


Jon Abernathy 47:57
Man, my, my, my bet. He was gonna go over an hour, so he I I lost the bet today, so.


Brian Dunn 48:01
Lots of it.


Chris Freeborg 48:03
That's right. You owe me -A bourbon, John. You owe me -A bourbon.


Jon Abernathy 48:07
Yeah, I'm in.


Brian Dunn 48:07
No, I appreciate it, Chris. That was a great presentation. I've got, I got a handful of of comments and questions and then I've got one to flip over to John as well. So first of all, for anybody that joined on late, I'm going to brag a little bit on Chris. I've had the opportunity to work with Chris over the last 10 years in different capacities. And so Chris, you know, after joining TAMCO from his.


Chris Freeborg 48:15
Yeah.
OK.


Brian Dunn 48:27
Military service, you know he's he's had a number of different roles leading to where he's at today. And so that's covered everything from process improvement into leading an innovation team into new product development and research and

development and then ultimately now where he's you know overseeing a lot of those groups including our marketing efforts and so.
I can say it's just a cool story of of you know the continuous improvement you know culture at TAMCO and you know folks like Chris who have led those efforts in a number of different capacities and brought these these you know outstanding products to market. So first of all I think that's you know that's a really cool piece of it that you know if there are other questions that you might have based on Chris's background.
Please feel free to drop into the chat. The other thing that I'll just call out more of a comment than really a question, Chris, is I really appreciate how you stepped through really the good, better, best right lineup of our products and then how those systems of systems build upon one another, right? So talk about the Tri shell technologies that's in heritage and the improvements that we made to.

Chris Freeborg 49:19
Yeah.

Brian Dunn 49:27
Heritage over the last you know several years, you know 5-10 years plus continue to make an improvement to that base product. Then you know adding the anchor lock technology over into into Titan is really kind of a signature product for Tamko and you know and really kind of that second mover advantage that you talked about right like learning about what others have done.
Being able to continue to test, bringing that culture of improvement to that product and measuring and learning continuously from it. And then the third piece with flex of the oxidized coating, the improvements that are going on there with the additives that are put in, it was making me think of like a pre shrunk T-shirt, right?

Jon Abernathy 50:32
Yeah. So your your best product, obviously we always wanted the good, better, best sales approach to homeowners. You know we kind of went in with it using the enhanced warranties and then also from a product approach, you know being our best offering was always we always included financing.

Chris Freeborg 52:20

And and Brian, one of the notes that I I meant to to mention, but you know John kind of alluded to it, we're actually gonna, we're in the process too of putting together some pieces that like a flip book of of some kind that will allow.
This narrative to be easier or, you know, more easily conveyed to homeowners. So be able to give something for contractors having their hands so they can kind of walk through that in an easy to understand manner, right? Like we don't have to get into all the technical nuance and all that that that can kind of, you know.
Put people to sleep maybe like I did earlier today, but just to be able to kind of convey the actual practical benefit and then overlay that with what John was just discussing of you know at the end of the day wind damage is expensive whether you fully replace it or have to repair or just go through that. And so that's why these these.
Performance. These upgrades are of beneficial.

Brian Dunn 53:13
Yeah. No, absolutely.

Jon Abernathy 53:14
I actually talked to one today that had bought a contractor that the homeowner had literally had to buy 5 roofs in five years you know and it and and they were it was a lot of was was wind related blow off and I'm like man you know if you could be the contractor that solved that problem with Titan.

Brian Dunn 53:22
Wow.

Jon Abernathy 53:32
Or Storm Fighter Flex to where every year wasn't a new year. We had to buy another roof. I mean, how many homeowners they going to are going to put their eyes up at the roof now and say, hey, we won't want that. So using good quality products back and homeowners as well will always grow your business. Remember, this is a marathon, not a race in business. We want to build strong brands.
We want homeowners talking about how good we are and the and obviously co-branding with the products we use to bring the results that they deserve.

Brian Dunn 53:59

Absolutely. Yeah. I think it's really well said. Yeah. No, great presentation. I mean, again, you know, I don't, I don't think we're, I don't think we're expecting that, you know, anybody's going to walk away from this ready to go and run R&D test themselves, right. But you know, we're just trying to help build that confidence with with each of you, right as as contractor.

Jon Abernathy 54:14

Mhm.

Brian Dunn 54:19

To be able to have that have that edge in the home with a homeowner right to really be able to to represent the product that you represent right well with all all these different differentiating factors. So you know again I I said that you know we're going to put some of this content onto the the edge portal for you. Chris any plug Chris or Josh any plug for like.

If folks are looking for more, you know, more information that might be captured in some of the basic, you know, marketing documents, you know, where can they get some of that information or what are your thoughts there on next steps?

Chris Freeborg 54:49

Yeah, I think the Edge portal where we start to put more on there, the the TAMCO website actually has a lot of that imagery I pulled from the justbasedtamco.com website. So if you go, you know to Titan to Flex or to Harry's any of those pages, it's an easy to understand there. There is some pop-up nature to it. So there's interactive part and that's really intentional to allow homeowners to be able to.

To kind of walk through that, right. And I think just as a final note from me, if nothing else, you hear this, it's the intention here is that these terms, this technology, this performance, it's not a marketing fluff piece, right. I think in today's society we're so used to, oh, you tell us something.

Brian Dunn 55:25

Right.

Chris Freeborg 55:28

And there's probably some hidden narrative to it or there's some subcomponent and you're just trying to kind of exaggerate or fluff it up, right. And the reality of it is and while we go through and we're happy to talk in even more detail if it's beneficial to anybody is it's really important for us that the technology and the performance that we reinnovate never just becomes.

It needs to provide practical value to the contractor, practical value to the homeowner, but it has to be real, right? It has to be sustainable and we want to continue to build on that. And that's the vision and that's the goal as we look at product development, whether that's the shingle or whether that's accessories and components.

To add to that complete system, that's our vision and that's our that's where our heart is.

Brian Dunn 56:12

Yeah, I love it. I think it, I think it's a really powerful message, you know? And yeah, no, I appreciate you pulling that forward, Chris. Josh, Josh or John, anything else you wanted to add just as closing thoughts here?

Jon Abernathy 56:24

No, just excited to be part of this. I hope people got value out of it and learned some things they can take on to their team and and even to homeowners as you're having those conversations around products. It's always good to get a little more granular and explaining the different products options to your homeowners to give them a fair shot at getting what I call the best products in my opinion on the market. So just appreciate you.

Coming out today, looking forward to the next one. This is the one hour every other week. That's a lot of fun for me to to be able to come to and listen to all these different people bring tons of what I've seen tons and tons of value to contractors.

Brian Dunn 56:56

Totally, totally, John. Yeah. And Speaking of which, you know the next couple that we have coming up that that everybody here will be invited to. We got Company Cam coming up in about two weeks and then two weeks after that we've actually got a

virtual workmanship training, which we're really excited about doing as well. Some of you on the call might have already attended.
In person workmanship training, which is fantastic, but we're providing a virtual option as well coming up. So yeah, thrilled about thrilled about your attendance here today. Really appreciate you guys carving out time on a Wednesday to join us and you know big thanks you know to John always to Chris and Josh for for attending today and and joining us for this discussion. So thanks everybody for joining on and yeah we'll we'll talk again.
So.

Jon Abernathy 57:35
Thanks guys.

Chris Freeborg 57:36
Thanks.

Brian Dunn 57:37
See ya.

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