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#006 Acrylic gels for leak-sealing and more with Brice Diochon at SNF

Brice Diochon
You can play on the on the structure you will obtain. So, you can have different compounds in the gel to manage about elasticity, about the softness, about the sticking, about the hardness, about the swelling…

Mateusz Furs
You are listening to Brice Diochon from SNF, France.
In today's episode of Concrete Injection Made Easy, everything you ever wanted to know about acrylic gels but were afraid to ask!
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Hello everyone, today we have the special guest from France Brice Diochon, who is an expert in acrylic gels. And previous previous episode was about how to seal the expansion joint and we were discussing this with another expert of the injection but a today I wanted to focus on the this part of what is the acrylic gel gel. We all use it almost every day for years. But what's inside this that we buy? How do we know that this is the you know the material that is going to be used for watertight in our structures. So our guest brace is an expert on this first question, what's the acrylic gel in jar Can you can you dive into the details for us little bit.

Brice Diochon
Yeah, first of all, hello everyone. I will try to answer all question about acrylic. Okay, just to introduce a little bit myself, my background is a chemical engineer and I, I work on formulating this kind of products, developing this and commercializing the product. So to introduce

Mateusz Furs
just No, this is the perfect guy for this question. Yeah, I know. I know that. Yeah. He's got

Brice Diochon
to answer a question. First of all, acrylic, acrylic gels come from acrylic acids. With so it's a it's a monomer comes from the oil, then, acrylic acid we, we make a little bit of neutralization and formulation on that having some product to structure the monomer in terms of let's say, three dimension geometry when you react the jail Having those compounds in the formulation you will have a complete network once you start polymerizing it's because when you when you deal with acrylic gel, you start from a monomer and then you blend some also compounds like the accelerators like the catalyst to build to really build the polymer adding monomials together so you can imagine a chain Okay, you can put the connection in the chain to structure the chain and to to be able to do whatever you want with the chain and you can control how fast you will assemble the chain you will structure the chain. So that's that's what is schematically acrylic gel.

Mateusz Furs
Okay, and then we have different kinds of gel like I as an applicator, use at least like five or maybe even six brands of different acrylic gels. And then there are different amount of components we can you know mix to achieve a certain certain given resin and then we have these gels that come with the component B is mainly water Can you discuss where where these differences come from and why why water because this is for water tightening So, why do we use water to watertight the structure?

Brice Diochon
okay. Okay first of all you have different range of acrylic resin, if we focus on the alkalinity A components, because, as I told before you can play on the on the structure you will obtain. So, you can have different compounds in the gel to manage about elasticity about the softness about the sticking, about the hardness. About the swelling. So, all these parameters by adding some additives in the part A, in the resin when you formulate products, you manage this and you

achieve the product you need. So, basically we have infinity of products available then okay the market will will let's say bring some standards to manufacturer. So, more or less all manufacturer gets the same product same standard as soon as they are initiate to this technology

Mateusz Furs
They will never admit that that this is more or less the same. No no every one of them have better stuff than the others.

Brice Diochon
Yeah, but in the in the fact the components the main components and then the cross linker you put inside and the other additives. Okay, they are all the same chemicals function, more or less. So then that just about the active content But the amount of cross linker about the different ratio you put in the formulations that make the difference. So that's why there's different formulation. That's what the Part A. Then if we focus on the part B, normally B is the is the part you bring the salts, the catalyst to initiate the polymer, the radicals, then to start the polymerization, you bring you bring the salts with water, because you need to dissolve the salts. So that's the first point then to enhance some properties to improve some properties, you can replace the part of water by for instance, some cements, some kind of latex. So you can you can play on that you can, you can really also play on this B part to achieve different properties for of the of the final job.

Mateusz Furs
I see. So as I understood the most important thing is happening in the component A.

Brice Diochon
Yes, yes, the everything is is starting from the A component to build the polymer to bring the structure and then you put some other additives possibly in the B part. If it's not enough in the A to enchance some elasticity For instance, if you bring some some some latex, you will have some elasticity you will slow down or decrease the swelling rates. If you bring some cement, you will have a really hard finished material. So you have different different possibilities in fact, possibilities depending to the job then always you need to relate this to well as you do what you want to achieve. And so that's, that's why you need to be in touch with injectors directly on the field.

Mateusz Furs
Sure. Okay. So When I inject like the cracks in the bottom and slop bottom slab is somewhere between 50 centimeters even up to one meter thickness of the concrete and there is a crack I love to use acrylic gels for this kind of application and we use this acrylic gel where the Part B is mainly water because this this material has the viscosity very low of around 7 mili Pascal seconds. Do you find this this material good solution for the cracks in the concrete?

Brice Diochon
For cracks in concrete? Yes, it's a good material but you have to consider the size of the cracks. Of course, because, okay, you mentioned the viscosity. viscosity is one of the main advantage of this kind of chemicals. If you compare it's not a competitor But it's it's I would say it's complimentary, the PU and the acrylics. Yeah, when you have the PU you have higher viscosity and PU you can be used and have to be used for bigger cracks or bigger, bigger water flow to to just stop it directly. Then for smaller cracks for let's say it deep infiltration, deep injection or well when the soil is really low permeability, you need to use acrylic because you will have the viscosity that allow you to really enter the ground really enter the cracks and really do the job. So that's, that's what you what can help you to choose the proper products.

Mateusz Furs
Absolutely. The lower viscosity and lower pressure I need to use on the pump to achieve the same amount of filling in the cracks. That is why I really like using this acrylic. And that is why I use this acrylic with water in the part B not with this polymers and other stuff. You mentioned, you mentioned before. So, but there is one thing that if we use the water part in this acrylic material, that if there is no water in the surrounding in the ground, they say that this material can be dry. It's, it's get less in volume, and it doesn't stick to the concrete anymore. So if there is another

water coming, it can happen that this crack will leak once again. What's your answer to this to this statement because this is well known. I'm not sure if it's true, but this is well known disadvantage people, you know, say here and there and this is not the best situation on the on the job site.

Brice Diochon
Yeah, I know this and that's, that's a point that quite often people are telling this because Okay, that's true first of this if you if you consider pure acro, you will have in dry condition, you will lose the water you bring from the beginning when you inject and you will you will reduce the volume, okay. So that's on pure acryl. Then as I told in the first question, you can formulate the acryl or you can modify the acryl. So, when you formulate you can reduce this drying and also the swelling rates. For instance, some some of of the gradients, well like 100% standard ones who are like 30%, but we can decrease this to 10% and even lower And then it depends to the to the matter to the job you will have to achieve so that's that's why and that's also the mistake people are doing sometimes they use one to one kind of products for all the job and then they said oh it's not working here but it's not working because from the beginning the product choosen was not a good one for to have really really low, low shrinkage and really low swelling low drying face you have also other alternative is derivative of acrylic it's metallic and using this guy, you have nearly no no dry and okay. The B components even if it's also modifying the viscosity for instance, the emission the latex emission, which is commonly used, you can also by adding this reduce the swelling in the drying stage. So, okay there is some some movement in the job due to humidity or dry condition, but you can you can really have good control on this also. But okay you need in. In my, in my speech generally I used to say that it's a good technology but you need to be well trained to use it.

Mateusz Furs
Like everywhere every single market has the same it works but you have to know how to use it.

Brice Diochon
Yeah, that's okay that's okay if we analyze a little bit the market it's not the topic today but PU are most commonly used because it's easy, easy to use PU you have B component and it's react whatever you you do, but okay, you cannot do everything with PU so sometimes you need a quill and if you know well they are quill, you will see that you have in fact, plenty of possibility to and plenty of way to use the technology.

Mateusz Furs
Sure, I agree on this. Absolutely. Okay. You know, since I Admit in the beginning that I'm a I run a service company in Warsaw, Poland and I noticed for this years that there are different kinds of acrylic gels, some of them are better in the swelling, some of them are better in better adhesion to the to the concrete. Can you tell us a little bit which solution is better for, you know, sealing injecting and sealing the expansion joints because this is the most common application.

Brice Diochon
Okay, okay. Well for expansion joints normally and what is most currently used is elastic and we'll get a lot ribbits swelling but not more than 30% in water, and time to time the blend it will B part latex in the B part and this products have adhesion. Good adhesion to the concrete due to some components we formulate in the in the resin, so that what is commonly admitted for expansion joints for instance. Then you have okay also kind of injection like, like typical cracks in parking lots or curtain, you make a membrane behind the behind the wall for this you don't care about about the sticking, you don't care about the B component. When you make a curtain you just want to fill behind the wall with the products and whatever if it's sticky, sticky or not. You just feel and you just have to make a complete membrane to have a complete coverage.

Mateusz Furs
Okay.

Brice Diochon
Yeah, question.

Mateusz Furs

It's great that you mentioned this. The question is, if you know and if you can tell us how many kg we have to use per one square meter of the courtine to be more or less sure that this is you know, it's Really filled. It's really watertight.

Brice Diochon
Well, okay,

Mateusz Furs
I have my number I have my number. I'm just, you know, I'm just curious, what's your answer?

Brice Diochon
Okay. Okay, so first of all, okay, I'm more on the on the, as I introduce myself on the chemical and the formulation and the selling development of this kind of product, not really 100% of my time on the field injection, but this is a difficult question. This is a good question. Because it depends, first of all, it depends on what you have behind the wall. For instance, we had some some job sites in in Mexico City, where behind the wall, you have clays, you have some us in in Spanish, it's Arceus clays. Yes. So the porosity of this is really, really, really low. So you have to put some pressure to put the material and the quantity per per square meters, okay, I don't have any any number to give here. To be honest, but Compared to rock or some something more open as a as a ground behind wall you will use you will use really less. So in in sand for instance I can relate the volume related to the porosity which is a between 35 to 45 percents. So you can have estimation like that, but to give you a number for just a wall per square meters. Okay, I can't, I can't because it's it's it won't be a good advice to say that you will use for instance, this quantity if you have a really open ground behind this.

Mateusz Furs
Yeah, absolutely.

Brice Diochon
Okay. Oh, yeah. Well, I'm sorry, I just can't answear this question. I'm curious about your number if you won't share it.

Mateusz Furs
So I say that somewhere between 35 and 40 kg.

Brice Diochon
Okay, and and considering what kind of material you have behind behind The concrete structure.

Mateusz Furs
So, like, you know, in Poland, this is the this this kind of job sites, I mean, the curtains are being made in the old massively masonry walls in the old buildings like even, that were built even before the Second World War. And so the thickness of this wall is around 80 centimeters, sometimes even up to one meter. And then above the ground above this, this this wall, there's like this black soil, no, okay, no place for the black side. So we have to inject quite amount, big amount of the resin to fill to create this, this this curtain between the between the last bricks and the and the soul. And the reaction time is more or less one minute and a half up to two minutes. So it's quite fast. Sometimes we even don't make the court in itself, but we inject into the structure of this mastery because we have like 80 to one meter centimeters of it. So this is quite big volume of the masonry. So it can be filled with this resin and this is my favorite way of watertighting the structures because the consumption of the resin is lower and then and there is a better control over the material. We can easily see where it's coming inside the wall because it goes thrugh another packers in this in this area. So this is the the way I do it. It's cheaper also for the investor so they like it.

Brice Diochon
Okay, okay, well, just as a comparison if you if you want to describe a case for parking injection, parking lot injection like also some some kind of coating behind the wall in some leaking leaking parts we we have injected, like just packers per packers and we so instead of the water, the coming back of the jail and that's that's how most of the people consider that they're wall injected

the the area is when they see the coming back of the job. They imagine that it's reacted all the way along so it's just coming back and the job is done.

Mateusz Furs
Mm. And I'm just you know, working on a newsletter and this is the one of the first newsletters first email in this newsletter. And I'm you know, trying to convince people to use injection Packers to install injection Packer without an already screwed nipple. Because when it's you know installed without this. So, whatever is happening in the crack or in the masonry during the injection, you will see the water coming out of it or the resin coming out so you will know where the resin is and what is your situation inside this and it also lets you to minimize the pressure that is being built in the in the construction while injection is taking place. So, yeah, this is one of the best ways to really understand what is going on in the concrete. We all know the concrete is not we I mean we can see through it. But this really allows us to see a little bit what's inside. Okay. I have another question because this acrylic gels are really tricky. We all know that we can Actually, maybe, no, it's not that we all know, we are all told that we can set the reaction times of the gels. But why is it for why is it so important and where it is really best place to make it as short as possible or where or vice versa? Can you give us a situation when we need it as long as possible?

Brice Diochon
Okay, well, it's always it's related to the to the job you have to achieve. If we consider accounting, gotten injection, one minutes, two minutes, like you said, it's okay because you will, you will make the membrane behind the wall you don't have such distance to cover. So that's the most common case for cracks injection you need also this kind of setting time more or less. Then if we consider other application because I told you that you can play on the gel, you can play on the structure, you can you can You can have the hardness you want you can have the softness you want. So we can go and we are going to order application like salt consolidation like okay there is much much more application we can get back on this. But if you consider a soil consolidation application you will need to inject and to impregnate the soil considering the porosity so you will need to have much longer setting time to be sure that you have injected like a colon of sand. I don't know if I'm clear on that.

Mateusz Furs
Yeah, that's

Brice Diochon
when you need where you need to have a longer setting time. On the On the contrary if you need if you have a really highly leakage, so you you need a really short setting time like 30 seconds or even 20 seconds to avoid that the acrylic is going out by the the flow rates and...

Mateusz Furs
My maximum was seven seconds. We add more salt than it was put in the technical datasheet but it worked.

Brice Diochon
Yeah, it worked out. Well. You okay. There's also other other kind of catalyst. I won't, I won't develop in this topic but you you have also got a list that you can use and you have direction just like once again after it's immediate reaction. So you can have really, yeah, yeah, we can. Okay, no problem.

Mateusz Furs
I have it right. Okay, so reaction time depending on the what we are going to achieve on the job site very well. I mean, this is great because it's not that easy to set the reaction time and when it comes to you PU based resins and acrylic gels really gives us this. So this is a great advantage of this of this. of this material, that for sure. And we mentioned this little bit, but if you could tell the areas of application of gel. Like where we can use it and we know that this is a good solution for the for what's on

Brice Diochon
wealth. So, today if I have to describe the most common application we will go for from the expansion joints, curtains, cracks injection, tunneling leaking leaking, which is more or less related

to cracks injection, you have application that's solid consolidation, which are commonly commonly known using the hard kind of accrylates or meta-accrylates. And then we we develop other field of application like seismic insulation like oil and gas application where you have some some use of this material. So I would say that there is the the civil engineering application, but inside the civil we can always Extend and improve the technology. And then there is some kind of new application like oil and gas well, where the the products are considered to for some very specific application. But when you touch to oil and gas, you touch volumes. So that's

Mateusz Furs
Yeah, that's just you know, my imagination started to work when you mentioned the water or gas well,

Brice Diochon
So they're oil and gas. They slow down a little bit, but it's just a matter of time and due to the situation

Mateusz Furs
We will come back to this during this conversation, if you if you have find some time a little bit, because I have this question that is also discussed on the job sites and many engineers. Simply don't allow me to inject acrylic gel into the cracks I mentioned in the beginning. The conversation that I like to use this material for cracking jokes especially when there's when the concrete slab is between between 50 to one meter in thickness. Why, I you may ask so they don't allow me because they are afraid of the salt in the component B they are afraid of the you know that there will be a corrosion in the concrete and especially in the in their steel bars. So,is it harmful to steal if we use this material?

Brice Diochon
Okay, If you consider the salts just as a salt, yes, it's corrosive, but when you when you inject what you are doing, you inject the salt in the liquid in water and the salt will react and will be used to initiate the polymerization. So, then you you have the polymer with the initiator inside stuck inside and with no no more corrosive effect on the on the on the steel. So, the only material you can have corrosion on is the is the pumps and at the back here okay because there yeah you are in contact with the salts sterically wave with those equipments, but then once in the ground as its polymerized you have no no risk really. So, so I would say just some people are also afraid about using monomer because, okay, the product itself it's monomer in the past, maybe let's say 10 years ago, they use acrylamide. Now acrylamide is forbidden Okay, you probably heard about this. It's forbidden because acrylamide is highly toxic but when you make the gel using acrylamide, you make a poly acrylamide. Polymer which is not toxic and and the polymers It's not toxic, for instance, this kind of polymer are used for water treatment application. So, so well, they're probably afraid or good because they are not knowing exactly what happened with the product after reacting.

Mateusz Furs
Yeah, it was, I was told that acrylic gels are very good for these expansion joints, because expansion joints are only concrete. I mean, the left and the right side of the expansion joint is the concrete wall, period. So we inject the resin between two concrete walls. That's it, right? No, no risk of any rebars you know, being there, naked without any passive. So that's it. And this This is one question. But when you said this, that the only time that we have the salt is in the pump and to be even more exact in the part B because the this took a pump Yeah, transports these resin separately until it's mixed in the mixing had just before it's injected. So I reminded myself when I bought pump in 2013 and we found that the component B really destroyed the injection holes on this part B because it was meant for the residence not for the acrylics. So yeah, I was given another set of hoses this time for acrylics because the corrosion really destroyed this. So yeah, the corrosion will took place. I can I can say that I've seen it on my pump in the hose, but uh, well not for the rebars 100% right. Well yeah, but there is a condition we have to really mix the component A and component B very carefully. So, there is no salt being pumped into this crack without component B. So this is also the conquest work very, very properly. Okay.

We are discussing mainly acrylic gel that are elastic for water tightening, mainly expansion joint as you as you explained and But I know that there are occurring jobs that are also rigid, they are not

that well known on the market. So, do you know how we can use this kind of materials and why they are not so popular?

Brice Diochon
Okay there is probably different reason like why they are not popular The first reason could be for the very hard material, the price could be one of the reason because, okay you you have different kind of of monomer side you will have your more expensive products in the formulation. So final price are a little bit more expensive. So that's the first point why they are not commonly used. But okay, also for for, let's say 80% of the jobs doing by, done by acryl. You don't need such a hard gel. So and when you did some some hard gel, as we explained before, PU are most popular and you can you can use the two components PU you also to have hard, hot stuff. So that's probably why they are not so popular. But okay. We we have some acrylic we have some meta acrylic and the one made with we metacrylic are one of the more harder in the in, in the market if we focus on on acryl chemistry, I mean so that's, that's a part of the answer for the question you asked then maybe also, simply because PU are easier to use, as we said before, so that could be all this reasons.

Mateusz Furs
I think there's also another one that for example, when we are going to when the goal is to inject into the ground to stabilize it and then we simply choose the cementitious materials, because they are even cheap, even cheaper than the PU based resins let alone this acrylic gel. And then if we use like 500 bars and we have this rotation mixing device in the ground that mixes the ground with the cementitious material, and then there is no way not to make this ground you know, stabilized. So, this is it ended this is of course, cheaper because this is the cement is way cheaper than the than any resin. That's it. This is well known technology.

Brice Diochon
Yeah, could be could be but cement, when you put cement to modify the viscosity, so, okay, I've got some job sites. Soil consolidation job or mining mining job when you need really to, to inject really local ability ground, and they have no choice to use really, really highly structured and formulated acrylic job to obtain the illness.

Mateusz Furs
I have a question concerning this because some time ago I had an idea to to you know, put

another solution meaning inject the resin into the ground, but I was told that I have no papers saying what is this? You know, how do the ground works with resin, like we know how the ground works with the concrete. But it was like five years ago, maybe even maybe even seven years, something like that a long time ago.

Do we know at the moment is this and the calculation being done then it's easier to calculate like when the client asked me how much resin should I inject over there to stop this building falling and that I will be able to calculate and use PU or acrylic and for that reason, Do we have anything any knowledge on this?

Brice Diochon
You mean to you mean to bring some some structural properties back using acryl?

Yeah.

Okay.

Mateusz Furs
Can we calculate how much and he and how much resin on what depth into the ground and where and you know and okay to okay the gives this paper to our client and say look, if we do this step by step like this, so this is the whole calculations. It is. So you are on the safe side.

Brice Diochon
Well to be honest with you, I never recommend to use acrylic to give some structural really structural properties back to some building or or some some cement we have made tests just for

sure, we have made test injecting some some kind of some block of cements, we put pressure on this, we crack it, and then we re inject the cements just to see how much material properties we can bring back. And we reach like 45% of the properties. But today is just a project related to some study in seismic and in in the concrete properties itself. But it's not it's not sold today. Really as a as a solution. for registering, let's say the properties of cements, because it's very too specialized application and it's okay, it's today for for me personally, I mean, it has not been studied and it's too far from purely injection and the injection job or some kind of surgical sedation, injecting a block of sands or block of ground. So never never really studied this topic to be honest.

Mateusz Furs
Okay, okay, I understand you. Okay. So you mentioned before a little bit on this and they said that we will come back to this topic in the end of the conversation. So the question is, what are the other other areas of application? You mentioned the seismic areas. Can you dive little bit more into the into this topic because I find it very interesting I must admit.

Brice Diochon
Yes I can describe it It means a project. So, it started like six or seven years ago we have some some requests from from Italy after some some kind of problem or issues they have with with earthquake to consider the products to insulate First of all, which was insulating building and okay. So, we stood we work with some lab and measuring the properties measuring the compressive strength measuring the all the characteristic of the gel. And then we also consider the possibility to use the gel has a dampening system to avoid let's say the building displacements during her earthquake. So, this was student and then we will end this on the side And we're very recently we had some requests in, in some country really subject to seismic problem. It's like Mexico and and we have started out the project we have started out all the study and for this study we also that's from where I have the data study the properties we can get back on on the concrete where we I mentioned 45% and so, we will start on this topic and today we are under studied studying this. How we can dump in the building effect how much when you need to inject what is the cost, what is every parameters, I know, it sounds like crazy but, okay. This these people really look for a good solution to the problem. They expect a big one. They don't know when they don't know how but they expect big one. So That's Today we are we are two years project two or three years projects with lids then we will see how we can we can validate we have the good labs we have the good relation and now it's just a matter of, of really getting all the data we need to convince people to make a big big scale trial.

Mateusz Furs
Wow, that's that's really sounds fantastic if you if you're really able to to help this people and that they are willing to stay even during the seismic and at the end of quakes. You also mentioned the oil and gas wells. Water the amount of the reason that you need to pump into this to to create the plaque.

Brice Diochon
Well, you you commonly inject like 7 to 10 tones per well in In in real time, yeah, so as there is some, let's say, thousand, hundred or thousand Well, it's it's relatively good good and big big volumes, the product the product used in this application are combined to other technology, but okay they have a use of this, this kind of technology. So really as I told you, the property of accolades can be bring to a lot of different and various application and sectors.

Mateusz Furs
So do they, I mean, 7 to 10tons of the resin per one well, that's an enormous amount of, of material. Same me who uses hundreds not thousands of kg per one, you know, underground parking place where we inject only into the expansion joint, not into the well. So this is mine mind blowing for me what kind of pump? Do they use the same time as I do? 2k pistn

Brice Diochon
No no it's not it's no more than 2K for this we we are in touch with some some pump manufacturer and there'll be some specific pumps to to be able to bring the product exactly where we need to bring it and also to to blend it not so far from the point because obviously you

have the temperature problems you have the delaying problems. So you have to consider the whole system and and to bring the machinery related to this but okay as we mentioned for the for this application as soon as you can have some bring your or had some some some added value for for this kind of application. You You will use it so in and then you interested guys so Okay,

Mateusz Furs
I would love to see the pump you know pumping this huge amounts of resin somewhere I don't know where that will be great. Okay, so this is it. We agreed to cover these topics from my point of view most things interesting for the beginning, because I'm really sure that we will have another opportunities to meet once again for another episode of the Concrete Injection Made Easy podcast. As you we all know, not all of the topics we covered are concrete injections, because if we discussed the grant injection is obviously not concrete, but still injection and still water job. I still job sites to be to be down worldwide and very interesting for me to enter this new areas of running My own business. Okay, do you have any question for our listeners to ask?

Brice Diochon
Yeah, I would I would say that okay, it's a good start we we've made today and of course we if there is specific request or specific demands following this we can we can probably adapt some some some kind of in different interview to to the questions to be more in details on on on different parts because we have tried to cover let's say briefly because we are, we have briefly covered a wide range of, of application wide wide range of products, wide range of use. So, if they are just Yes, I

Mateusz Furs
just wanted to choose this questions that are very commonly asked some doubts about this corrosion, the salt the time reaction and so on. So we have done this. You said a little bit in the beginning, what's the acrylic gel in general? That's for us who are really interested a little bit more in this. And now we are waiting for questions from our listeners.

Unknown Speaker
Yeah. What was one of the things? Yeah, one question we we probably need to deal with would be okay. It's a complicated topics because, uh, because, okay, there's different opinion on this. It's the aging of the gel once since rejected in the ground, how long does it last blah, blah, blah, all this, this kind of of topics. Okay, so so far when we we have made some accelerated aging study in the lab, we obtain, let's say, shelf life, more than 50 years. In years. Yeah, it's lab condition. But in reality when you consider the job we have done like 25 years ago. Still nothing to complain about using the acrylic. So I would say that today the minimum in the application is 25. Then we as the technology is relatively recent that the new version of accolade blah and all this stuff. It's it's recent. In the past it was, as I told you, acrylamide, which is now forbidden. And acrylamide there have also some, like 50 years a job's done, and nothing has moved. So sometimes people are complaining about relatively low aging of this product. Well, today, I've got no bad feedback from the ground from job we have done 25 years ago. So that could be a question from the from the people I get. Right,

Mateusz Furs
right. I didn't think of this question. But it's all it's asked. Anyway, thank you very much. Thank you that I just wanted to say that when I heard on my Metro Project a couple of years ago that the metro station is designed to last for 100 years. I was in shocked because I only hundred years for the metro station that it's in the underground of the, you know, downtown or in the center of the of the huge city, I would say at least 300 years. So if you say that the acrylic gel can last over 50 years and 25 for sure. Because we have we have all their application that last for that and still work. So I can easily use this material. I'm not I'm not worried about, you know, any complaint and so on. And so thanks for this conversation.

Brice Diochon
Okay, thank you. Thank you for your time.

Mateusz Furs

Thank you for finding the time. For me, and for our listeners, now we are waiting for some questions. I hope that people will be interested in the topic. And if there are questions, then we will find each other once again to answer them.

Brice Diochon
Yeah, that's it. Okay, sounds good.

Mateusz Furs
Thank you very much. All of us. Bye bye

Brice discussed the use of acrylic gels for leak-sealing concrete, in curtain injection procedures, and even to make structures more resistant to earthquakes! I'm sure you know how you can use acrylic gels to take your concrete injection business to the next level!

Thanks for listening and I hope you tune in next time.