

Helpful Hints

The Bare Truth about Sealers and Impregnators

An article by Maurizio Bertoli, the founder of the “marble cleaning” company

The past 12 to 15 years witnessed the birth and phenomenal surge of a type of product for which nobody had ever felt the need for since mankind started to use stone, which means since the stone-age. All of a sudden, the last decade of the twentieth century brought about the awareness that, without it, we could no longer live!

I’m talking about sealers for stone, also more appropriately referred to as “impregnators.”

What happened, that caused this kind of frantic need for something that nobody ever needed before just about overnight?

Ignorance happened!

North America and most Northern European countries (that had no stone culture to speak of) were fascinated by a product that they always admired and craved for, but could never afford. The affordability factor, however, was not as much a cost issue, as it was an issue of lack of the specific craftsmanship necessary to process it. I’m talking about marble, limestone, granite, etc. Up until a couple of generation ago, stone tiles finished in the factory had not even been invented yet, and the slabs were delivered to the fabrication shop right off the gang-saw; that is, neither one of their two faces were calibrated and polished like they are now. It was the fabricator that had to process the surface of one side of the slab, by calibrating it (grinding), honing and polishing! All this without mentioning the machinery and tooling that were available back then! Marble and granite floors were made by using unfinished cuts of stone (the only ones available) that were set directly on the mud bed, then ground and finished on the premises (“grind-in-place” method). And that – all the processing, that is – is the main factor that makes the craftsmen involved understand stone.

New processing techniques in the quarries and manufacturing plants, brought about an impressive reduction of costs, along with the great idea of ready-to-use products, such as polished marble and granite tiles, or almost ready-to-use, such as pre-finished marble and granite slabs.

All of a sudden, the whole world was flooded with such enticing and legendary materials like marble, granite and other stones, which were offered in a way where expertise and craftsmanship were no longer needed (or were they still?) and at prices that were getting more and more affordable.

Buying and selling stuff that’s manufactured in some mysterious way, in some far off factory, doesn’t make anyone, any more intelligent about whatever it is that one’s trading. Processing it does. But it’s not the case here, remember?!... All the processing had been done by the factory; all we needed were just plain setters, or contractors that could use a saw and learn how to polish edges; and we could find plenty of them at a dime a dozen!

Installing and cutting material that was made ready-to-use in some mysterious way, in some far off factory doesn’t make anybody any more intelligent about such material, does it! Once again, only processing does! That’s why stone restoration / refinishing is the very pinnacle of all stone related activities: It’s the only one that actually processes the stone! And to do that, one must know stone.

Are we beginning to get the picture? If you add to the mix the huge number of “new” stones that all of a sudden started appearing on the marketplace from all corners of the planet (and

counting), and the almost total lack of self-regulation of the stone industry, which has been desperately trying to “keep things simple” with the consequence being that the situation is so confusing that nobody knows what actual stone one’s looking at, you have a big melting pot where only one ingredient is brewing: Ignorance. And to the best of my knowledge, nothing intelligent ever came out from it!

Without knowing which one stone was good for what, and without any official guidance, wrong choices and specifications became the rule, rather than the exception (the exception, in fact, was a strike of pure luck in many instances!), and problems of an unknown nature started springing up from all over the place (and still counting, of course!)

A solution was badly needed. But, alas, with the benefit of a previous few exceptions, the importers/distributors don’t know the first thing about stone. The fabricators are just about themselves, since they get their stone “education” from salesmen and invoices. And the setters? What on earth have they got to do with stone knowledge? They only install it! What about the original producers? Well, quarry owners/operators usually know their own stone, period. So, if for instance you’re considering a marble quarry and processing plant, and you go back to the owners and question them why their marble “stains” so easily when it’s installed, say, in a kitchen, all they could honestly do would be to break the news that’s the wrong material for the wrong application, but such a “solution” – the only sensible one -- would certainly not be satisfactory, would it! It would mean going back to school and learn something about stone, and nobody has time for that! Something “better” and “easier” was needed!

It is the general perception that when a material turns out to be delicate and difficult to maintain, it needs to be “sealed”. The picture that most people have in their mind about a sealer and its expected performance is of some sort of “cocoon” that envelops the item to be preserved and protected, and turns it into an enjoyable, bulletproof material. A sealer is also perceived as a product that will influence the finish of the surface of the stone, and as a filler for possible natural imperfections (nicks and fissures). With this picture in their minds, the major operators of the stone trade started soliciting chemists from all over the planet to find a sealer for stone that would solve all problems and could make them go away without stone knowledge. Of course the chemists – who don’t know the first thing about petrography – started out by asking the BIG QUESTION: “What seems to be the problem?” The answer came in like a unanimous choir: “STAINING!” Hearing that, off they went to work to solve a problem that they perceived as related to absorbency, due to the natural porosity inherent of all dimensional stones.

And “The-miracle-in-a-bottle” made its trumpeted appearance on the international scene of the stone industry, and in a very short period of time became the “necessity” and what I consider one of the most overrated, over-promoted and over-applied (not to mention ill-applied!) products in mankind’s history! A domestic company – one of the pioneers of the bottled solution – even called itself “Miracle” to anticipate what one could expect from their “one-medicine-cure-all” product! Did it work?

When something sounds too good to be true, it usually is! What’s more, no matter how you slice it, there’s no substitute for true knowledge and professionalism. The much heralded “miracle-in-a-bottle” was not to be an exception!

The was majority of the problems related to stone were stemming from their wrong specification, in part due to sheer ignorance about the real nature (geological classification) of the stone itself, and in part to the total hostility at listening to reason displayed by all too many specifiers. No canned “solution” will ever be able to overcome that!

So then, are all these sealers (impregnators) nothing but a bunch of useless marketing gimmicks?

No, they are not. But before we go any further, let’s try to understand what a sealer for stone is, how it works and what kind of protection it offers.

For starters, impregnating sealers are two-part products: one is the carrier, which could be mineral solvent or just plain water while the other part is the solid, a resin of sorts, which will do the actual sealing. The most popular resins are silicone, silane, siloxane, ester epoxy, fluorocarbon aliphatic (a.k.a. fluoro chemicals). Currently, the latter are recognized as the best and longer-lasting performers, plus they are the easier to make in a formulation that can be carried by water, thus eliminating the use of volatile and hazardous mineral solvent.

Second and very important, is the fact that sealers for stone are not topical products like any other sealer people are familiar with. In fact, they are below-the-surface sealers. The first implication of this is the fact that a sealer for stone will not offer any protection to the surface of the stone itself from wear and tear or chemical attacks. The second implication is the fact that a sealer for stone will not alter in any way, shape or form the original finish on the stone surface that was either produced by the factory, or by a stone refinishing contractor. The most important phase of the application of a sealer for stone is to make sure that every residue of the product is thoroughly removed from the surface of the stone, before it has a chance to dry. This means that, at the end of the application of the sealer, the surface of the stone will be as bare as it was before the sealer was applied to it.

That being said, let's now elaborate the principle of a below-the-surface sealer. The product goes inside the stone; the carrier (water or mineral solvent) evaporates, while the solid part (the resin) will remain inside to clog the pores of the stone to an average depth of approximately 1mm. (The more porous the stone is, the deeper the impregnator will go.) Now how does an impregnating sealer go inside the stone? Quite simply, by being absorbed by it. The product is applied on the surface of the stone, which in turn will absorb it.

So far, so good! However ... Mother Nature never meant to make things simple and equal. While every stone this side of mono-mineral rocks (e.i.: most gemstones) are absorbent to a certain degree, when their degree of absorbency is 0.2% by weight or less, it will hardly absorb anything: the surface tension of the stone will not allow anything in, if not under extreme circumstances. What this translates into is the fact that many stones will not absorb the sealer and, therefore, they will not absorb any staining agent, either. Hence, the application of an impregnating sealer to those stones is a total waste of time, money and also with the distinct possibility of the development of future "mysterious" problems if the residue of the product (actually 100% of it!) will not be completely removed, which is seldom the case.

Another factor to be taken into consideration is the way the surface of the stone is finished. The absorbency rate of stone is measured by the increase of the weight of a given sample after being totally immersed in water for a pre-determined period of time. The percentile represented by the difference in weight before and after is the rate of absorbency of the given sample of rock. But... the sample is just a rough piece of rock with all its pores open to the max. However, stone is not delivered and installed in that way: one face of the slab or tile will be finished by the factory, either to a polish-finish or hone-finish or whatever. This can make a huge difference; for instance, if we take travertine, we can see that its absorbency rate is on or around 0.4-1.0. That absorbency rate confirms that despite a widespread misconception that has travertine as a very absorbent stone, it is in fact rather on the dense side. However, in its natural state it will absorb liquids – even if not much. But once it's finished either polished or honed or even tumbled, the surface tension of travertine will become so tight that only occasionally any liquid will ever go in – including the sealer, of course.

Let's make no mistake absorbency of stone is a fact indeed, and, under certain circumstances it could represent a problem (although not a dramatic one; after all removing a stain from a stone is usually child-play). Good-quality impregnating sealers such as our MB-4 can help a great deal. But it must be understood that the reduction of the natural absorbency of the stone is the only feature that anybody can expect from a sealer. No "cocoon" and no other

“protection” whatsoever. What’s more, we must above all learn when a sealer is needed or is useless. As further examples, a granite (true geological granite, that is) countertop fabricated for a kitchen does need to be sealed. But let’s understand that the sealing is required because of the environment the stone is installed within, not just because of the stone itself. In fact, it wouldn’t make much sense to seal the same granite installed on a formal living room, or a foyer floor (where the likelihood of staining is minimal); as it would make no sense whatever to seal the same granite installed on the walls of a condominium lobby, where the likelihood of staining is totally inexistent. Remember, stone is a product of nature, and the more you leave it alone and don’t tamper with it, the better it is for it! It’s a scientific fact, not this writer’s opinion.

However, what’s most important is the fact that true granites are no more than a dozen stones; a tiny minority compared to the over 2000 type of stones that are traded as granite! Take a couple of dozen of them out as next of kin of granite, and what you’re left with is a huge number of stones with no relation whatsoever to granite and to each other. Many of them have absorbency rates coming in at 0.2 or less (some as low as 0.01!). No staining will ever occur to those stones and, of course, they will never absorb any sealer!

But what about all those stains on marble and travertine?

They are NOT stains: they are rather “stains”, that is actual surface damage that only look like stains (see our other helpful hint about stain removal), and no sealer on the marketplace claims to even begin preventing them! As a matter of fact, most marbles and travertine are very dense stones – contrary to popular misconception. Their absorbency is very limited and, in most instances, they don’t need to be sealed. Green Marbles (Serpentinite) do need sealing, when installed in an environment where staining is likely to happen.)

Is there any easy way to find out if a given stone needs to be sealed?

Yes: just spill a few drops of water on its surface, let it dwell for 5 minutes or so and then wipe it dry. If under where the water had been sitting you will notice a darkening of the stone (it will disappear once the water will evaporates) it means that some of it was absorbed; therefore, if the stone will be installed in an environment prone to staining, the application of a good-quality impregnator will be in order. If not, don’t bother.

In conclusion, like I had the opportunity to state in my other and more formal editorial about stone impregnators, when properly and intelligently applied (stone is a natural product, and no blanket rule ever applies to a natural product!), they do solve the problem of medium absorbency stones when installed in an environment where staining is a distinct possibility, but that’s all there is to them. Once again, buying into the possible suggestion that a sealer can do more than that; will inevitably lead to wrong decisions, which in turn will only lead to disappointment.

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Maurizio Bertoli