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Clear Repellents and Sealers

With the hundreds (if not thousands) of 3rd Party materials manufactured and marketed for use with masonry products, including natural stone, terminology can get confusing for the consumer as companies work to differentiate their products from those of their competition. Many times the terms; sealer, water proofer, and repellent get loosely interchanged, even by manufacturers of these products. First, it is important to understand the distinction (as we understand it) between these materials and how they are commonly anticipated to perform. What we are describing in the following
are transparent "clear" materials that are topically-applied to the EXPOSED faces of masonry in an installation. These are not to be confused with non-transparent "opaque" materials such as "damp-proofing" or "back-coating" materials commonly applied to the UNEXPOSED faces of masonry in order to isolate the veneer masonry from hidden sources of moisture and staining.

(Water) Repellents (Excerpt from ILI Handbook pg. 31)

Exterior water repellents intended for application to vertical, above-grade, masonry walls are, generally, clear liquids of low viscosity. Their chemical makeup allows them to be absorbed by masonry substrates, leaving the surface essentially unchanged in color or texture. The active ingredients in water repellents are intended to be deposited in the pores of the substrate while not closing or blocking them, so that moisture vapor can pass from within the wall, but liquid moisture is not absorbed at the surface. Water repellents should reduce the adherence of dirt to building walls because they render the wall less absorptive. They should reduce or eliminate a "wet look" in rainy weather. They should reduce humidity in cavity walls. An effective water repellent will create these effects without altering the color of the substrate, and without creating a shine, or sheen.

Clear Repellents and Sealers

(Graffiti) Repellents (Excerpt from ILI Handbook pg. 32)

Graffiti materials include pencil, lipstick, felt-tip pen, spray paints, enamels, and lacquers. Each requires its own type of removal process and materials. The only general rule is that prompt cleanup will be the most successful. Graffiti-proof coatings should not be confused with water repellent materials mentioned earlier. Successful coatings tend to be slick or shiny. They offer no "tooth" to which graffiti materials may cling. The coatings also tend to retard the wall's ability to breathe. Therefore, their use should be limited to those areas subject to graffiti—generally within about eight feet of grade.

Sealers

Sealers or water proofers are by definition coat formers. They will change the color and sheen of the substrate. The coating created by a sealer is intended to render the installation "water proof", though most of these clear products have limitations when it comes to bridging gaps, cracks, mortars, etc. Most do not have the ability to respond to thermal expansion/contraction or differential movement in building envelopes. Note: These materials ARE NOT equivalent to properly specified and applied "Damp-proofing" or "Back-coating" materials

Summary

It is the ILI's opinion that clear sealers and water repellents are unnecessary for most Indiana Limestone installations, particularly on exterior applications. One of the major arguments against the application of a clear sealer is that most, if not all, will inhibit the natural ability of the stone to breathe off moisture and impurities the stone may have absorbed.

These materials:

a) Will not render the stone or joints "water proof"
b) They will not bridge cracks or gaps
c) May change the appearance of the stone and leave the surface blotchy or streaky, either at initial application or as they break down over time.
d) Some of these materials have shown themselves unstable with exposure to U.V. and have yellowed as a result.
e) All have a finite life span and will require long-term maintenance. In general, while a valid argument can often be made for sealing interior stone, given that the self-cleaning effects of the weather won't come into play, the ILI believes it's better to leave exterior stone uncoated to weather naturally.

Clear Repellents and Sealers

3rd Party Products

We recommend that ANY 3rd Party product intended for use with Indiana Limestone, be first tested on a mockup or scrap stone for compatibility, application technique, and cleanup. As with any product that is made to be applied, absorbed or bonded to the material, once installed, removal of these products may be problematic if not impossible to achieve.

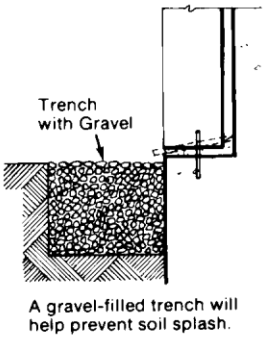
- Clear sealers and water repellents can change both the sheen of the stone as well as the color.
- Joint sealants (silicones and some butyls), can be wicked from the joint they are applied into adjacent stone faces, resulting in stains and/or creating "sealed" areas that will weather differently from the remaining stone.
- Cleaning products (specifically acidic compounds), will react with limestone (Calcium Carbonate) and can severely burn the stone. Acid washing adjacent brick installations should be done only by experienced personnel with control measures in place to prevent this issue.
- Surface pitting & spalling is typically seen **where rock-salt or chemical ice melts (which typically contain salts) are used to clear ice and snow.** The ILI recommends against their use with Indiana Limestone. Salt will be wicked into the stone as the salt-laden snow melts, as the water evaporates, it leaves behind the salt in the pores of the stone which crystalize and expand, thus popping the stone. We typically recommend clearing the snow as much as possible and utilizing kitty litter or sand to provide traction. **Note:** Clear sealers can actually accelerate this issue as they tend to trap the salts in the stone creating more damage.

We highly recommend downloading our current (22nd Edition) ILI Handbook as well. It has a wealth of information on these and other topics relating to the successful use of our stone. Thanks for using Indiana Limestone!

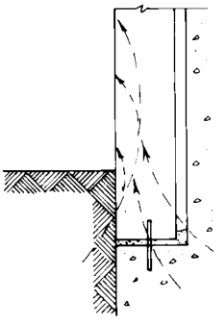
The conditions shown here illustrate the procedure for isolating Indiana Limestone from the possible harmful effects of ground and construction moisture. Weepholes, moisture barriers and thoughtful design will avoid most potential problem areas. The dark lines shown throughout these illus- trations represent either waterproof cementitious stonebacking or asphaltic emulsion paint. See comments on the relative merits of each material and suggestions for their use in DAMPPROOFING.

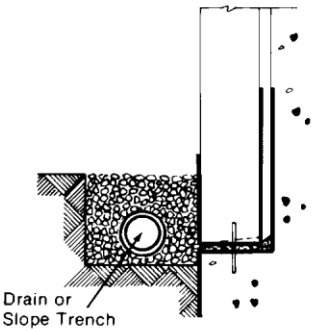
– – – – – Path of Moisture through Stone

——— Heavy lines indicate dampproofing

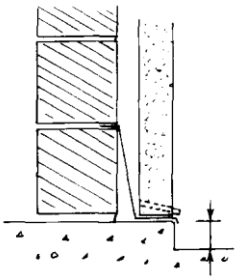


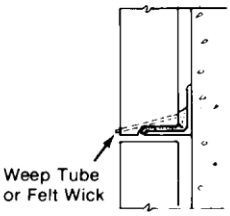
A gravel-filled trench will help prevent soil splash.



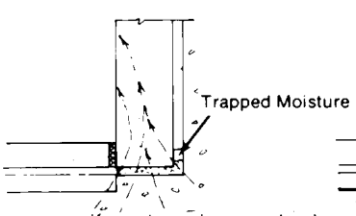


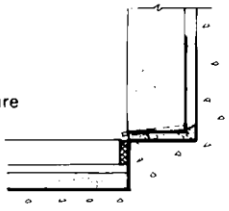
Where stone is exposed below grade it MUST be protected.



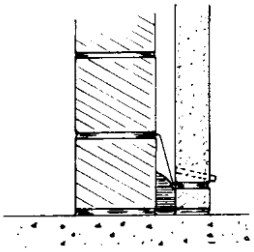


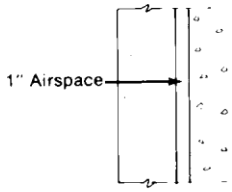
Weep continuous and other angle supports where moisture collects.



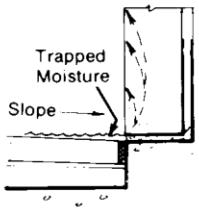


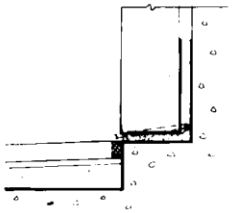
Keep stone above grade where design permits.





Air spaces isolate stone backs from moisture.





Note: Isolate stone from grade moisture with a concrete ledge or a dampproofed starter course with flashing as shown.

Note: Indiana Limestone paving must be properly sloped for good surface drainage; avoid low spots where surface moisture can collect. See p. 63.

Stain resulting from alkalinity will usually disappear within a few months after completion of construction, when sources of moisture may be expected to dry up. Ground moisture usually may be expected to continue for the life of the building, and any stain from that source is likely to be long-lasting.

Water repellents

Exterior water repellents intended for application to vertical, above-grade, masonry walls are, generally, clear liquids of low viscosity. Their chemical makeup allows them to be absorbed by masonry substrates, leaving the surface essentially unchanged in color or texture. The active ingredients in water repellents are intended to be deposited in the pores of the substrate while not closing or blocking them, so that moisture vapor can pass from within the wall, but liquid moisture is not absorbed at the surface. Water repellents should reduce the adherence of dirt to building walls because they render the wall less absorptive. They should reduce or eliminate a “wet look” in rainy weather. They should reduce humidity in cavity walls. An effective water repellent will create these effects without altering the color of the substrate, and without creating a shine, or sheen.

In common usage, water repellents are sometimes called sealers, or waterproofers, or dampproofers. These misnomers are confusing; worse, they tend to instill a false sense of security in users. Water repel- lents will not render a wall waterproof, nor will they “seal” it. Waterproofers or sealers are by definition coat- formers; they change the color and texture of the sub- strate. Ideally, a masonry wall treated with a water repel-

lent should not differ in appearance, during dry weather, from a similar, untreated wall.

Water repellents are not waterproof. They will not bridge gaps in mortar or sealant joints. Their use is not a fail-safe for poor mortar practice, nor a substitute for damp-proofing. Water repellents have been suspected of contributing to surface scaling in some cases. It is possible that a water repellent allowing vapor transmission may reduce the *rate* of transmission compared to identical, untreated, substrates.

Water repellents should be applied only on completed walls, with mortar or sealant joints in place. They should not be applied over wet or stained stones, nor to stone backs, nor stones under grade.

Good workmanship is essential in the application of water repellents. As a class, the materials tend to be labor-sensitive; substrate condition, weather condition, application tool, flow rate, etc., should all be in accordance with manufacturers' instructions.

ILI does not recommend specific types or brands of water repellents. Product types including silicones, stearates, acrylics, silanes, and siloxanes have all been used with apparent success on Indiana Limestone. ILI does recommend that (1) stone samples be treated on only one-half their surface for initial evaluation; (2) man- ufacturers provide statements on both vapor transmis- sion and guarantee; and (3) applier and manufacturer agree on the condition of the wall and the weather prior to application.

An understanding of probable retreatment costs, probable length of time until retreatment may be needed, and alternatives to retreatment should be part of the consideration of water repellents.

ILI will respond to requests for further information on this subject.

GRAFFITI REPELLENTS. Graffiti materials include pencil, lipstick, felt-tip pen, spray paints, enamels, and lacquers. Each requires its own type of removal process and materials. The only general rule is that prompt cleanup will be the most successful. Specific recommendations for removal are given in other ILI publications.

Graffiti-proof coatings should not be confused with water repellent materials mentioned earlier. Successful coatings tend to be slick or shiny. They offer no "tooth" to which graffiti materials may cling. The coatings also tend to retard the wall's ability to breathe. Therefore, their use should be limited to those areas subject to graffiti—generally within about eight feet of grade. These coatings may change the color of the stone by altering the refractive qualities of its surface; thus, they may become a design consideration. Application should be terminated at joints or other natural stops. Some coatings are fragile and easily scratched when damp.

flooring and paving with indiana limestone

As suggested in Note C, Table II, Indiana Limestone can perform satisfactorily as a flooring and paving material. Surface wear due to insufficient abrasion resistance in the stone is seldom a cause of problems with paving except in high-traffic, bottleneck areas. Because bending failure is not a factor in most flooring applications, thickness decisions can be made based on other factors. ILI or its member companies should be consulted on available thickness.

For exteriors, Indiana Limestone will give the most satisfactory performance when no moisture can rise through it from grade, mortar bed or concrete base. In practice, isolating the stone from this "rising damp" can be done by dampproofing ALL unexposed surfaces. (See pp. 30 and 63.) Thereafter, the stone can be set as usual.

Isolation can be achieved also by the use of setting mats or pedestals. Either system allows moisture to move below the stone's lower face, along the concrete base to properly located drains. For greatest efficiency, these systems are set with open joints, or butt joints, which allow for continuous drainage.

In any setting system, drainage of surface water is of the greatest importance. Especially in frost areas, slope and crown must be properly designed and built, and water must be channeled away from the paving. In mat and pedestal designs, subsurface drains must be kept free-flowing and clear of debris.

Exterior stone will not usually need a sealer or other pro- tective treatment on its upper surface. Allowing the stone to acquire its natural patina with age is usually a better decision than to apply a temporary coating. These products will usually either darken the stone, or cause it to shine, or both. They may increase slipperiness as well.

Limestone used as interior flooring must usually be applied on a mortar bed. "Thin-set" mastic can also be used provided the concrete base is very flat and level. Bituminous mastics will usually not bleed or "telegraph" through limestone. Test applications are recommended.