

Stone Maintenance

1.0 POLISHED INTERIOR STONE

1.1 DESCRIPTION

Polished stone has a glossy surface that reflects light and emphasizes the color and marking of the material.

1.2 USES

Polished interior stone has traditionally appeared as wall veneer. It is also seen in the form of furniture and desktops, counter and lavatory tops, tables, and other items of designer quality, as well as tiles for commercial and residential installation.

1.3 NORMAL MAINTENANCE

Normal "Housekeeping" maintenance involves only periodic washing with clean, potable water and neutral (pH-7) cleaners. "Soapless" cleaners are preferred because they minimize streaking and filming. However, mild phosphate-free, biodegradable liquid dish-soaps, soap flakes or powders that contain no aromatics are acceptable if rinsing is thorough. Stone surfaces should be first wetted with clean, hot (not boiling) water. Then, using the cleaner solution (following manufacturer's directions), wash in small overlapping sweeps, from bottom-up if a vertical surface. Rinse thoroughly with clean, potable water to remove all traces of soap or cleaner solution. Change the water in the rinse pail frequently. Dry with soft cloth or cotton-flannel, and allow to thoroughly air-dry. Chamois skin may be used in lieu of cotton cloth in this process.

Note that any flooring surface, regardless of how it is finished, is slippery when wet. Care should be taken to promptly remove liquids or foreign materials that might result in safety hazards before permitting pedestrian traffic.

1.4 MAINTENANCE PROBLEMS — PREVENTION AND CURES

Generally, prevention will save a great deal of time spent on cures and remedies, especially since damages to stone are often irreparable.

Polished stone should receive the same care and consideration that is given a fine wood finish. Spills of any type should be immediately removed and water-rinsed. Coasters should be placed under all glasses, particularly those containing liquors or citrus juices. Hot plates should be used under heated dishes. And, place mats or felt bottoms should be placed under china, ceramics, silver and bric-a-brac to prevent scratching of polished finishes.

See Section 7.0, "Stain Removal," for cases where nominal care and cleaning procedures have not been followed.

HONED INTERIOR STONE

2.1 DESCRIPTION

A honed finish is a satin smooth surface with relatively little light reflection.

2.2 USES

Generally, a honed finish is preferred for floors, treads, thresholds and other pedestrian traffic locations where heavy traffic would wear off a polished finish.

As a rule, honed finishes are more susceptible to soiling than polished finishes, because a honed surface is slightly more porous and absorptive than a polished finish. However, the honed finish is easier to restore because it will sustain harsher cleaning efforts.

2.3 NORMAL MAINTENANCE

Normal "Housekeeping" maintenance of a honed finish involves as-needed washing with clean, potable water and neutral (pH-7), mildly abrasive cleaners. Commercially available "Soft-Scrub®" or other thick

liquid cleaners and chlorine-bleach type scouring powders are ideal for this purpose. Simply mix in clean water according to manufacturer's directions.

CAUTION: Bleach should not be used on dark colored stones because it may lighten their color. Surfaces should be first wetted with hot, clean water. Then, using a mildly abrasive, alkaline cleaner and a medium bristle brush, wash in overlapping, swirling strokes. Suds build-up can be left to stand for several minutes to permit the bleaching agents to work on stains and dirt. On vertical surfaces, always work from bottom-to-top.

Rinse thoroughly then wipe dry with cotton, cotton flannel, burlap, or chamois skin. Wipe well to avoid streaks. If further cleaning is needed, make a paste to the consistency of syrup using a mildly abrasive alkaline cleaning powder and clean, potable water. Apply the paste uniformly over the surface with a broad brush and allow to stand until dry. Then, use a medium bristle brush with additional water and scrub the surface vigorously. (Additional cleaning powder may be added at this point.) Rinse thoroughly and dry as described above.

2.4 MAINTENANCE PROBLEMS — PREVENTIONS AND CURES

For honed stone used on furniture tops and the like, follow care practices as described in Paragraph 1.4 for Polished Stone.

Note that any flooring surface, regardless of how it is finished, is slippery when wet. Care should be taken to promptly remove liquids or foreign materials that might result in safety hazards before permitting pedestrian traffic.

Regular, daily mopping of traffic surfaces should be done as described in Section 3.0, "Stone Floors." In areas where normal care and cleaning prove inadequate, see Section 7.0, "Stain Removal."

3.0 STONE FLOORS

3.1 DESCRIPTION

"Stone Floors" broadly include any honed finish stone that is a traffic surface.

3.2 USES

The "Stone Floors" category includes treads, floors and thresholds.

3.3 NORMAL MAINTENANCE

Honed finish floors, treads, and thresholds subjected to traffic, should be regularly mopped or scrubbed in a manner that will not leave a hazardous, slippery film.

Stone surfaces should be first wetted with hot, clean water. Lightly sprinkle an abrasive cleaner (i.e.: a chlorine-bleaching type household scouring cleaner. Do not use bleaches on dark-colored stone) over the wet stone, or put one-to-two handfuls into a pail of 2-3 gallons of hot clean water. Using a scrubbing motion, mop the stone surfaces with this solution (or with clean hot water if cleaner is sprinkled directly on the stone). Rinse thoroughly with clean hot water and dry with mop or cloths. Power scrubbers (RPM less than 375) can also be used for cleaning as described above.

3.4 MAINTENANCE PROBLEMS — PREVENTIONS AND CURES

Generally, follow guidelines presented in paragraph 2.4 above.

See Section 7.0, "Stain Removal" for areas that do not respond satisfactorily to normal housekeeping procedures.

3.5 SPECIAL CONDITIONS AND PROCEDURES

Often, it is desirable to protect special interior areas and to enhance the coloration of honed stone in areas where a polished finish is not practical. In such cases, sealers may be applied after the stone has been cleaned to minimize maintenance and prevent staining around toilets and urinals, and in food preparation areas or entrances.

Sealers should only be applied to clean interior stone. Follow the manufacturer's directions for application and subsequent maintenance.

In all cases, sealers should be of a clear, hard-finish type suitable for traffic surfaces, and definitely "non-yellowing." Do not use soft-finish waxes, paste wax, or resins. These coatings collect dirt and grit. Some acrylic base, liquid floor "waxes" advertised as "non-yellowing" can be used in place of "permanent" sealers, but may give limited life.

EXTERIOR STONE

4.1 DESCRIPTION

"Exterior Stone" is a general term denoting a stone installed in a situation where temperature, moisture, and air-borne contaminants are regulated primarily or solely by the forces of nature.

4.2 USES

Exterior stone can be used in a honed, textured, or a polished finish in any mode in an exterior environment. However, the use of a polished finish marble or limestone is discouraged for exterior applications due to susceptibility to damage by air-borne acids and wind-driven dust.

4.3 NORMAL MAINTENANCE

In accessible areas, routinely follow maintenance procedures as specified in Section 1.3 for Polished Stone, or Section 2.3 for Honed Stone, as applicable. The large expanses of stone traditionally found on exterior multi-story installations generally will make it impractical or uneconomical to perform housekeeping maintenance on a frequent basis. However, such large installations should be given periodic overall cleaning consistent with economy, or as necessary to remove accumulated pollutants. (See MT-1 and MT-3, "Cleaning Exterior Stone")

The cleaning of multi-story installations should only be done by qualified contractors who have the craftsmen, equipment, resources, and technical expertise to execute the cleaning work properly, as well as perform any repair, resetting, or re-pointing that may be found necessary during the initial inspection. Consult the listings of MIA Members to obtain the required services.

Generally, the processes used in multi-story cleaning will be similar to normal procedures except that pumps for wash and rinse water should be employed to economize on the amount of time required due to the inherent high costs of labor and support equipment necessary to the undertaking.

5.0 SPECIALTY FINISHES

5.1 DESCRIPTION

Specialty finishes are surface finishes other than "polished" or "honed" and often are provided as specialty treatments under specific trade names. Such treatments usually are patented or copyrighted products of the supplying contractor.

Examples of such specialty finishes are polymer coatings, texturing treatments, and a variety of chemically produced surface conditions.

5.2 USES

Specialty finishes are provided to meet the requirements of service under which traditional polished, textured, or honed finishes prove inadequate, are subjected to unusual hazards, or do not satisfy the ever-broadening requirements of designers.

Examples of the applications of specialty finishes are polymer coatings for liquor-dispensing and food-service tops; or textured surfaces for special lighting effects, decor enhancement, graffiti resistance, and maintenance reduction.

5.3 NORMAL MAINTENANCE

Consult literature or instructions furnished by the supplying contractor for care and remedial measures pertinent to the specific specialty finish. (Always request this information when the installation is first made.)

6.0 SPECIAL CLEANING PROCEDURES GENERAL POULTICE METHOD

NOTE: Marble, limestone, travertine and onyx are calcareous stones, alkaline in nature. Acids, such as those contained in milk, wine and beer, fruit juices, and vinegar, will etch a polished finish. Strong alkalis, such as ammonia, will "burn" a polished finish. Most confuse the etch and "burn" marks with stains. The following procedures are given for the removal of staining. Contact a MIA Member regarding repolishing of etched or "burned" surfaces.

6.1 DESCRIPTION

The "General Poulitice Method" is a special cleaning procedure for the removal of deep-seated, time-set dirt and grime. The poulitice may be applied to honed; sand finished, or polished stone, and is particularly useful on intricate carvings, moldings, and other detailing difficult to scrub.

The general poulitice is essentially a strong cleaner, applied by way of a holding medium that concentrates its effort over a period of time.

6.2 USES

The poultice is used primarily to attack and reduce heavy deposits of normal soiling, or to remove stains resulting from the action of moisture on normal soiling.

For specific stains, i.e. stains whereof the origin is known see Section 7.0 "Stain Removal."

6.3 EXECUTION

Mix kaolin or Fuller's earth with common laundry bleach or a 6% solution of hydrogen peroxide to form a paste the consistency of oatmeal or cake icing. (For estimating purposes, figure a consumption rate of one pound of paste per square foot of surface.)

Moisten the surface of the stone with the same liquid that made the paste, wetting the stone beyond the extent of the stained areas.

Apply the poultice paste to the stone with a wood or plastic spatula, insuring a uniform coat about 1/4-inch thick. Cover the entire area to be cleaned and somewhat beyond, to prevent the soil from being forced into clean stone. Insure the poultice is in full contact with the stone, with no entrapped air pockets or voids.

Tape plastic sheeting over the poulticed area to prevent quick drying-out and allow it to act for 48 hours. After this standing period, dampen the poultice with clean, cool water to prevent undue dust generation. Remove the poultice with a wood or plastic spatula to avoid scratching. Rinse the cleaned area thoroughly with clean water; blot or wipe off excess water; allow the work to dry.

When water spotting has disappeared from complete drying, inspect for remaining soil. A second poultice application may be necessary.

CAUTION: White, non-leaded gasoline may be used in this method instead of bleach. **However, it should not be used in closed spaces and should be used only by experienced applicators. Laymen should avoid the use of flammable or explosive liquids in cleaning operations.**

CAUTION: Do Not use a poultice containing additives other than water on dark colored stone. If white veins in a dark colored stone have turned yellow with age, for example, apply a poultice made of kaolin and water.

Several "Marble Poultice" base powders are currently available to commercial users. These powders require only the addition of plain water for activation, are not acidic, and will prove convenient and effective in many cases.

7.0 STAIN REMOVAL 7.1 GENERAL

7.1.1 Adherence to normal care and maintenance procedures should help prevent staining. But, should accident or neglect contribute to staining, necessary remedial measures will be completely different from general cleaning and will usually require persistence to achieve results.

7.1.2 When the source of the stain is not known, the "Poultice Method" should be tried first, as described in Section 6.0 above. If this method is ineffective, follow specific remedies as explained below, attempting each in turn until results are achieved. Please note **CAUTION** against the application of poultice containing additives other than water on dark colored stone.

7.1.3 Stains in stone will generally be caused by one of three major category sources: organic materials, metallic materials, or oils and greases.

7.2 EXECUTION — ORGANIC STAINS

7.2.1 Most organic (carbon-oxygen based) stains require an oxidizing agent treatment, and generally will respond in varying degrees to hydrogen peroxide or chlorine bleach treatment and poultices. Hydrogen peroxide (H₂O₂) should be used in a 6% hair-bleaching solution. Chlorine bleaches should be used in commercially available strengths as sold for laundry and household use.

CAUTION: Do Not use bleach and ammonia together. Their combination produces **TOXIC GASES!**

CAUTION: Do Not use a poultice containing bleach on dark-colored stone.

7.2.2 Excelsior, leaves, bark, bird droppings, and foods may cause pinkish-brown stains in the presence of moisture. Outdoors, with the sources removed, normal sun and rain action will generally bleach out the stains. Indoors, use hydrogen peroxide or chlorine bleach soaked in a blotter or sponge, or mixed with kaolin or Fuller's earth as a poultice.

7.2.3 Tobacco stains are usually receptive to the same treatment described in 7.2.2 above.

7.2.4 Urine stains, if long-seated due to neglect, should be attacked with a strong chlorine-bleach poultice. Areas around urinals and water closets should be lightly sprinkled with a chlorine-bleaching powder cleanser, dampened, and left overnight periodically as a preventive measure.

7.2.5 Iodine stains will usually fade of their own accord with time. To hasten fading, apply a poultice of isopropyl (rubbing) alcohol [(CH₃)₂CHOH]; methyl (wood) alcohol (CH₃OH), or ethyl (grain) alcohol (C₂H₅OH).

7.2.6 Fire and smoke stains, caused by burning wood or paper, can be removed with a commercially available "Fireplace Cleaner" or by washing with a solution of caustic soda (sodium hydroxide) (NaOH). NOTE: As caustic soda is very corrosive, extreme care must be taken to protect skin, eyes, and clothing from burns. Rinse the area well with clean, cool water after using either of these remedies.

7.3 EXECUTION — METALLIC STAINS

7.3.1 Metallic Stains chemically required treatment with a reduction agent, i.e. an agent that will attack the metallic salts and reduce them to soluble, colorless salts that can be rinsed away or drawn out by poultices.

7.3.2 Iron (Ferrous and Ferric) Stains: These generally appear as red-brown stains resembling rust, and result from the action of moisture on adjacent or embedded iron or steel. Before attempting the removal of this stain, cure the cause. That is, clean and paint accessible ferrous items to prevent over splash and run-off onto the stone. If possible, remove the sources of moisture to prevent further oxidation of the iron or steel. Where the iron or steel is embedded in stone little can be done to prevent a continuation of oxidation and resultant staining, except to cut off the moisture supply to the metal.

Superficial, fresh stains will usually come off with a vigorous scrubbing. Seated stains may be removed by the application of a "Naval Jelly" or other commercial "Rust Remover," following manufacturer's directions for use. If these remedies fail, often abrasion with a scouring powder followed by a second application of the commercial rust remover will remove the stain.

Should this fail, apply a poultice for not more than 1/2-hour using either sodium hydrosulphite (NaHSO₄) or sodium hypochlorite (NaClO). (These chemicals are not usually available to the layman, which limits their application in household remedies.) Flush with a sodium citrate solution.

Unfortunately, deep-seated, rusty stains caused by prolonged neglect or from embedded metal (anchors, ties, etc.) may not be removable by any means.

7.3.3 Copper and Bronze (Cuprous and Cupric) Stains: These stains appear as green or muddy-brown colorations and result from the action of moisture on nearby or embedded bronze, copper and brass items.

Before attempting stain removal, cure the cause. Clean attached or nearby metal items and coat them with a quick drying, clear coating such as varnish, shellac, or a plastic spray-on/brush-on coating. If possible, remove sources of moisture to prevent further oxidation of the cuprous metal. When the source of stain is an embedded anchor, tie, or other device, the only remedy is to cut off the moisture at its source.

Coating would be impossible.

After eliminating the moisture or protectively sealing the metal, attack the stain with this poultice: mix a thick paste the consistency of peanut butter, composed of kaolin or Fuller's earth, ammonia, or sal ammonia (ammonium chloride) (NH₄Cl), (which can be purchased at most pharmacies). If sal ammonia is not available, a fairly effective "Field Expedient" is a solution of household ammonia and table salt mixed in equal quantities into the poultice base. Apply the poultice thickly over the entire stain, beyond the limits of the stain, and leave it until dry. Remove with a non-metallic spatula and rinse thoroughly. Cover with plastic and allow to dry. Repeat if necessary.

7.3.4 Lead: Stains caused by lead will appear as yellow or orange colorations and may appear at a distance from the source. There is no use attacking the stain if the source cannot be removed, inasmuch as lead is virtually non-reactive to chemicals, and any lead salts that may form will be extremely difficult to reduce.

Generally, the stains will fade in time as a result of atmospheric action if the source is removed.

7.3.5 Ink: Inks are frequently formulated from some metallic salts, and the stains caused by inks should be attacked with the same methods as recommended for iron stains. Non-metallic ink stains can frequently be removed using a poultice or white blotter soaked in wood or grain alcohol, followed by a flushing with household ammonia. Often, a bleaching poultice (see 7.2.1) will be needed to remove any remaining coloration.

7.4 EXECUTION — OIL AND GREASE STAINS

7.4.1 Oil, grease, linseed oil, and perspiration stains normally must be dissolved chemically so the source of the stain can be flushed or rinsed away.

CAUTION: Acetone (dimethyl ketone) [CH₃]₂CO] is a widely available solvent that produces good results on most oils and greases. Mineral spirits and white (unleaded) gasoline can be used as substitutes for acetone. **However, the use of flammable or explosive liquids in cleaning operations by inexperienced applicators should be avoided.**

7.4.2 After removing as much of the source of the stain as is possible, make a poultice, or saturate a white blotter with the solvent, and apply over the remaining stain, covering beyond the stain limits. Allow the solvent to dry, then remove the poultice and rinse with water. Repeat if necessary.

7.4.3 Do not use solvents containing color agents or oils. Avoid these solvents: turpentine, leaded gasoline, and kerosene.

7.5 EXECUTION-PAINT AND PAINT-STAIN REMOVAL

7.5.1 Paint should be removed only by use of a commercial-type "heavy liquid" paint stripper available from hardware stores and paint centers. Such strippers are normally hydroxide types, that is, they contain caustic soda or lye. **DO NOT USE ACIDS OR FLAME TOOLS** to strip paint from stone. Follow manufacturer's directions for use of these products, taking care to flush profusely with clean water after use. Use only wood or plastic scrapers and stiff fiber or jute brushes for removing the sludge and curdled paint.

7.5.2 Normally, latex and acrylic paints will not cause staining. Oil-based paints, linseed oil putty, and "Architectural Grade" caulks and sealants may cause oily stains. These stains should be attacked as in 7.4 above.

7.5.3 When removing paint and paint stains from vertical stone surfaces take care to protect unpainted stone from run-off. If oil-based paint is accidentally dripped or overrun, remove immediately with a clean cloth followed at once by wiping with a cloth bearing acetone or mineral spirits to preclude oil staining. Latex paint drips should be wiped off immediately with a damp cloth.