



The natural stone you have in your home, office, or commercial building is an investment that will give you many years of beautiful service.

Simple care and maintenance will help preserve your stone's beauty for generations to come.

This brochure has been developed for you by the Marble Institute of America (MIA) to present routine cleaning guidelines as well as procedures for stain removal should it become necessary. All methods of cleaning should be in accordance with ASTM C1515-01.

## Definitions

**Finishes:** There are three primary stone finishes:

- A **polished** finish has a glossy surface that reflects light and emphasizes the color and markings of the material.
- A **honed** finish is a satin smooth surface with relatively little reflection of light. Generally, a honed finish is preferred for floors, stair treads, thresholds, and other locations where heavy traffic will wear off the polished finish. A honed finish may also be used on furniture tops and other surfaces.
- A **flamed** finish is a rough textured surface used frequently on granite floor tiles.

Many other finishes are available and used throughout the world. Consult with a stone professional if your finish does not match these three primary types.

**Lippage:** A condition where one edge of a stone is higher than adjacent edges, giving the finished surface an uneven appearance.

**Maintenance:** Scheduled cleaning, specific procedures, and inspections performed on a daily, weekly, or other regular basis to keep the stone in proper condition.

**Poultice:** A liquid cleaner or chemical mixed with a white absorbent material to form a thick, stain-removing paste.

**Refinishing:** Repolishing or honing of dull, once-polished marble, limestone, or granite floors and walls.

**Renovation:** Cleaning and repolishing of neglected dimension stone surfaces.

**Restoration:** Large-scale remedial actions taken to restore a structure or area to its original or acceptable "near original" condition. Generally applies to historic structures.

## A Note on Historical Buildings

In the case of historically important buildings and landmarks, many of the cleaning, maintenance, and restoration protocols are established by historical preservation committees and other agencies/departments of the government. Please consult with these organizations when developing your normal maintenance program.

## Know Your Stone

Natural stone can be classified into two general categories according to its composition: siliceous stone or calcareous stone. Knowing the difference is critical when selecting cleaning products.

**Siliceous stone** is composed mainly of silica or quartz-like particles. It tends to be very durable and relatively easy to clean with mild acidic cleaning solutions. Types of siliceous stone include: granite, slate, sandstone, quartzite, brownstone, and bluestone.

**Calcareous stone** is composed mainly of calcium carbonate. It is sensitive to acidic cleaning products and frequently requires different cleaning procedures than siliceous stone. Types of calcareous stone include: marble, travertine, limestone, and onyx. What may work on siliceous stone may not be suitable on calcareous surfaces.

## What Type of Stone Is It?

It is advisable to maintain careful records about the type, name, and origin of the stone existing in your building. If such records do not exist, you should explore the following options before determining a cleaning and maintenance program:

1. **Consult with a professional** stone supplier, installer, or a restoration specialist to help identify whether your stone is siliceous or calcareous.

2. **Conduct a visual identification** of the stone. While there are exceptions, the following characteristics are common:



- **Granites** have a distinct crystal pattern or small flecks; very little veining.



- **Limestones** are widely used as a building stone. Colors are typically gray, tan, or buff. A distinguishing characteristic of many limestones is the presence of shell and/or fossil impressions.



- **Marbles** are usually veined, fine-textured materials that come in virtually unlimited color selections.



- **Sandstones** vary widely in color due to different minerals and clays found in the stone. Sandstone is light gray to yellow or red.



- **Slates** are dark green, black, gray, dark red, or multi-colored. They are most commonly used as a flooring material and for roof tiles and are often distinguished by distinct cleft texture. Some notable cladding projects have also included slate.

3. **Conduct a simple acid sensitivity test** to determine if your stone is siliceous or calcareous. You will need:

- 4 ounces of a 10% solution of muriatic acid or household vinegar
- Eyedropper

Because the test may permanently etch the stone, select an out-of-the-way area (a corner or closet) several inches away from any mortar joint. Apply a few drops of the acid solution to the stone surface on an area about the size of a quarter. Two possible reactions will occur:

- 1) Acid drops will bubble or fizz vigorously – a sign that the stone is calcareous.
- 2) Little or no reaction occurs – stone can be considered siliceous. See note below.

Rinse the area thoroughly with clean water and wipe dry.

**NOTE:** This test may not be effective if surface sealers or liquid polishes have been applied. If an old sealer is present, chip a small piece of the stone away and apply the acid solution to the fractured surface.

**CAUTION:** Muriatic acid is corrosive and is considered to be a hazardous substance. Proper head and body protection is necessary when acid is used. Again, it is always wise to consult with a stone professional if you are unable to visually identify the stone and/or are uncomfortable using the acid test.

## Assessing the Stone's Current Condition

Knowing the current condition of the stone is another critical first step. It is recommended that you develop a checklist of questions to use in your routine examination of the current conditions. Your checklist should include questions such as:

- Are the tiles flat and even?
- Are there any cracked tiles?
- What type of stone finish exists?
- Has the stone been coated with any waxes, acrylics, enhancers, or other coatings? If so, which type and manufacturer?
- Is there any evidence of staining? What type?
- If the stone has been sealed with a topical sealer, are there any signs that the sealer has worn off?

Your answers to these and other questions will help you pinpoint your next step. For example:

- Uneven tiles (a sign of lippage) may result in the floor needing to be ground flat, honed, and then polished.
- Cracked tiles will allow dirt and other debris to accumulate in the cracks. This may require that the tiles be replaced, or at a minimum, filled.
- Knowing the type of stain (organic, oil-based, etc.) will help identify the proper stain removal technique needed. Also, the level of stains or spills the stone can be exposed to will play a role in determining if an application of a sealer is appropriate.

## Care and Precautions

**Countertops:** General guidelines for both siliceous and calcareous stones: Use coasters under all glasses, particularly those containing alcohol or citrus juices. Do not place hot items right off a stove or out of an oven directly on the stone surface. Use trivets or mats under hot dishes and placemats under china, ceramics, silver, or other objects that can scratch the surface.

For calcareous stones, many common foods and drinks contain acids that will etch or dull the stone surface.



**Flooring Surfaces:** Many flooring surfaces can become slippery when wet. When wet conditions occur, reduce potential hazards by doing the following:

1. Spread carpeted runners from each outside door into lobbies and corridors to help dry shoe soles.
2. Place bright-colored "slippery when wet" pylons on walking surfaces in conspicuous places.
3. Mop or shovel walking surfaces as often as necessary to remove standing water, ice, and/or snow.
4. Issue standard instructions to building maintenance personnel and prominently post at all janitorial workstations.
5. Follow local building and safety codes.

**Keep** a checklist of questions to use in your examination.

# Do's & Don'ts

## General Guidelines for Stain Removal

1. Remove any loose debris.
2. Blot spills; wiping the area will spread the spill.
3. Flush the area with plain water and mild soap and rinse several times.
4. Dry the area thoroughly with a soft cloth.
5. Repeat as necessary.
6. If the stain remains, refer to the section in this guide on stain removal.
7. If the stain persists or for problems that appear too difficult to treat, call your stone care professional, installer, or restoration specialist.

## Cleaning Do's and Don'ts

When discussing care and cleaning procedures with your maintenance staff, there are recommended do's and don'ts that should always be followed:

**Do** dust mop floors frequently.

**Do** clean surfaces with mild detergent or stone soap.

**Do** thoroughly rinse and dry the surface with clean, clear water after washing.

**Do** blot up spills immediately.

**Do** protect floor surfaces with non-slip mats or area rugs and countertop surfaces with coasters, trivets, or placemats.

**Don't** use vinegar, lemon juice, or other cleaners containing acids on marble, limestone, travertine, or onyx surfaces.

**Don't** use cleaners that contain acid such as bathroom cleaners, grout cleaners, or tub & tile cleaners.

**Don't** use abrasive cleaners such as dry cleansers or soft cleansers.

**Don't** mix bleach and ammonia; this combination creates a toxic and lethal gas.

**Don't** ever mix chemicals together unless directions specifically instruct you to do so.

**Don't** use vacuum cleaners that are worn. The metal or plastic attachments or the wheels may scratch the stone's surface.



## Sealing Natural Stone

Several factors must be considered prior to determining if the stone should be sealed:

- What is the hardness, density, and durability of the stone?
- How porous is the stone and how fast will it absorb a liquid (also referred to as the absorption coefficient)?
- Is the stone expected to be in frequent contact with a staining agent?
- What type of finish was applied to the surface? For example, a polished surface is more resistant to staining than a honed surface.
- Will the sealant affect the color or other aesthetics of the stone?
- If a resin was applied to the stone, how will the sealant react with the resin?
- Where is the stone located (e.g. countertop, floor, wall, foyer, bathroom, etc.)? Residential or commercial?
- What type of maintenance program has the stone been subjected to?

The type of stone, its finish, its location, and how it is maintained all need to be considered when determining how to protect the stone.

In some cases it makes sense to seal the stone. Once properly sealed, the stone will be protected against everyday dirt and spills. In other cases, it is best to leave the stone untreated. Topical sealers can alter the surface texture and finish as well as build up on the surface, creating a layer that is less durable than the stone. Generally, topical sealers are not recommended in exterior applications because they can trap moisture within the top layer of the stone, which may lead to surface deterioration during freeze/thaw cycles.

The Marble Institute of America's position on sealers is as follows:

**The Marble Institute of America (MIA) recognizes the benefits that sealers can provide in certain applications. MIA recommends that care be exercised in the application of any chemical to a stone's surface. Although normally innocent in and of themselves, some sealers have reportedly reacted with some cleaning/maintenance chemicals and/or with components within the stone surface, causing some reactions.**



If you have decided to treat your stone, make sure you understand the differences between the types of sealers available on the market:

- **Topical Sealers** are coatings (film formers) designed to protect the surface of the stone against water, oil, and other contaminants. They are formulated from natural wax, acrylic, and other plastic compounds. When a topical sealer is applied, the maintenance program often shifts from a program focused on stone care to a program focused on the maintenance of the sealer (for example: stripping and reapplication).
- **Impregnators** are water- or solvent-based solutions that penetrate below the surface and become repellents. They are generally hydrophobic (water-repelling), but are also oleophobic (oil-repelling). Impregnators keep contaminants out, but do not stop the interior moisture from escaping. These products are considered “breathable,” meaning they have vapor transmission.

Vanity tops and food preparation areas may need to have an impregnator applied. Check with your installer for recommendations. If an impregnator is applied, be sure that it is safe for use on food preparation surfaces. If there are questions, check with the product manufacturer.

**Make sure**  
you understand  
the difference  
between the types  
of sealers available  
on the market.



### **Before sealing, always:**

- Read the Manufacturers Warranty and Instructions.
- Contact the manufacturer prior to application if you are unsure or need clarification. The wood-working analogy of ‘measure twice, cut once’ applies.
- Consider the life span of the application (1-year, 2-years, 5-years, etc.) – keep a log of each application.
- Don’t switch from one product to another without fully understanding any potential issues. Not all products are alike – again, consult with the manufacturers.
- Consult with your stone professional as necessary.
- Ask yourself, does the stone need to be treated in the first place?