

# STONE

## DESIGN & CO

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Installation Guidelines

# Stone

# *Wall Cladding*

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## DESIGN & CO

Thank you for considering Stone Design & Co for your next project.

The following guidelines are provided as general information to assist in the planning of your project. They have been prepared in good faith and are based on our knowledge, experience, and industry understanding at the time of publication. As every project is unique, the project manager or responsible professional should determine the most suitable installation methods and systems for the specific site, with consideration given to the relevant Australian Standards, manufacturer recommendations, and accepted trade practices.

The information contained within this document is intended as a general guide only and should not be relied upon as a substitute for the advice or services of qualified contractors, consultants, or other industry professionals.

If you need any further assistance, please reach out to our showroom team.

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## Material Considerations

Natural stone is a product of nature, with each piece shaped over thousands of years through geological processes. As a result, every tile or paver is unique in colour, veining, texture, fossilisation, mineral deposits, and natural markings. These variations are an inherent characteristic of the material and contribute to its individual beauty rather than representing defects.

To ensure expectations are aligned, specifiers, contractors, and clients should familiarise themselves with the characteristics of the selected stone before ordering. Samples and photography are intended as a guide only and should not be expected to represent the exact appearance of the supplied material.

It is the responsibility of the installer to inspect all materials prior to installation. Natural edge chipping, minor surface marks, dimensional tolerances, and other characteristics typical of natural stone are not considered manufacturing defects.

### Storage

Natural stone should be stored in a clean, dry location, protected from direct sunlight, rain, groundwater, and other sources of moisture. Materials should remain dry and free from dust, dirt, and contaminants before installation.

Crates should be stored on a stable, level surface and must not be stacked on top of one another unless specifically designed to do so.

### Blending

As natural stone varies from piece to piece, it is essential to blend tiles or pavers from all pallets or crates during installation. Blending throughout the laying process creates a balanced distribution of colour, tone, and natural variation, resulting in the most visually consistent finish.

### Weather Consideration

To achieve the best installation outcome, avoid laying natural stone during periods of heavy rain, extreme heat, or other adverse weather conditions. High surface temperatures, particularly above 30°C, can reduce adhesive performance and may affect the bond between the stone and substrate. Where possible, schedule installation during mild weather conditions.

### Thermal Shock

Thermal shock occurs when stone is exposed to rapid and significant temperature changes over

a short period. This is most common in climates where temperatures fluctuate from below 0°C to above 15°C within a 24-hour period.

The resistance of natural stone to thermal shock varies depending on the stone type and its physical properties. Material selection should consider the environmental conditions and intended application, particularly in regions subject to freezing temperatures or extreme temperature fluctuations.

Our database of technical data is always growing. If you intend to install in an area more susceptible to rapid temperature changes, please call our showroom to discuss,

Note: due to the inherent variability of stone, all testing results are indicative only.

### Non-Combustibility

Natural stone materials are considered inherently non-combustible and can be used wherever a non-combustible material is required.

We do not recommend installing Dry Stone as internal elements of a fireplace.

### Waterproofing / Moisture Management

An effective moisture management strategy should form part of every installation system. This may include, where required, waterproof membranes, suitable adhesives, drainage provisions, pre-sealing, consolidation, sealing, and an ongoing maintenance program.

Some natural stone products are more susceptible to moisture-related issues than others. To help minimise the risk of efflorescence and other moisture concerns, we recommend applying an appropriate waterproof membrane to the substrate before installation.

It is also recommended that the top course be sealed with a suitable silicone or polyurethane sealant, or protected with a cap, to help prevent moisture from penetrating between the stone and the substrate.

### Cleaning and Sealing

Pre-sealing may be recommended depending on the type of natural stone and the environment in which it will be installed. Where pre-sealing is undertaken, ensure the selected sealer is compatible with the chosen adhesive system.

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For installations exposed to elevated moisture, including coastal environments and water features, applying a pre-sealer or consolidating sealer to all six sides of the stone may be appropriate. Project-specific sealing recommendations should always be obtained from the sealer manufacturer.

Cleaning and sealing should also be carried out by applicators approved or accredited by the sealer manufacturer where applicable.

Stone Design & Co recommends consulting a reputable sealing manufacturer, such as Chemforce, when selecting an appropriate sealing system. Stone Design & Co does not provide warranties on sealers and accepts no responsibility for claims arising from the selection, application, or performance of sealing products.

### **Selection of adhesive for bedding stone**

As a general guide, cement-based adhesives are suitable for most natural stone installations. In some applications, however, epoxy or polyurethane adhesives may be required depending on the project conditions and substrate.

The appropriate adhesive should always be selected in consultation with the adhesive manufacturer, who can provide project-specific recommendations based on the installation requirements.

Stone Design & Co recommends using quality adhesive systems from reputable manufacturers, including SAS Australasia Pty Ltd.

### **Grouting Compound**

If grouting it is recommended to use a high-grade proprietary grouting compound that is suitable for the application.

### **Silicone Sealants for Caulking**

It is recommended to use only neutral-curing silicone sealants that will not cause any migratory staining on natural stone and match sealant colours to grout colour.

### **Cutting**

Natural stone should be cut using suitable wet-cutting equipment fitted with an appropriate diamond blade. Wet cutting assists in reducing airborne dust

while producing a cleaner finish. After cutting, thoroughly rinse each piece to remove slurry and residue before it has an opportunity to dry onto the stone surface.

### **Crystalline Silica**

Crystalline silica (or silica dust) is a common mineral found in many natural and man-made substances.

A crystalline silica-containing substance is defined as any substance that:

- a. contains more than 1% crystalline silica; and
- b. is reasonably likely to be mechanically processed at a workplace; and
- c. is not in a respirable form.

There is risk involved in working with crystalline silica substances when these substances are mechanically processed (for example through cutting or grinding), in which crystalline silica dust is generated. Exposure to crystalline silica dust over a long period at low to moderate levels, or short periods at high levels, can lead to serious health conditions such as silicosis, which is an irreversible, incurable, and progressive lung disease that can lead to disability and death.

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**Warning:** The nature and severity of risk will depend on multiple factors including the percentage of crystalline silica in the material, exposure conditions and sites, and activities undertaken that result in the release of silica dust.

Ensuring a workplace is without risk to the health and safety of any person, as is reasonably practicable, is the responsibility of the person with management or control of the workplace.

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## Installation

Installation will vary from site to site with varying conditions experienced on that site (i.e.: soil conditions, pool surrounds, driveways, wet areas etc.). A site sample of the proposed method of installation should be completed to ensure that this method is appropriate for the site conditions.

### Substrate/Wall

The background structure must be structurally sound and suitable for the installation. This may require an engineer's structural certification.

For concrete, block-work or brickwork walls, the surface must be even and true, with a variance of no more than 2mm every 4m. If the wall is not true, a render should be applied as per the manufacturer's recommendations. The surface should be free from movement, oils, grease, waxes, paints, curing compounds and any other loose contaminating materials.

New concrete must be allowed to cure for 6 weeks, should have a wood float finish and be free of any laitance.

Old concrete should be cleaned of all laitance and have a keyable surface.

For tilt-up concrete panels, all residues from release agents etc. must be removed from the panel before the application of any tile adhesive. Mechanical fixings such as a shelf, pin, or tie-back system may be necessary.

Stone Design & Co do not advise on these technical recommendations.

### Expansion, Movement, and Control Joints

Control joints should be used in the following areas:

1. Over movement joints
2. weakened plane joints.
3. At a junction between different background materials.
4. At fixtures interrupting the stone surface, e.g. columns and beams.
5. At internal vertical corners.
6. At all horizontal joints and vertical joints (Approximately 3m to 4.5m apart).

Refer to architects and engineer's drawings for full details on expansion.

### Consideration of Mechanical Fixings and Wall Ties

It is recommended that the architect/builder work with a façade engineer for the design of the reinforcing layout and the selection of suitable structural supports including the use of mechanical fixings or wall ties.

If in doubt about your specific requirements, please contact your engineer to discuss.

Stone Clip ([www.stoneclip.com.au](http://www.stoneclip.com.au)) is a good source for supply and information regarding mechanical fixing hardware.

### Grouting Methods

When grouting natural stone, the following general practices are recommended:

1. Lightly dampen the joints before applying grout to assist with adhesion.
2. Fill all joints completely, ensuring the grout is compacted without leaving voids.
3. Remove surplus grout as work progresses to minimise the risk of staining the stone face.
4. Once the grout has begun to firm, clean the surface with a damp sponge using clean water, taking care not to wash material from the joints.

### Laying of Stone Elements

The following recommendations are provided as a general installation guide:

1. Ensure both the substrate and the back of each stone piece are clean, dry, and free from dust or contaminants.
  2. Apply the adhesive evenly using a notched trowel suitable for the size and weight of the selected stone, ensuring complete coverage and the minimum bed thickness specified by the adhesive manufacturer.
  3. Back-butter each stone prior to installation to maximise bond strength.
  4. Install the stone while the adhesive remains within its open working time. Adhesive that has begun to skin should be removed and replaced.
  5. Periodically lift a recently installed piece to confirm full adhesive transfer has been achieved.
  6. Remove any excess adhesive from the stone face before it hardens.
  7. Avoid disturbing the installed stone until the adhesive has cured in accordance with the manufacturer's recommendations.
  8. Progress up the wall at a controlled rate to maintain stability throughout the installation.
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9. Joint widths, coursing, and spacers should be selected to suit the intended design aesthetic and the style of stone being installed.
  10. Where corner units are incorporated, ensure they are positioned to create a natural and continuous appearance.

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## Maintenance

Over time stone will age, resulting in changes in their appearance. To preserve its natural beauty and sustain its performance, it is crucial to maintain the stone through regular cleaning and sealing, along with other maintenance practices customised to the environment.

For optimal results, we always recommend working with an accredited professional who specialises in cleaning and sealing natural stone and using high- quality cleaning products specifically designed for natural stone.

### Regular Cleaning

Using the wrong cleaning products or techniques can damage the integrity of the stone's surface. It is critical to use appropriate cleaning products and techniques that are suitable for your specific type of natural stone to avoid damage.

A pH-neutral cleaner has a balanced pH level that is neither acidic nor alkaline, making it safe to use on natural stone surfaces without damaging the stone. Regular use can help prevent dirt and grime build-up that causes undesirable discolouration and deterioration of the stone's surface.

**Warning:** High-pressure cleaning equipment is not recommended for routine maintenance of natural stone. Excessive water pressure can damage the stone surface, disturb mortar joints, and reduce the long-term performance of the installation.

Always use accredited Cleaning & Sealing professionals.

### Long Term Cleaning

Getting your stone professionally cleaned in conjunction with regular cleaning is an excellent way to maintain the appearance and longevity of your stonework.

Professional cleaning involves using specialised equipment and products to deep clean and restore the surface. They can help remove stubborn stains, dirt build-up, and discolouration that may not be effectively removed with regular cleaning. They can also recommend how often your stone flooring should be professionally cleaned based on usage and environment. Additionally, they can provide advice on the best pH-neutral cleaner to use for your regular cleaning.

### Efflorescence

Efflorescence is the appearance of white, powder-like mineral deposits that can develop on the surface of masonry and natural stone. It occurs when moisture carries naturally occurring salts through the substrate or installation materials before evaporating at the surface.

While efflorescence does not generally affect the structural integrity of the stone, it may indicate that excess moisture is present within the installation. Addressing the source of moisture is essential to minimise the likelihood of the deposits returning.

In many cases, light efflorescence can be removed using clean water and a stiff-bristled brush. It is often beneficial to allow several days after installation before undertaking the initial clean, as this provides time for residual salts within the bedding, adhesive, or grout to migrate to the surface. Once the stone is completely dry, any recommended sealing or protective treatment can then be applied.

### Discolouration

Prevention through regular cleaning and sealing is the most effective treatment. If corrective action is required, consulting with a professional to determine the best treatment for your specific material and environment is recommended.

Generally, poultices or acid-based cleaners will be recommended, however the brand, type and strength based on degree of irritation required will be case-dependent.