



STONE PRODUCT SPECIFICATION

TRAVERTINE & LIMESTONE

INSTALLATION TIPS

Please note these tips are guides only and should be used in addition to the relevant Australian Standards for trade practices. Note that installation may vary from site to site with varying conditions experienced on that site (i.e. soil conditions, pool surrounds, driveways etc.). The contractor should decide if these suggestions are suitable for their application or require further adjustment. These tips are given in good faith and to the best of our knowledge and experience at the time of printing. In no way do these tips replace the services of professional contractors and/or consultants.

Some typical installation methods are:

FOUNDATIONS

For an area to be successfully paved, the base or foundation preparation is very important and is the first element to influence the end quality of the flooring. This is because the sub base or 'laying support' carries out a number of functions in protecting the surface layer of the Stone. For these stones we recommend the following:

Pedestrian traffic only: reinforced concrete* 75mm thick

Vehicle traffic: reinforced (F72 mesh) concrete* base 100mm thick min. 25MPA

*Engineers advice should be sought in the design of all concrete. Contractors should also consider drainage and/or waterproofing issues to minimise the risk of rising humidity which can bring salts contained in the soil or in the bedding layers to the surface.

SLOPE

When dealing with outdoor stone flooring, special attention must be paid during planning in order to respond adequately to rainwater run-off. This is done by dividing the floor field into different drainage surfaces if necessary and giving them effective slope and perfect levelness. This will avoid trapping water and moisture on the floor surface since they cause undesirable and unsightly effects due to rings, salt peter efflorescence and dirt build up. The following slopes are recommended:

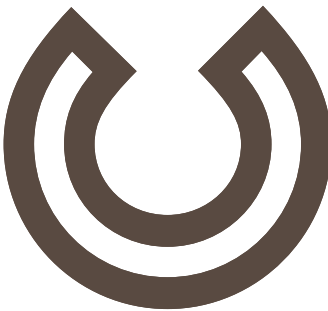
Small flooring surfaces: gradient > 1%

Large flooring surfaces: gradient > 2%

CONTROL JOINTS

Control joints are recommended for the substrate (concrete sub base). The joints in the concrete base should be continued through the mortar bed and grout joint. Control joints help absorb variations in the flooring caused by temperature swings and other movement in the sub grade, concrete base, mortar or actual tile itself. In addition to structural concrete joints, tiled/paved surfaces should also include appropriate control joints every 20m² that penetrate through tile and the bedding mix, but not through the concrete substrate. Generally, the overall floor field is divided into compartments where technical expansion joints are set out in a crosswise and/or longitudinal direction (minimum 5mm joints every five metres).

Use of control joints will greatly reduce the chance of unsightly surface cracks appearing.



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INSTALLATION TIPS

SELECTION OF PRODUCT - VARIATION IN COLOUR

Given stone is a natural product, variations in colour are an inherent characteristic of the product. We suggest sourcing tiles from all pallets delivered whilst laying. This will enhance the natural look of the product and the overall effect of the area that has been laid.

WATERPROOFING

In areas that may be affected by efflorescence or unusually high moisture levels, it may be necessary to coat the substrate prior to laying with a waterproofing compound.

LAYING

In general we recommend two key techniques for bedding these stones:

- a) Classic (promptly laid wet mortar)
- b) Contemporary (using synthetic adhesives)

Please note: we would recommend the Contemporary method be used for all installation of stone with a consistent thickness of 20mm or less, to achieve the best results. For light coloured stones, we recommend that a light colour adhesive is used.

SURFACE PREPARATION

It is recommended that the slab to which the mortar is going to be applied, be free and clear of all dust and debris. It is vital to ensure that the surface is clean, to enable a good bond to take place between the mortar and the concrete base.

MORTAR COMPOUND

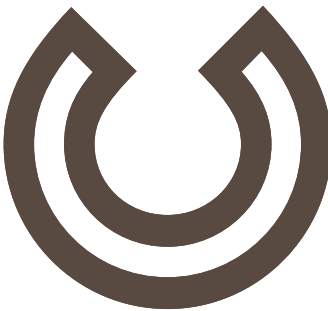
Recommended mix is:

- 3 parts blended coarse wash sand (as per Australian Standards)
- 1 part Grey Portland cement (type GP cement)
- 1 part clean water (Note: additional water can be added to achieve the desired consistency)
- Bonding agent: this will help with the workability, adhesion and strength.

This can be mixed with a paddle mixer or in a barrel cement mixer. It should be mixed until free of all lumps and all material is completely blended together.

BONDING SLURRY COMPOUND

1. Cement and water mixed into a workable paste or;
2. Cement and bonding agent (SBR based) mixed into a workable paste



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INSTALLATION TIPS

LAYING METHOD - CLASSIC

1. Clean and dampen the concrete on which the stones are to be laid.
2. Apply the Slurry Mix to the concrete where the mortar is to be placed in an even coat (1-2mm thick).
3. Place the mortar mix on the concrete and the paste on which the stone is to be laid. The mortar bed should be 25mm thick with no voids and evenly spread.
4. Remove all loose material from the back of the stone before laying.
5. Apply the Slurry Mix to the back of the stone in an even coating (1-2mm thick).
6. Place the stone into position gently tapping down with a rubber mallet (white rubber mallet is recommended to avoid marking the product). It is important to ensure that there are no air voids under the product as this may cause the adhesion of the stone to fail or the product may not be fully supported.
7. Tap the stone down to the desired level.
8. Trowel fill any voids around the product and remove any excess mortar and discard it.
9. Remove all excess material from the surface of the stone using a clean sponge with clean water. It is important to work as cleanly as possible to avoid marking the product.
10. Do not spread too much mortar as it may begin to dry before you have laid the stone. Work in smaller controlled areas.

LAYING METHOD - CONTEMPORARY

White cement should be used as coloured cement may seep through the face of the stone.

Contemporary (using synthetic adhesives) This technique can be used on existing floors as well as screeds that have been prepared especially for this purpose and have dried completely. There are various suitable adhesives on the market and it is essential to follow manufacture's instructions. Some general tips in working with adhesives are as follows:

1. Prepare a sub floor (screed) that is perfectly flat to make it easy to keep the stone elements level with each other, since only a thin (8-10mm) layer of adhesive is used (therefore offering very little laying tolerances).
2. Clean the laying surface (remove debris, dust oil etc), once the screed is completely dry.
3. Prepare a uniform layer of adhesive using a notch trowel 8-10mm thick, and back butter the base of the tile as well.



STONE PRODUCT SPECIFICATION

TRAVERTINE & LIMESTONE

INSTALLATION TIPS

4. Lay stone elements so the timing corresponds to the drying time required for the adhesive used, without letting the glue create a film due to prolonged exposure to air. The stone pieces are then compacted evenly on the adhesive with a rubber mallet to ensure consistent contact with the glue. Consistent open joints should be allowed for at 6-10mm spacing.

For both of the laying techniques above, we recommend that after an area is laid it should not be loaded for a period of time to enable the bedding layer to strengthen.

Pedestrian traffic: 2 days

Vehicle traffic: 2-3 weeks

GROUTING COMPOUND

It is recommended to use a high grade pre-bagged grouting compound that is suitable for the application. It should cater for grout joints of between 7-10mm.

GROUTING METHODS

1. Dampen grout joints and stone with a sponge
2. Place grout into joints, ensuring no voids, to the full depth of the paving stones
3. Remove any excess grout with a trowel
4. Sponge clean the paving surface with water, ensuring all excess grout has been removed

CUTTING

Ideally it is recommended that cutting be done using a bench saw with a wet diamond blade. The stone should be washed immediately after it is cut to avoid cutting paste drying and staining the surface of the product.

CLEANING

Stone should be cleaned when grouting material has set. Cleaning will enable any grouting residue to be removed.

1. Wet the area you wish to clean down
2. Apply acid water mix (20 parts water to 1 part Hydrochloric acid) or other approved cleaning system
3. Gently agitate surface with a stiff broom or scrubber
4. Rinse surface thoroughly using a neutral cleaner

It is recommended to work in small areas at a time (3-4m²) and thoroughly wash as you go. It is important to have a well wet down surface before you apply the cleaning mix. Never apply acid mix to dry stone.



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POOLS

We recommend all coping tiles and stone that is subject to continual wetting and drying should be dip sealed, prior to laying, with an appropriate sealer.

SEALING

A penetrating spirit based non-slip sealer is recommended to protect from oil-based stains.

ACCEPTABLE CHARACTERISTICS

Stone tiles are made from naturally occurring materials and a variation in colour and/or surface finish may occur. It is the responsibility of the user to inspect tiles prior to laying. Minor marks and small chipping are not structural and therefore not considered defects. Any tile with excessive chipping or variation in thickness and dimension prior to laying, may be subject to a warranty claim.