



1.0 External & Internal Finishing/Surface Textures for Residential Panels

1.1 External plaster and coatings

The smooth exterior surface of the panel (known as F5 finish) is produced by casting on a steel casting bed. This means that once installed the panels are ready to be painted. In this instance the V-joints between the panels are “expressed” and become a feature. If a plaster finish is specified to hide the joints, they would be filled in and treated as “control joints” - to cope with any seismic movement - (see *detail D18*). However, any paint or plaster system should be of the vapour-permeable variety. We recommend systems that have been BRANZ appraised and/or meet the NZBC requirements. In all cases the manufacturers’ application and maintenance instructions must be followed, with particular attention given to the following areas:

- Weathering, flashing and sealing systems at door and window openings, junctions with other materials and any other penetrations of the exterior envelope. The ground/foundation/floor/wall interface. Particular care needs to be given to ensure that minimum distances between ground and floor level, as stated in NZS 3604:2011, are met.
- If external plaster systems are required they must be applied and cured within the temperature limitations, climatic and curing conditions set by the manufacturer. The finished external plaster system is sealed and protected from the weather with a vapour-permeable coating system.

1.2 Natural (Clear) Concrete Surface

Where a clear natural concrete look is specified for Litecrete panels we recommend the application of a matt finish clear sealer after installation; eg: Markham NZ’s “Aquron 2000” or STO NZ’s “Sto Pur”, both of which comply with CCANZ CP 01:2014 – *Code of Practice for Weathertight Concrete and Concrete Masonry Construction, Section 4.4 Clear Coating System, when tested in accordance with AS/NZS 4456.16:2003*. The following aspects should also be considered:

- The pumice aggregate contains minerals which can sometimes cause yellowing and result in heavier surface figuring than is the case with normal precast. On rare occasions mafic (iron-bearing) particles can also occur. This can present as small rust spots on the panel surface. It does not have any effect on the structural integrity of the panels and is not considered a defect.
- As with any type of concrete, the mix can vary in colour from batch to batch. If a consistent, blemish-free surface is required, then a vapour-permeable masonry paint or concrete stain should be considered. We strongly recommend that designers and their clients visit the Wilco factory and view typical Litecrete panel surfaces prior to the start of manufacture.
- Any transit or site damage (chips) to panels can be repaired but the remedial material, being of a different composition, usually apparent, particularly if a clear sealer is being used.
- There is the propensity for hairline cracking to occur from the corners of any openings in ALL precast concrete as the panels are subjected to stress during craneage in the plant, transportation to or during installation on site. Even when temporary steel bracing is installed across large panel openings prior to leaving the factory, surface cracks from corners of openings may occur despite all precautions being taken to prevent them. While these cracks do not affect the structural integrity - typically not more than 1 mm deep - they are often a concern to the client and remedial work will in most cases be visible.



Typical surfacing figuring on a natural finish Litecrete panel

1.3 Exterior Maintenance

External coating systems must be maintained in accordance with the respective manufacturer’s instructions and all damage repaired promptly to ensure the ongoing weathertight properties of the coating system and thermal performance of the Litecrete wall. In addition to these system-specific requirements, the following general maintenance procedures must also be implemented:

- Any dirt accumulation or organic growth that may occur should be regularly removed from the external surface by cleaning with warm water and detergent and a soft bristled broom. Solvent-based cleaners must not be used.
- The external cladding system should be checked yearly for damage to the system itself, deterioration of seals and possible water entry at junctions and joints.
- Any damage to the coatings which does occur must be repaired in accordance with the manufacturer’s instructions.
- Where exterior plaster finish systems are used, it may be necessary to recoat the top paint coating, after 8-15 years, in accordance with the manufacturer’s instructions, to restore the visual appearance.



1.4 Internal Surface finishing

Some designers specify Litecrete panels in their natural (raw) state as the finished interior wall surface, to achieve an “industrial” or “honest” ambiance. Be aware that the interior face of the panel has a rougher, trowelled finish (U3) as opposed to the exterior face, which is off a smooth steel mould. Because Litecrete is manufactured from natural materials no one panel is exactly the same colour and variations must be accepted from one batch of concrete to another. We recommend that the trowelled interior panel surface has a 1-2 mm thick cementitious skim coat (eg Mapei *Planitop 200*) applied, which can then be finished with paint or plaster systems. If the panels are to be plastered, control joints should be installed over each vertical panel joint so that they can cope with any seismic or structural movements without fracturing the plaster (see *detail D18*). We strongly recommend that designers and their clients visit the Wilco factory and view typical Litecrete panel surface finishes prior to the start of panel manufacture. If the Litecrete panels are to be left exposed on the internal face a clear matt finish sealer (Aquron 1000) should be applied to prevent dusting of the surface and stop grime build-up, particularly around light switches, etc.

1.5 Weld Plates

Often weld plates will be specified by the engineer to connect panels at corners or to attach suspended panels, such as garage door lintels, between walls. They are installed on the internal face of the panels and in most cases are hidden by ceilings etc. However, sometimes for structural design or aesthetic reasons they will be visible. If requested, the weld plates can be rebated 20mm deep into the surface of

the Litecrete panel so that they can be plastered over after being welded together.

See *detail D21 Typical Cast-in Weld Plates – Flush and Recessed*. Where the plates are to be exposed as a feature, they can be treated with a proprietary rust inhibitor such as Brunox, which immediately turns the rust black, ready to be sprayed with a can of satin finish metal lacquer (EG: Rustoleum). The left-hand side of the photo shows where the application of Brunox has blackened the rust. This occurs in a variegated pattern, depending on the depth of the rust, providing what some architects have described as “a very acceptable patina effect”.



1.6 Internal Lining

Plasterboard.

Plasterboard can be either glue-fixed direct to Litecrete panels, or attached to timber battens fixed to the walls. Use Sikacil C or Selleys Liquid Nails (or similar) adhesive in beads at 250mm centres. Lining materials can be screw fixed into 40 x 20 mm vertical timber battens attached to Litecrete panels at 600 mm centres. The battens provide a cavity for the installation of through services. Coarse thread screws 32mm x 6mm are required at max 300mm centres around the sheet edges and at max 450mm centres horizontally and vertically within the body of the sheet, or as recommended by the manufacturer. The sheet/edge distance is usually a minimum of 12mm.

Insulating board

Aerated phenolic resin-based insulating board (*Kingspan*), with a plasterboard panel already attached, can be glue-fixed directly to the Litecrete walls. After joints are stopped the surface is painted or decorated to suit. Note that placing insulation on the inside of a concrete wall negates the benefits of thermal mass.

Adhesives

Adhesives used for the fixing of internal linings must be suitable for use on lightweight concrete surfaces. Suitable products are: *Sikacil C*, Fullers *Maxbond*, Gib® *Allbond*, Holdfast *Gorilla Glue* and Selleys *Liquid Nails*.

Ceramic tiles

Litecrete provides an excellent surface for the direct fix of ceramic tiles for wet areas, etc.

1.7 Attaching Fittings/Cabinets to Walls

When attaching such items as mirrors, towel rails, picture supports, shelves or light fittings to any Litecrete wall, mechanical fasteners should be used. Do not use nails. We suggest fasteners such as Mungo brand (or similar) MN10 x 50 mm long metric screw, from Powers Fasteners Ltd. For mounting timber framing, or heavier objects such as kitchen cabinets, use Wurth timber anchor screw AW40 with 21 mm head. These fixings should be installed strictly in accordance with their respective manufacturers' recommendations. Wurth anchor screws shown at right are 90/100 mm long (www.wurth.co.nz). Alternatively, rawl plugs or timber plugs can be installed after drilling into the panel.





1.8 Surface Textures

Surface textures can be incorporated into the panel during the manufacturing process which can add character to the external or internal panel surfaces.

1.8.1 Rebates

The simple vertical rebates shown in this photo at right, set at random distances apart, are very cost-effective and can help to break up the solid wall surface. In this case the rebates mimic the typical panel joint and give the appearance of one solid wall rather than three panels.



1.8.2 Band-sawn timber

Band-sawn timber textures are currently in vogue. The photo at right shows a close-up of band-sawn timber finish. This was developed from 150 mm wide American Ash band-sawn timber planks from which urethane rubber moulds 8 metres x 4 metres were produced and are available in both a vertical and horizontal orientation. Note that surface



textures can be applied to one side of the panel only, not to both sides. The photo below shows rough-sawn timber (pine) finish on beach house panels at Awhitu.