

SupercreteTM

Sustainable Cost Effective Construction & Coating Systems



Properties & Handling Design & Installation Guide



SupercoatTM

100% NZ
Owned & Operated

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1. Properties & Handling

1.1 Physical Properties

Dry Density	≤525 kg/m ³
Density (30% moisture @ 525kg/m ³)	682.5 kg/m ³
Dry Shrinkage	-0.66 mm/m
Expansion Coefficient	7 × 10 ⁻⁶ /°C
Water Absorption	
Totally Submerged	36 % volume
Partly Submerged	30 % volume
Characteristic Compressive Strength	4.0 MPa
Minimum Compressive Strength	2.8 MPa
Modulus of Elasticity	1800 N/mm ²
Thermal Conductivity	0.13 W/m ² . °K

1.2 Product Weight

Thickness (mm)	Weight (30% moisture) Kg/m ²
50	35
75	52
100	70
120	84
150	104
200	140
250	174
300	210

Supercrete™ AAC normally arrives on site with 30% moisture by weight. However, during their life the products will dry out and the normal in-service moisture content is expected to be around 10%.

1.3 Frost Resistance

The cellular nature of Supercrete™ AAC, incorporating millions of pockets of trapped air, gives the product remarkable protection against frost. Tests have shown that Supercrete™ AAC products have greater resistance to frost compared with traditional masonry products such as clay bricks. As a matter of principle however, building materials should be protected against excessive wetting in severe winter climates. Typical values for frozen AAC would be a 1.0% loss in general quality & a Compressive Strength of 3.6 MPa.

1.4 Workability

Supercrete™ AAC can be sawn, drilled, nailed and routed using normal wood working tools. This greatly increases onsite productivity as applicable services can be routed in after the structure has been erected.

Note, the recommendations of the NZ Building Code should be followed with regards to routing/chasing and installation of services.

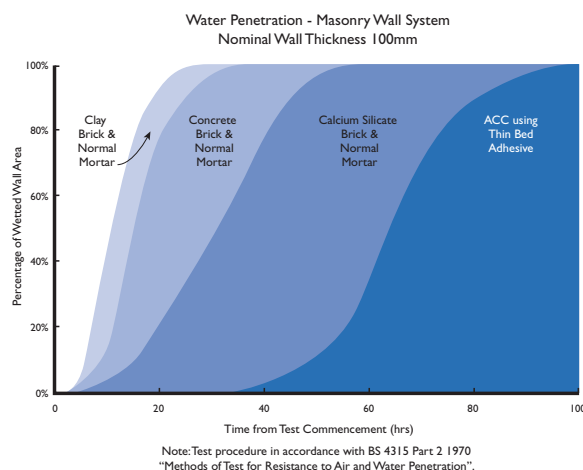
The fact that Supercrete™ AAC can be easily cut means curves and mitres can be used to add to the creativity which the designer can express on any project.

1.5 Moisture Resistance

Supercrete™ AAC is superior to normal concrete in water permeability because of its cellular structure and discontinuous microstructure.

Tests demonstrate the superior moisture resistance of walls constructed out of AAC compared with traditional masonry products. The test results are shown in Chart 1.1 below

Note, the results of the testing clearly indicate that the Supercrete™ AAC products (such as block walls) are not waterproof, but do exhibit a slower water penetration to the other masonry types assessed.



During the tests the following was observed. At 48 hours after commencement of the test, all other masonry products had a fully wetted unexposed surface, while the unexposed surface of the AAC wall (uncoated) was only 10% wetted.

A wall coated with 3mm of Render showed no sign of moisture penetration on the unexposed surface, to the end of the test at 7 days (168 hrs).

For external walls, Superbuild International Ltd recommends a Supercoat coating system consisting of: render; a water-resistant, vapour permeable texture coating and two finishing coats of paint

An important feature of the coating system is vapour permeability (breathability). This is required to allow vapour to move in and out of the AAC product.

Coatings using an acrylic binder allow the surface to breathe (vapour permeable), while at the same time providing a water repellent coating. Further details of the Supercoat Coating Systems can be found on their website www.supercoat.co.nz.

1.6 Drying Shrinkage

Expected moisture content varies between 30% (by weight) ex-factory and an installed equilibrium value of approximately 5% to 10%. For this range, the value of drying shrinkage is in the order of -0.66 mm/m.

Depending on site conditions this decrease can take up to 1 year to occur.

A comparison of the movement of common masonry systems is given in the Table 1.1 for comparison. Sign indicates growth (+) or shrinkage (-). For further information contact Supercrete NZ Ltd.

Table 1. Long Term Permanent Dimensional Change

Masonry System	Movement (mm/m)
Clay Bricks	Up to +1.8
Concrete Blocks	Up to -0.8
Concrete	Up to -0.7
Lime Silicate Bricks	Up to -0.4

1.7 Other Properties

Thermal Expansion

The thermal expansion co-efficient of Supercrete™ AAC is $7 \times 10^{-6}/^{\circ}\text{C}$ which is lower than that of normal concrete. Movement over a 24 hour period is negligible due to the insulation properties of the AAC

Air Permeability

The air conductance coefficient of Supercrete™ AAC is $18 \times 10^{-6} \text{ m}^3/\text{m.h.Pa}$.

Melting Point

Supercrete™ AAC, like most cementitious materials, melts at approximately 1600°C .

Chemical Properties

Supercrete™ AAC is alkaline (pH9.0-10.5) and will not corrode other building materials. Like other cement-based products, Supercrete™ AAC should be protected against high concentrations of carbon dioxide, sulphates, chlorides and strong acids.

Toxicity

Supercrete™ AAC does not contain any toxic substances and emits no odour.

Vermin Resistance

While Supercrete™ AAC will not harbour or encourage vermin, Superbuild International Ltd recommends detailing, in accordance with the NZ Building Code or relevant standards, to discourage and prevent the ingress of vermin.

Hardeness

Supercrete™ AAC has been tested and was assessed as being no less hard than plaster.

2.0 Panel Handling & Installation

2.1 Introduction

This guide is to compliment all other Supercrete™ Technical Literature, safe work method statements and design documentation related to the installation of Supercrete™ panels. In this document, Supercrete NZ Ltd has endeavoured to outline all handling issues to be addressed during the panel installation. However, there is no replacement for common sense.

For further information on walls constructed using Supercrete™ panel refer to the following publications; Supercrete™ Panel Cladding Systems Design Guide, Supercrete™ Commercial Industrial Wall Systems Design Guide, Supercrete™ Structural Floor Panel Design Guide, Supercrete™ Acoustic Wall Systems Design Guide and Supercrete™ Soundfloor Design Guide.

2.2 Delivery to Site

Handling and storage of all materials supplied by the Supercrete™ Distributor before delivery to the construction site is the responsibility of the Supercrete™

Distributor. Handling and storage of materials supplied by the Supercrete™ Distributor once delivered to site, is under the control of the Supercrete™ Panel Installer.

When Supercrete™ panels are delivered to site it is recommended that the panels be taken from the truck direct to the appropriate work area. This will reduce the amount of double handling and product damage.

2.3 Storing Panels on site

Supercrete™ Panels may be stored outside although it is recommended they remain in the packaging until they are required for use. Dry storage should be provided for all other components. Ensure panels sit off the ground on pallets or packing to prevent damage from rough terrain. In coastal locations, battens and metal cavity flashings that have been exposed on site for prolonged periods to windborne marine salts should be rinsed with fresh water and dried prior to panel installation.



Panels stored on site

2.4 Laying Out Panels

The panels should be positioned around the work area at the locations where the panels are to be installed. This will minimise the degree of double handling required by the installers, and reduce clutter in the work area.

It is recommended that at the start of the project, time is taken to discuss palletising & stowage with the Supercrete™ Distributor. This time spent preparing the palletising schedule will pay dividends in time saved due to searching for the correct panel.

2.4 Panel Layout Drawings

When layout drawings are provided, then the panels shall be installed as detailed on the drawings. The Project Engineer shall be consulted for prior approval of any variations. Panels should not be cut unless indicated on the Layout Drawings. For panel cladding of residential buildings typically no layout drawings are provided and the installer is to work out the most economical layout as the panel is installed. Cladding panel is able to be cut as required on site without prior approval.

2.5 Site Preparation

The work area should be kept clear of waste and unnecessary equipment, and panels arranged to allow easy, unobstructed access to the work area (eliminate possible tripping). Sufficient room should be provided to allow a panel trolley or other approved mechanical lifting device to be operated freely.

All preparation and accessories, such as brackets, fixings, mortars, adhesives, packers, surface treatments (waterproof membranes etc.) should be accessible, installed or completed prior to lifting the panel.

2.6 Lifting

IMPORTANT: Ensure every member of the installation team is aware of their role and that there is a nominated team leader.

Whenever possible, Supercrete™ panels are to be lifted and transported to the workface using the panel trolley or other approved lifting device. Refer to the panel trolley handling procedures, over page.

When panel lifters are to be used to lift and move the panel, Supercrete NZ Ltd recommends lifting the panel with your legs, keeping your back straight, and stabilising the panel with your shoulder and/or free hand. It is not recommended that the panel be held clear of the lifter's body, causing undue stress to the persons lifting the panel.

During installation, persons not involved in the lifting and fixing process should remain clear of the work area, and make installers aware of your presence before approaching.

2.7 Bracing

At **ALL** times, the panel should be supported, by a person other than the person installing the fixings.

NEVER release a panel until **ALL** fixings are installed and the panel is secure.

2.8 Fixings

Ensure fixings are installed in accordance with Supercrete™ installation specifications or other manufacturer's specifications.

2.9 Personal Protective Equipment (PPE)

Ensure all recommended safety equipment, such as dust masks, goggles, hearing protection, gloves, clothing, and shoes are worn. Refer to Supercrete™ or Supercoat™ Material Safety Data Sheets for further guidance.

NOTE: This information can be downloaded from the Supercrete™ or Supercoat™ websites www.superbuild.co.nz or www.supercoat.co.nz

Supercrete™ Panel Cladding Systems Handling Procedure



Lifting Panel off pallet onto trolley

IMPORTANT: Do not carry panel on its flat. It is not strong enough to be handled in this way. The exception is 75mm Soundfloor that is designed to be laid flat.



Carrying Panel from trolley to wall



Cutting Panel



Tilting Panel to the Vertical Position



Positioning Panel onto Wall

Personal Protection Equipment



Dust Mask



Eye Protection



Ear Protection

Hand Tools

Below are some of the hand tools that will be required for working with Supercrete™ AAC. These can be obtained through trade outlets.



Mixing Tub



Power Saw with Concrete Cutting Blade



Mixer for Power Drill



Large Hand Sander



Scoop Trowel



Hand Saw

Technical Support

Superbuild International Ltd and its network of Distributors offers technical assistance across New Zealand. Visit www.superbuild.co.nz for your local Distributor who will offer free estimating services; technical support to project architects, engineers, builders and owners.

Health & Safety

Information on any known health risks of our products and how to handle them safely is shown on their package and/or the documentation accompanying them.

Additional information is listed in the Material Safety Data sheet. To obtain a copy, telephone 0800 GO 4 SUPER or visit www.superbuild.co.nz

Guarantee

Supercrete™ Autoclaved Aerated Concrete products and Supercoat™ Coating System products are guaranteed to be free of defect in material and manufacture.

Installation workmanship and coating application work is guaranteed by the personnel who perform this work.

Substitution of this claddings' listed components is not permissible and if alternative brands, materials or elements are used, this will void all guarantees.

This guarantee excludes all other guarantees and liability for consequential damage or losses in connection with defective cladding, other than those imposed by legislation.

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Authorised Distributor



Superbuild International Limited
67 Reid Rd, P.O. Box 2398
Dunedin, New Zealand.
Phone: +64 3 455 1502
Fax: +64 3 456 3587
0800 GO 4 SUPER
www.superbuild.co.nz

**For your nearest distributor of Supercrete™ Products
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