Exsulite®
Thermal Facade System by Dulux Acra-Tex

EXSULITE® FACADE SYSTEMS
SPECIFICATION & INSTALLATION MANUAL

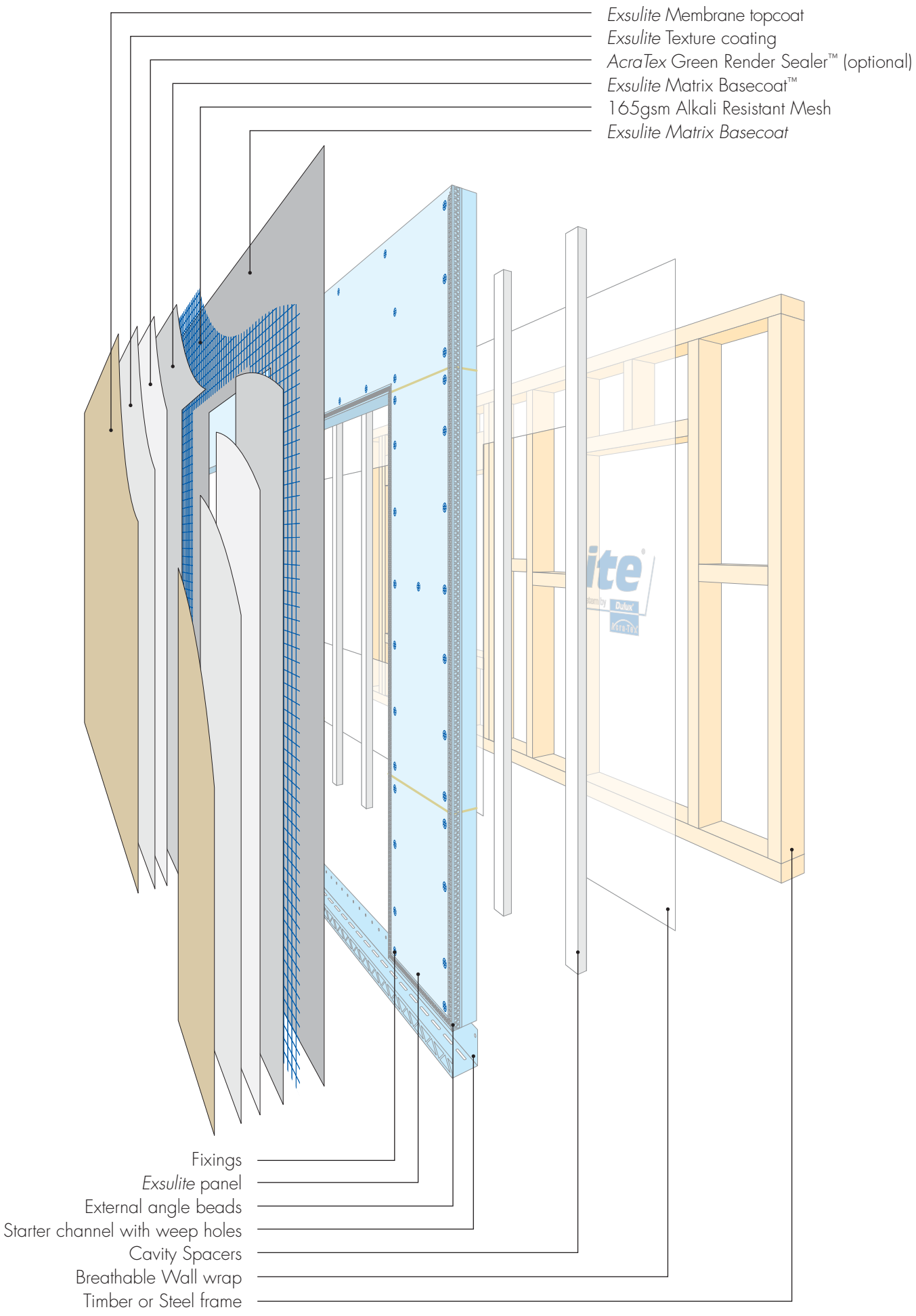
AUSTRALIA · 01 OCTOBER 2014
VERSION 1

EXSULITE®
SPECIFICATION & INSTALLATION MANUAL

THE SOLUTION TO LIGHTWEIGHT WALL CLADDING SYSTEMS.

This manual is provided as a source of information and is only intended for guidance. It cannot fulfil the functions of a professional, engineering or design consultancy. Professional advice should be sought to determine the suitability of this product for the intended end use. The use of sound building practices should always be applied and this manual may not contain all the necessary relevant information. Please seek professional advice on all aspects of design, engineering and installation.

This manual is to be treated as one document, do not separate and distribute individual pages. Please visit **exsulite.com.au** for the most current Specification and Installation Manual and Construction Drawings.


Exsulite Membrane topcoat
Exsulite Texture coating
AcraTex Green Render Sealer™ (optional)
Exsulite Matrix Basecoat™
165gsm Alkali Resistant Mesh
Exsulite Matrix Basecoat
Fixings
Exsulite panel
External angle beads
Starter channel with weep holes
Cavity Spacers
Breathable Wall wrap
Timber or Steel frame

Section 1- *Exsulite* Facade System Specification

Light weight wall cladding solutions for specifiers, surveyors & builders

This Specification & Installation Manual is designed to provide fixing guidelines to both timber and steel frame construction as a total integrated light weight, self draining, cavity walling system. This Technical Specification & Installation Manual is intended for use by *Dulux AcraTex Exsulite* Trained & Registered Installers, builders, specifiers and designers who are involved with the specification & installation of the *Exsulite* Facade System. Providing more design flexibility options and faster build process than conventional masonry construction.

1.1.0 Overview

Dulux AcraTex - is a pioneer in the use of External Insulation Facade Systems (EIFS), designing and installing coating systems specifically for wall applications. EIFS walling systems have been used in Europe for over 50 years. In recent years the use of Lightweight Cladding Systems, as alternate solutions in the building and constructions industry has grown rapidly but proper system design and installation has not been considered.

The Building Code of Australia (BCA) (or National Construction Code (NCC)) requires appropriate design and installation controls to qualify any alternate solution and ultimate success requires a total system approach integrating design, componentry, installation and performance requirements.

The *Exsulite* Facade System by *Dulux AcraTex* protects specifiers, surveyors, builders and their clients from the risks of mixed componentry being used with uncontrolled installation. *Exsulite* Facade System by *Dulux AcraTex* offers a single supply source for the Total Light Weight Facade System – from wall wrap to the weatherproofing coating.

The *Exsulite* Facade System is a light weight exterior walling system that provides both weatherproofing & insulation of the building envelope and helps to eliminate thermal bridging that can occur through the wall frame.

The *Exsulite* Facade System is designed as a total integrated non-load bearing lightweight facade system to deliver a weatherproof external building envelope with a self draining cavity for moisture management whilst providing high thermal performance (R value).

The Exsulite Facade System is CodeMark™ certified as a total integrated facade system for use as either a cavity or non-cavity system known as:

A) Exsulite Thermal Facade Cavity System -

B) Exsulite Composite Thermal Facade Cavity System -

C) Exsulite Thermal Facade Non-Cavity System -

D) Exsulite Composite Thermal Facade Non-Cavity System -

The *Exsulite* Facade System comprises of an *Exsulite* breathable wall wrap, flashing tape to all openings & penetrations, *Exsulite* EPS Panel or *Exsulite* Pre-Coated Composite Panel, *Exsulite* starter piece / cavity closer with weep holes, *Exsulite* fixing components, EPS "H" Grade wall cavity spacers where a cavity system is selected, *Exsulite* Matrix Basecoat™ with alkali resistant mesh, *Exsulite* Texture and *Exsulite* Membrane weatherproof protective coating or an approved *Dulux AcraTex* texture and *AcraTex* membrane topcoat system designed & supplied by *Dulux AcraTex* and installed by a *Dulux AcraTex Exsulite* Trained & Registered Installer.

1.1.1 If you are a Specifier:

Dulux AcraTex ensures the *Exsulite* Facade System is fit for its specified purpose provided it is installed in strict accordance with the specification & installation manual and the agreed specification by a *Dulux AcraTex Exsulite* Trained & Registered Installer.

1.1.2 If you are a *Dulux AcraTex Exsulite* Trained & Registered Installer:

Ensure you follow the design & installation guidelines provided in conjunction with the *Exsulite* Construction Drawing details. *Exsulite* system components can only be supplied by *Dulux AcraTex* or other *Dulux AcraTex* approved suppliers.

1.1.3 If you are a Builder:

To ensure your build meets the design specification make sure all work is completed by a *Dulux AcraTex Exsulite* Trained & Registered Installer. An *Exsulite* "Certificate of Completion" & Project Warranty will only be issued when the installation is completed by a *Dulux AcraTex Exsulite* Trained & Registered Installer.

1.1.4 Design & Installation:

Any alternative *Exsulite* Facade System project specific specification outside the standard system must be pre-sanctioned by *Dulux AcraTex*. The alternative *Exsulite* Facade System project specific specification must be secured prior to job commencement. Where an *Exsulite* Facade System project specific specification outside the standard approved system is used performance and/or appearance of the system may be compromised. As a consequence, any warranties or guarantees, whether express or implied may also be compromised.

Dulux AcraTex does not approve nor endorse the use of any non-standard or non-approved *Dulux AcraTex Exsulite* Facade System components. *Dulux AcraTex* will not be responsible for the performance of a system with non-standard or non-approved components. The use of any non-standard or non-approved components will compromise the system and no product warranty will be issued for the system.

1.2.0 Uses

Exsulite Facade System by *Dulux AcraTex* provides a weatherproof cladding and insulation system for various Residential and Multi-Residential applications. It can also be installed to masonry & concrete substrates in accordance with a *Dulux AcraTex* project specific design fixing specification.

The *Exsulite* Facade System is used as a light weight integrated facade system as an alternative to masonry systems in the Multi-Residential and Residential Sector.

Residential External Walls to **NCC Volume Two, Class 1 and 10 buildings** with wind loads to either AS/NZS 1170.2 or AS 4055 "Wind loads for housing" for Wind Classifications N2,N3,N4,N5, within the AS4055 limitations less than 8.5m in height less than 16m in width and where the length does not exceed five times the width and roof pitch does not exceed 35 degrees, fixed to either steel or timber frames.

Integration of System Design, Components and Installation is delivered by a *Dulux AcraTex Exsulite* Trained & Registered Installer to ensure the build meets the design specification. System installation and job quality control documentation is project managed by a *Dulux AcraTex Exsulite* Trained & Registered Installer to ensure all jobs are installed in accordance with *Exsulite* Facade System specifications. The *CodeMark* Certificate of Conformity can be provided upon request.

1.3.0 Design Considerations

Compliance:

All design and construction must comply with the appropriate requirements of the current Building Code of Australia (BCA) regulations. The BCA is comprised of two volumes. The volumes divide the types of building into two groups being **Volume 1: Class 2 to Class 9 Buildings and Volume 2: Class 1 & Class 10 Buildings – Housing Provisions.** All the regulations for construction of buildings are contained in these volumes.

The *Exsulite* Facade System is *CodeMark* certified as a total integrated facade system in compliance with the Building Code of Australia's performance criteria for:

1. Structural Performance, Wind Resistance
2. Thermal Performance
3. Damp and Weatherproofing

CodeMark certification provides building certifiers with the confidence that the system performs against these criteria and together with an "*Exsulite* Certificate of Installation" from an *Dulux AcraTex Exsulite* Trained & Registered Installer confirms that the build meets the design specification at job completion.

System design should consider factors such as:

- Purpose of structure for Residential or Multi-Residential
- Location – coastal or inland
- Identify BCA performance requirements and any additional project specific needs
- Wind design actions subject to local wind pressures
- Self draining cavity to allow drainage of any moisture ingress or condensation
- Wall wrap – vapour permeable for condensation control & weatherproofing
- Thermal (R-Value) – energy efficiency
- Bush Fire Attack Levels (BAL)
- Acoustics (Rw Ctr values)
- Frame type, layout, design, stud spacing (steel or timber)
- Minimum panel thickness based on wind design pressure
- Colour selection – Light Reflective Value (LRV>35)
- Additional wall insulation to improve energy efficiency
- Control joint installation

Benefits of Installing a Drainage Cavity System:

The Drainage Cavity separates the *Exsulite* EPS Panel or *Exsulite* Composite Panel from the frame, creating a second layer of defence that allows air flow to dry out any condensation, moisture / water ingress that may form in the wall or behind the *Exsulite* EPS Panel or *Exsulite* Composite Panel as a second line of defence. The cavity is created by installing a vertical cavity spacer / batten to each wall stud. This allows any moisture / water ingress to drain down the back of the panel and out through the bottom of the wall via weep holes that are located within the cavity closer. Any remaining condensation or moisture within the cavity can then dry through ventilation provided along the bottom of the cavity and the *Exsulite* vapour permeable wall wrap.

A Drainage Cavity System will allow for moisture management as follows:

A) Deflection: This first line of defence against moisture / water ingress. A well designed and constructed Drainage Cavity system will deflect any potential water ingress or condensation away from the vapour permeable wall wrap and frame.

B) Drainage: A Drainage Cavity provides a second line of defence against condensation and or moisture / water ingress, allowing any build up behind the facade system to drain to the bottom of the wall section and out via the weep holes located in the cavity closer at the base of the wall.

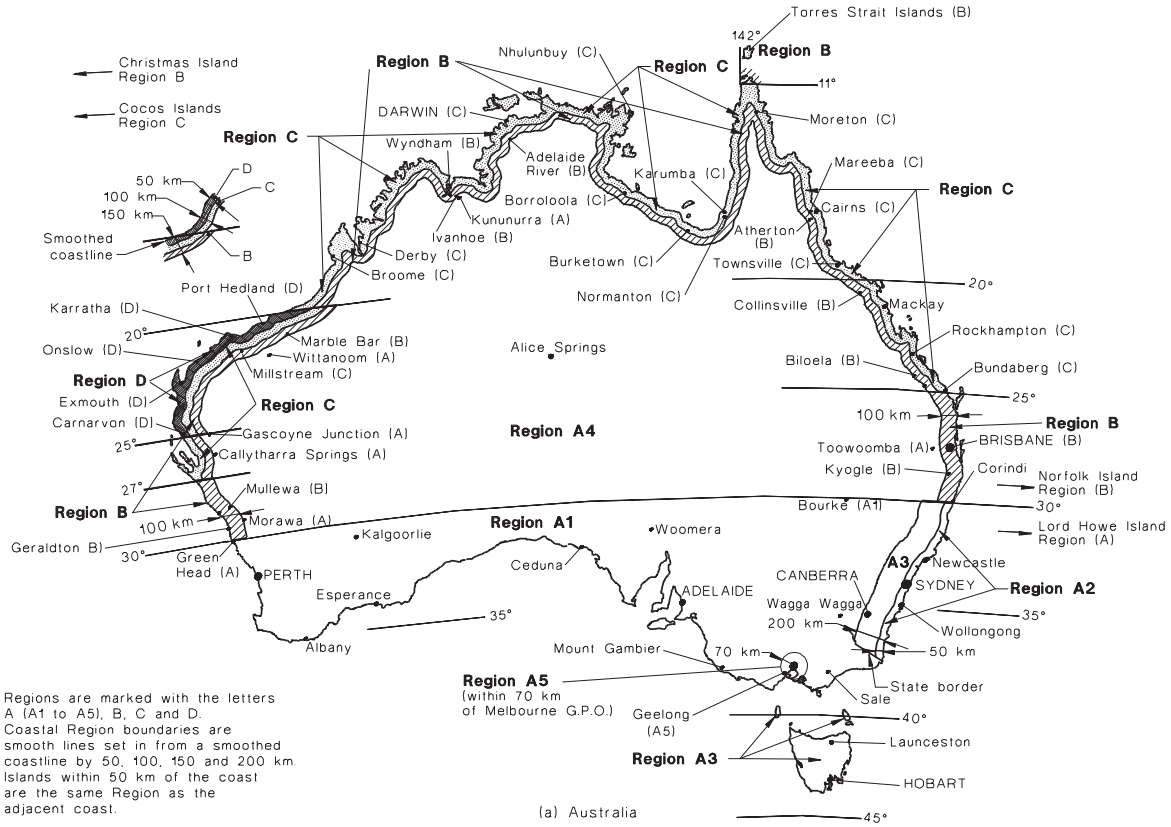
C) Drying: A Drainage Cavity allows air flow through the bottom of the cavity so any remaining moisture or condensation can be absorbed by the vapour permeable wall wrap and allowed to dry out.

This drainage cavity is not ventilated to the outside air to an extent that would compromise the thermal performance of the systems.

1.3.1 Design Ultimate Wind Pressures:

A qualified engineer is to be involved to determine wind pressures based on a buildings geographic location in accordance with the Australian Standard AS4055 for residential housing or wind pressures determined from AS/NZS1170.2. Refer to the wind load tables on page 10 for recommended fixing requirements.

Design ultimate wind pressures must account for such factors as site wind speed, direction, terrain, height, shielding and topography. These project specific considerations should be conducted and approved by a qualified engineer at design stage prior to job commencement to ensure that the final system design is fit for purpose specific to the project and is designed to Australian Standards AS4055 or AS/NZS1170.2 for wind loading requirements. The wind load will determine the system specifications.



NCC Volume Two Class 1&10: Residential Housing Construction

AS4055 has a more simplified method of determining wind loads for domestic housing and assists in determining the minimum panel thickness and fixings requirements. Design ultimate wind pressures, calculated in accordance with AS 4055 "Wind loads for housing" wind classifications N2, N3, N4, N5 for wall framing of up to a 600mm maximum stud spacing.

AS4055 limitations require buildings designed to this standard to be; less than 8.5m in height; less than 16m in width; where the length does not exceed five times the width; the roof pitch does not exceed 35 degrees. *Exsulite* Facade System shall be fixed to either steel or timber frames. Class 1 and 10 buildings that fall outside this scope require wind pressures to be calculated from AS1170.2 including regions of high pressures at corners.

General vertical fixing spacing is 275mm (5 fixings at 275mm spacings and 50mm edge distance top & bottom) for a 1200mm wide panel for most common applications in low wind suburban locations.

Table One – For Wind Classification to AS4055 Minimum Panel Thickness and Fixings Wall Areas (Over 1200mm Away From Corners)							
Wind Classification (AS4055)	Stud Centres 450mm				Stud Centres 600mm		
	Min Panel Thickness	Fixings per stud	Fixing Spacings		Min Panel Thickness	Fixings per stud	Fixing Spacings
N2	40mm	5	275mm		60mm	5	275mm
N3	60mm	5	275mm		60mm	5	275mm
N4	60mm	5	275mm		75mm	5	275mm
N5	75mm	5	275mm		100mm	5	220mm

Table Two – For Wind Classification to AS4055 Minimum Panel Thickness and Fixings Walls Located Within 1200mm from Corners							
Wind Classification (AS4055)	Stud Centres 450mm				Stud Centres 600mm		
	Min Panel Thickness	Fixings per stud	Fixing Spacings		Min Panel Thickness	Fixings per stud	Fixing Spacings
N2	40mm	5	275mm		60mm	5	275mm
N3	60mm	5	275mm		75mm	6	220mm
N4	60mm	7	180mm		100mm	8	150mm
N5	75mm	8	150mm		100mm	11	110mm

Table Three – AS1170.2 – Wind Pressure Criteria Design For Buildings That Fall Outside AS4055 Maximum fixing spacings to satisfy design ultimate wind pressures (kPa)							
Design Ultimate Wind Pressure AS1170.2	Stud Centres 450mm				Stud Centres 600mm		
	Min Panel Thickness	Min Fixings per stud	Fixing Spacings		Min Panel Thickness	Min Fixings per stud	Fixing Spacings
1.0	40mm	5	275mm		60mm	5	275mm
1.5	40mm	5	275mm		60mm	5	275mm
2.0	60mm	5	275mm		60mm	6	220mm
2.5	60mm	6	220mm		75mm	8	150mm
3.0	60mm	7	180mm		75mm	9	130mm
3.5	60mm	8	150mm		100mm	10	120mm
4.0	75mm	9	130mm		100mm	11	110mm
4.5	75mm	10	120mm		-	-	-
5.0	75mm	11	110mm		-	-	-
5.5	75mm	11	110mm		-	-	-

Assumption is based on a panel size of 2500mm x 1200mm panel size. It is acceptable to use a panel thickness equal to or greater than the minimum requirement to satisfy the wind classification and meet thermal requirements. Increased peak pressures occur near the edges of side walls and corners on buildings. Using AS4055, the size of the building has been assumed and hence the size of these high pressure zones is specified as within 1200mm from wall corners.

NOTE: The fixings per stud indicate the number of fixings required at each stud along each sheet.

1.3.2 Framing & Substructure:

Timber framing must comply with:

AS 1684- National Timber Framing Code.

NOTE: The timber used in the project must be of sufficient standard in terms of durability to meet the local conditions to which the timber will be exposed, such as moisture or insect attack. The force applied to the panels by the wind loading is transferred into the stud frame. The frame must meet the requirements of the relevant Australian Standard. All bracing and hold down requirements should be met by the frame design. The allowance of shrinkage in timber framing in BCA 2006 Vol 2 Section 3.3.1.10 by providing gaps between frame and masonry should be adopted as a minimum.

1.3.3 Metal framing must comply with:

AS 3623- Domestic Metal Framing - A cold-formed steel frame constructed in accordance with NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria.

NOTE: Structural bracing is to be part of the integral wall frame. *Exsulite* Facade System doesn't contribute to the structural integrity of the frame.

1.3.4 Slab & Footings:

Slab and footings on which the building is situated must be designed and certified by a qualified structural engineer. This should comply in accordance with AS2870 "Residential Slabs & Footings" and / or AS 3600 Concrete Structures, as appropriate.

1.3.5 Ground Clearance & Pest Control:

Install *Exsulite* Facade System with a minimum 75mm clearance *(refer to* **Exsulite** *construction drawings for details)* or in accordance with local building codes. Adjacent finished grade must slope away from the building in accordance with local building codes, typically a minimum slope of 50mm over the first metre. Do not install external cladding in areas where it may remain in contact with standing water or debris. Do not back fill.

All BCA and local council requirements must be complied with by the builder of the project to ensure adequate protection against pest attack such as termites. The requirements vary across different states in Australia. Refer to the BCA code and AS 3660.1:2000.

1.3.6 Coastal Areas:

In coastal areas located within 1km of the shoreline or large exposure to salt air, a protective weatherproof membrane topcoat must be used in all cases. Recommendation is that the facade should be regularly inspected for contamination & pollutants and washed down accordingly.

1.3.7 Colour Selection:

Avoid the use of dark colours - these will raise the surface temperature and can damage the cladding system. Use only colours with a LRV greater than 35 or consult *Dulux AcraTex* on the potential to use InfraCOOL® Heat Reflective Coatings that can assist in keeping the surface cooler depending on your colour choice. Consult your *Dulux AcraTex* Representative for project specific requirements.

1.3.8 Control Joints:

During the life of a building, the building and materials that it is constructed from will move. This movement is due to many factors such as structure movement, thermal expansion & contraction and differential movement between materials. This movement, unless relieved or accommodated for will impart stress on the building and construction materials and lead to cracking. To accommodate for building movement, to relieve stresses and reduce the risk of cracking, movement joints must be installed.

Articulation Joints (A.J.) make the walls more flexible by breaking it into a serious of small areas. Differential movement between the facade and adjacent structural elements need to be accommodated for via an (A.J.) joint.

Control Joints (C.J.) is an expansion joint to relieve thermal expansion or contraction between the *Exsulite* Facade System and other adjacent building substrate or structures. Good building practice provides for expansion joints at 3m (max) height & 6m (max) wide intervals and at all building weak points or where potential cracking may occur e.g. in line with openings (windows / doors), horizontally between floor levels and at all interfaces of different building construction materials and / or as defined by a responsible Building / Project Engineer. The placement and correct installation of control joints is the responsibility of the Building Engineer / Builder in determining the placement and number of control joints to accommodate any anticipated movement. Typical vertical control joints and horizontal joints filled with a suitable backing rod and approved flexible polyurethane sealant. The project engineer has responsibility for determining where control joins are to be located.

1.3.9 Fire Resistant Levels (FRL) & Bush Fire Attack Levels (BAL):

BCA Vol 2 (Part 3.7.1) details the requirements in residential buildings for fire resistance for external walls where the external wall is less than 0.9m from an allotment boundary or less than 1.8m from a building on the same allotment. In these circumstances a FRL is required from the outside of not less than 60/60/60.

The *Exsulite* Facade System has not been tested and is not suitable for use as a FRL rated compliant system for boundary walls and/or party walls as a standalone walling system. Where a FRL level / rating is required for such installation an independent appraisal and approval is needed by a qualified fire engineer.

Bushfire Attack Levels (BAL):

The *Exsulite* System has been tested for heat intensity and ember attack of bushfires in relation to AS 3959-2009 Construction of Buildings in Bushfire prone areas. *Exsulite* Facade System has passed AS 1530.8.1:2007 **and is approved for use in bushfire prone areas up to BAL 29.**

1.4.0 System Performance Criteria

The *Exsulite* Facade System is a fully integrated system designed & supplied by *Dulux AcraTex* and installed by a *Dulux AcraTex Exsulite* Trained & Registered Installer in accordance with this *Exsulite* Facade System Specification and Installation Manual, Construction Drawings and in conjunction individual product and application data sheets to all building code and Australian standard requirements.

The *Exsulite* Facade System is designed as a total integrated non-load bearing lightweight facade system to deliver a weatherproof external building envelope, with a self draining cavity for moisture management whilst providing excellent thermal performance (R value).

The *Exsulite* Facade System is *CodeMark* certified as a total integrated facade system for use as either a cavity or non-cavity systems known as:

A) *Exsulite* Thermal Facade Cavity System -

B) *Exsulite* Composite Thermal Facade Cavity System -

C) *Exsulite* Thermal Facade Non-Cavity System -

D) *Exsulite* Composite Thermal Facade Non-Cavity System -

Exsulite Facade System(s) comprise of *Exsulite* breathable wall wrap, flashing tape to all openings & penetrations, *Exsulite* EPS Panel or *Exsulite* Pre-Coated Composite Panel, *Exsulite* starter piece / cavity closer with weep holes, *Exsulite* fixing components, EPS "H" Grade wall cavity spacers where a cavity system is selected, *Exsulite Matrix Basecoat* with alkali resistant mesh, *Exsulite* Texture and *Exsulite* Membrane weatherproof protective coating or a *Dulux AcraTex* Texture and *AcraTex* Membrane top coat system, designed & supplied by *Dulux AcraTex* and installed by a *Dulux AcraTex Exsulite* Trained & Registered Installer.

Unless otherwise specified or approved, all *Exsulite* Facade System components & coating materials used must be *Dulux AcraTex / Exsulite* products as listed below. All system components & coating products are to be delivered to the job in unbroken containers bearing the brand name and name of the manufacturer and must be subject to the installers inspection & confirmation of correct materials received in good order.

1.4.1 *Exsulite* Facade System consists of:

- *Exsulite* Breathable-Vapour Permeable Wall Wrap
- Cavity Spacer: "H" Grade EPS Batten "where a cavity is to be installed"
- Damp proof course
- *Exsulite* EPS Panel or *Exsulite* Composite Panel
- *Exsulite* fixing disk & Class 3, 10 gauge bugle head screws (further than 1km of coastal areas)
- *Exsulite* Starter Channel with weep holes - placed at the base of the cavity, these function as a cavity closer to drain to the exterior at the bottom of the cavity
- Corner angles and expansion beads installed prior to render application
- Flashing Tape; aluminium bituminous self-adhesive flashing tape for weatherproofing around all window frames including sills, doors, openings, penetrations, intersections, connections, heads and jambs - all of which must be flashed prior to panel installation
- *Dulux AcraTex* Approved PU expanding foam adhesive
- *Exsulite* Matrix levelling coat with a minimum *Exsulite* 165gsm alkali resistant mesh
- *Exsulite* Acrylic Texture coating to selected colour with a LRV>35
- Selleys® Flexiseal Joint Sealant or as approved by *Dulux AcraTex*
- *Exsulite* Membrane or *Dulux AcraTex* AcraShield® Advance or AcraSkin™ weatherproof membrane top coat to selected colour with a LRV>35

1.4.2 Moisture Management - Cavity System:

The *Exsulite* Facade System helps moisture management through its self draining cavity spacer & non-reflective *Exsulite* breathable water barrier wall wrap. If condensation occurs, moisture can efficiently drain from the cavity through the specially designed starter channels with weep holes that also provide airflow throughout the entire cavity.

Panels are fixed to the vertical cavity spacer (EPS "H" Grade battens) and the cavity drains vertically to the bottom starter channel with weep holes. The cavity spacers (battens / top hats) separate the cladding material from the timber framing. It protects the frame from any moisture / water ingress and condensation by providing a gap allowing moisture to drain down the outside face of the wall wrap & cladding and out through the base of the cavity. Any remaining moisture within the cavity is able to dry due to the ventilation provided along the bottom of the cavity closer (starter channel with weep holes).

1.4.3 *Exsulite* Facade System Composition:

Exsulite EPS panel is manufactured to AS1366 Part 3 ~ 1992 and contains a flame retardant.

The *Exsulite* EPS Panel is produced from expanded polystyrene (EPS) which is a lightweight product displaying self insulative properties that can enhance the energy efficiency of a building. The *Exsulite* Thermal Panel can be used in Class 1 and 10 building applications and can be fixed to steel, timber and masonry.

Toxicity of *Exsulite* l EPS and Composite Panels:

Exsulite l EPS and Composite Panels do not attract ants, termites or rodents. However, it is not a barrier to them. Ants, termites and rodents may chew through EPS Foam to reach food or establish a comfortable home.

Expanded polystyrene products are combustible and should not be exposed to open flame or other ignition sources. Insulation material, as with other organic material, must be considered combustible and constitute a fire hazard if improperly used or installed.

Material	Ignitability Index (0-20)	Spread of Flame Index (0-10)	Heat Evolved Index (0-10)	Smoke Produced Index (0-10)
Expanded Polystyrene – EPS	12	0	3	5

(The above information is as per NPS technical data sheet – our supplier)

Sizes;

Exsulite EPS Panel – 2500mm x 1200mm

Exsulite Composite Panel – 2400mm x 1200mm

Standard Thickness: 60mm, 75mm, 100mm other thickness are available upon request

Physical Property	Unit	M Grade	H Grade	Test method used to measure compliance
Average Density	kg/cum	19	24	
Compressive strength at 10% deformation (min).	kPa	105	135	AS2498.3
Cross breaking strength (min).	kPa	200	260	AS2498.4

Exsulite Facade System Performance – R Value Performance

Smart rate assessment as a total walling system from plasterboard to coating.

***Exsulite* Thermal Facade Cavity System**				
Panel Thickness	Cavity Spacer	Wall Insulation	R Value With Insulation	R Value No Insulation
60mm	15mm	R2.0	3.945	2.105
75mm	25mm	R2.0	4.337	2.497
100mm	25mm	R2.0	4.990	3.130

***Exsulite* Thermal Facade Non Cavity System**			
Panel Thickness	Wall Insulation	R Value With Insulation	R Value No Insulation
75mm	R2.0	4.220	2.380
100mm	R2.0	4.890	3.050

The above calculations are in presented in accordance with the principles outlined in the Building Code of Australia (2012). *Exsulite* R-Values are calculated on M Grade EPS to Australian Standard 1366.3 with a conductivity value of 0.0383 $W/m^2.K$.

*Smart Rate Thermal Assessment report SLR Consulting can be provided upon request

1.4.4 Impact Resistance:

The *Exsulite* Thermal Facade System provides impact resistance to levels similar to that of other common non-masonry materials. Minor damage can be repaired by recoating with *Dulux AcraTex* coating system. Additional impact resistance can be achieved with the additional layers of *Exsulite* alkali resistant mesh and *Exsulite Matrix Basecoat*.

1.4.5 Water Vapour Resistance:

Exsulite EPS Panels have one of the highest resistance levels of all materials used for insulation. *Exsulite* EPS Panels have a low water vapour transmission rate, however it is not considered as an adequate vapour barrier. *Exsulite* Breathable Vapour barrier Wall Wrap must be installed in all cases irrespective of the buildings environment and location as part of the full *Exsulite* Facade System.

1.4.6 Weatherproofing & Water Resistance:

Exsulite Facade System – weatherproof finishing *Exsulite* Membrane, *AcraTex AcraShield and AcraSkin* top coats by *Dulux AcraTex* has been tested to AS4548.5-1999 Guide to Long Life Coatings for Concrete & Masonry. Testing shows water transmission results of $<1 g/m^2 / 24hr / kPa$ and a vapour transmission rate of $51.9 g/m^2 / 24hr$. (Refer to *Dulux AcraTex* product data sheets).

1.4.7 Penetrations:

Normal industry standards should be followed for the installation of services into the building. In order to avoid disrupting the layout, services should be installed through the frame. All penetrations through the *Exsulite* Facade System must allow for differential movement between the installed system and the services.

All penetrations are a potential source of water ingress and spread of fire and are required to be sealed with a *Dulux AcraTex* or head contractor approved flexible sealant. Back blocking should occur for items such as downpipe brackets, outside taps, light fittings and other building services to the appropriate locations and apply flashing tape before panel installation.

1.4.8 Waste Management:

Exsulite EPS Panel is a lightweight material that is easily dispersed in windy conditions. All waste and cut offs should be stored in plastic bags, secured and disposed of in accordance with local regulations. Good frame design will minimise the amount of waste generated during the construction process.

Section 2 – *Exsulite* Facade System Installation

2.1.0 *Dulux AcraTex Exsulite* Trained & Registered Installer

The Building Code Australia (BCA) requires appropriate design and installation controls to qualify any alternate solution and ultimate success requires a total system approach integrating Design, Componentry & Installation.

Using a *Dulux AcraTex Exsulite* Trained & Registered Installer not only provides peace of mind but also ensures that the final build meets the design specification. All *Dulux AcraTex Exsulite* Trained & Registered Installer accreditation can be verified by their *Exsulite* Identification Card and Registration Number. Project QA Process is a critical element of the *Exsulite* total system approach and the *Dulux AcraTex Exsulite* Trained & Registered Installer network ensures total facade system compliance - from start to finish.

2.1.1 Quality Control:

Dulux AcraTex Exsulite Trained & Registered Installers are required to participate in on-going refresher training from *Dulux AcraTex* to maintain their installer accreditation and only a *Dulux AcraTex Exsulite* Trained & Registered Installer can provide an "*Exsulite* Certificate of Installation" for job sign-off.

2.1.2 Handling and Storage:

Exsulite Facade System panels and fixing components should be stored elevated, under cover and laid flat. Edges and corners are to be protected at all times. *Dulux AcraTex* recommends that the specified *Dulux* finishing system be applied to the panels as soon as possible according to this specification. UV rays don't have an adverse effect on the performance of the EPS or Composite Panels during typical construction timeframes however, if installation is interrupted for any extended periods of time with the possibility of inclement weather, the surface of all panels should be covered in order to provide them with protection. If the panels are exposed to inclement weather they will need to dry prior to any coating being applied. Any panels exposed to an extended period of inclement weather should be replaced prior to installation.

2.1.3 Component Checking:

Damaged EPS or Composite Panels or panels that have been in contact with harsh solvents or acids should not be used. EPS or Composite Panels should be stored inside a building where possible. Where outside storage cannot be avoided, the panels should be stacked elevated from the ground and covered with a polythene sheet or weatherproof tarpaulin.

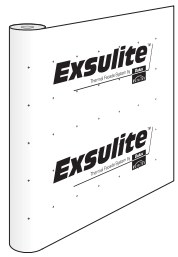
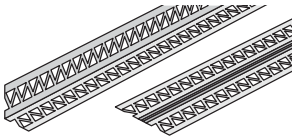
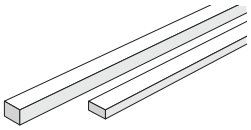
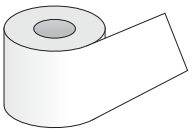
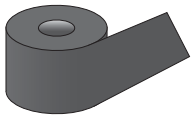
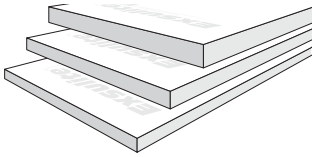
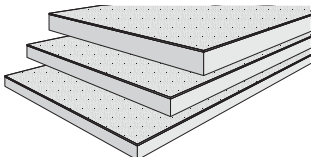
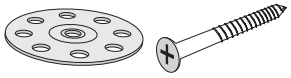
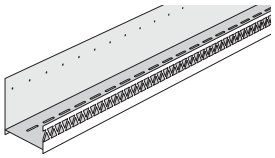
It is the responsibility of the *Dulux AcraTex Exsulite* Trained & Registered Installer to conduct a stringent quality check of all the *Exsulite* components prior to commencement of work to ensure the correct product items, quantities and colours have been delivered to site in good order and are ready for use.

Dulux AcraTex will not be responsible for rectifying potential claims where no evidence of the above following installation and job completion is provided.

2.1.4 No Component Substitution:

Design & installation of any non-standard or non-approved *Dulux AcraTex Exsulite* Facade System components will not be the responsibility of *Dulux AcraTex* and will void any product warranty or claims in relation to product performance.

2.1.5 *Exsulite* Facade System Components:

Product	Description	Product	Description
	*Exsulite* Breathable-Vapor Permeable Wall Wrap		Corner angles and expansion beads installed prior to render application.
	Cavity Spacer: "H" Grade EPS Batten where a cavity is to be installed		Flashing Tape; aluminium bituminous self-adhesive flashing tape for weatherproofing around all window frames including sills, doors, openings, penetrations, intersections, connections, heads and jambs - all of which must be flashed prior to panel installation
	Damp Proof Course		*Dulux AcraTex* approved PU expanding foam adhesive
	*Exsulite* EPS Panel		*Exsulite* Matrix levelling coat with 165gsm alkali resistant mesh
	*Exsulite* Composite Panel		*Exsulite* or *Dulux AcraTex* Acrylic Texture coating to selected colour with a LRV>35
	*Exsulite* Fixing Disk & Class 3, 10 Gauge Bugle Head Screws (further than 1km of coastal areas)		Selleys® Flexiseal Joint Sealant or as approved by *Dulux AcraTex*
	*Exsulite* Starter Channel with weep holes. Placed at the base of the cavity, these function as a cavity closer to drain to the exterior at the bottom of the cavity.		*Exsulite* Membrane or *Dulux AcraTex AcraShield* Advance or *AcraSkin* weatherproof membrane top coat to selected colour with a LRV>35

2.1.6 *Exsulite* Facade System - Material Estimate Guide:

Exsulite EPS Panel size (2500mm x 1200mm) = 3m^2 *Exsulite* Composite Panel (2400mm x 1200mm) = 2.88m^2 Exsulite Cavity Spacer; "H" Grade EPS Spacer (15mm, 20mm, 25mm thick and 1.2m long)
Job size (m^2) of wall area to be installed Calculate total wall area including openings = total m^2 Calculate all openings (doors & windows) = total m^2 Take total wall area (m^2) minus all openings (m^2) = total (m^2) area to be installed Take (m^2) of area to be installed plus 10% and Divide by "3" to give you the number of *Exsulite* EPS panels required OR Divide by 2.88 to give you the number of *Exsulite* Composite Panels required
Exsulite Facade System Screws & Disks - Allow minimum 9 of each per m^2 or 25 of each per *Exsulite* Panel
Exsulite EPS Panel or Composite Panel & Screws (10G Class 3) - Cavity System sizes: • 105mm screws for 60mm panel with 15mm Cavity Spacer (minimum) • 130mm screws for 75mm panel with 25mm Cavity Spacer (minimum) • 150mm screws for 100mm panel with 25mm Cavity Spacer (minimum) NOTE: Minimum penetration into timber frame is 30mm
Exsulite Breathable Wall Wrap - Size 2.7m x 30m = 82m^2
Exsulite Starter Channel & Angles: Size 3 metre lengths = measure lineal metres to where they are to be installed
Damp Course - Size: 300mm x 30m
Foam Adhesive = 1 x 750ml per 30m^2 (approximate only)
Flashing Tape for openings - size: 25m roll
Selleys Liquid Nails® Fast - size: 300ml allow 1 tube per 12 lineal metres of angles (approximate)
Primer Coat - *Dulux AcraTex Green Render Sealer* (optional)
Selleys Flexi Seal Sealant: size: 600ml
Base Coat - *Exsulite Matrix:* Size 20kg = Approximately 3m^2 @ 4mm thick plus wastage
165gsm *Exsulite* Alkali Resistant Mesh: Size 50m x 1m = 50m^2
Texture Coat - *Exsulite* Texture: Size 15L = Approximately 12m^2
Protective Membrane Topcoat - *Exsulite* Membrane: Size 15L = Approximately 70m^2

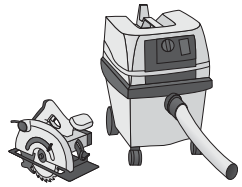
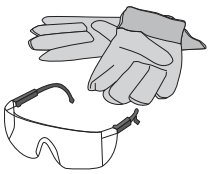
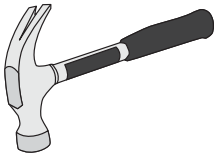
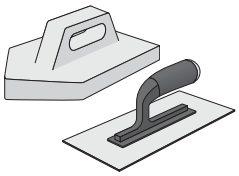
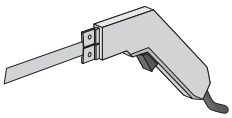
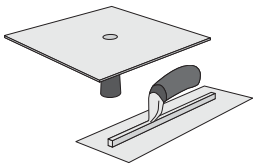
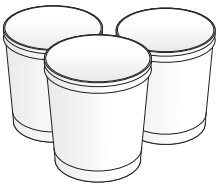
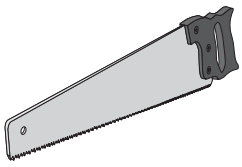
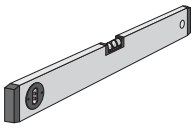
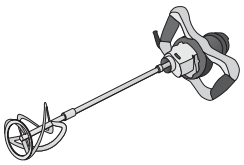
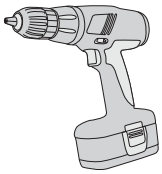
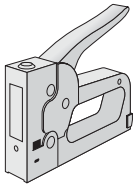
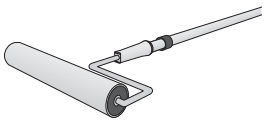
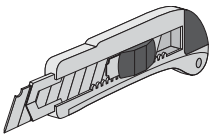
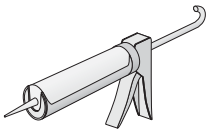
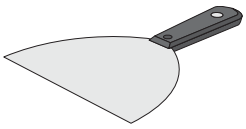
NOTE: The above calculations are a guide only. For project specific requirements please talk to your *Dulux AcraTex* representative.

Material estimate guide for typical job lot based as follows:

Estimate is based on a *Exsulite* EPS 75mm Panel and 25mm *Exsulite* Cavity Spacer						
Products	Metres Squared (wall surface)					
	60	80	100	120	140	180
	Quantity Required					
75mm EPS - 2500 x 1200 x 75mm	20	27	34	40	47	60
Battens H Grade (PK100) - 1200 x 40 x 25	2	2	3	3	4	4
10 Gauge Square Drive (Timber) - 130mm Class 3 Galv (PK500)	2	2	2	3	3	5
Exsulite Washers - 40mm Diameter (PK500)	2	2	2	3	3	5
Breathable Wall Wrap (Watergate) - 2740 x 30m roll = (82m^2)	1	2	2	2	2	3
Alkali Mesh - 1m x 50m - 5 x 5mm = (50m^2)	2	2	2	3	3	4
External PVC External Angles 90 Degrees - 3m x 3.5mm	23	31	38	45	54	69
External 100mm starter trim PVC (Weepholes) - 3m x 3.5mm	8	11	13	16	19	21
Expansion Joint PVC Trim - 3m x 3.5mm	3	4	5	6	7	9
Flashing tape - 75mm x 25m roll	2	3	3	4	5	5
Selleys Liquid Nails Fast - 300ml Tube	6	8	10	12	14	18
Foam Adhesive - 750ml Canister	4	6	7	6	8	12
Application Gun - Metal	1	1	1	1	1	1
Gun Cleaner - 300ml Canister	1	1	1	2	2	2

NOTE: The above calculations are a guide only, allowance for wastage should be allowed when determining job quantities. The above material estimates are based on a frame with the studs at 600mm centres.

2.1.7 Tools Requirements:

 Electric saw with diamond tip blade, fitted with a vacuum extraction appliance where possible	 Safety gloves & safety glasses	 Hammer	 Floats – plastic & foam
 Hot Knife	 Dust mask	 Hawk & trowel	 Empty pails
 Hand saw	 Spirit level	 Mixing drill	 Cordless drill
 Portable work bench	 Staple Gun	 Roller	 Scaffold
 Sharp blade knife	 Caulking gun	 Spatula	

2.1.8 Before Commencing Installation:

Read the *Exsulite* Facade System Specification & Installation Manual in conjunction with the project consultant, project specific specification and drawing details to familiarise yourself with the relevant project specific requirements.

It is the responsibility of the *Dulux AcraTex Exsulite* Trained & Registered Installer to ensure that the substrate / framework to which the *Exsulite* Facade System is to be installed to is properly prepared in strict accordance with the relevant Australian Standards, Building Code of Australia regulations and project specific requirements.

Ensure that all preparation work prior to commencement of system installation has been completed by the relevant trades and that the substrate onto which the *Exsulite* Facade System is to be fixed to is ready for installation work to commence. This includes installation of flashings to brickwork, window & door openings and penetrations. Ensure wall levels have been checked & signed off by project / site supervisor. Where the installer is not satisfied with the substrate standard they are to advise the head contractor prior to commencement of work of these concerns. Once the substrate has been rectified to a standard that meets the site agreed sample work, only then can the work commence.

Some checks may include:

- Check that the frame conforms to the relevant BCA regulations and Australian Standards as well as local standards for structural requirements including wind loadings and bracing. Refer to the relevant *Exsulite* wind design criteria for panel & fixing based on project specific wind pressures.
- Check with plumbers and electricians and back-block for any wall mounted services as it is imperative that this is done prior to panel installation.
- Check that all eaves and flashings have been completed by the builder to the requirements of the project specification prior to commencement.
- Check that the wall wrap installed by the builder is of breathable type, and if not, advise the builder that the wrap does not conform and will be required to be replaced with *Exsulite* wall wrap.
- Check that correct windows with reveal sizes are fitted in accordance with the project specification. Check that the outside of the reveal is flush with the external frame and 10mm proud on the inside allowing for the internal plasterboard. Make sure that they have been fixed off correctly, level and plumb.
- Check to ensure that the correct damp course has been installed to slab edge and termite treatment has been completed. Where no damp course has been installed by others then it must be installed by the *Dulux AcraTex Exsulite* Trained & Registered Installer prior to the *Exsulite* wall wrap being installed.

2.1.9 Framing:

The *Exsulite* Facade System can be fixed to either timber of steel framing. All frames should comply with the relevant building code and / or Australian standard for the type of construction. Studs should be positioned to a maximum of 600mm centres with noggins at maximum of 1350mm centres. The frame must be constructed correctly to allow the fitting of the panels so that a true and accurate outside face is achieved. If the frame is out of tolerance it should be checked and straightened prior to fitting the panels.

2.1.10 Timber framing must comply with:

AS1684- National Timber Framing Code.

2.1.11 Structural bracing is to be part of the integral wall frame:

The *Exsulite* Facade System does not contribute to the structural integrity of the frame. All studs and noggings must be checked with a long straight edge for line and face accuracy to ensure the stud wall has a true and accurate outside face, wall frames must be straight, plumb and level with a tolerance not more than 3mm to 4mm across a 3 metre span both vertically & horizontally and be laterally restrained. The panel will not straighten any warped frames and any warping may be visible at job completion.

2.1.12 Metal framing must comply with:

AS3623- Domestic Metal Framing - A cold-formed steel frame constructed in accordance with NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria.

2.1.13 Window Reveals Details:

Exsulite EPS Panel *Exsulite* Composite Panel	*Exsulite* Cavity Spacer	Window Reveal
60mm	15mm	50mm
75mm	25mm	65mm
100mm	25mm	90mm

Be sure that the window reveals are sitting 25mm proud of the studs.

2.1.14 Placement of Expansion Joints:

Good building practice provides for expansion joints at 3m (max) height & 6m (max) wide intervals and at all building weak points or where potential cracking may occur e.g. in line with openings (windows / doors), horizontally between floor levels and at all interfaces of different building construction materials and / or as defined by a responsible Building / Project Engineer. The placement and correct installation of control joints is the responsibility of the Building Engineer / Builder to determine if the joints are sufficient to accommodate the movement of the specific project building. Typical vertical control joints are 10mm-12mm wide and horizontal joints are 15mm-20mm wide and filled with an approved paintable flexible sealant.

Alternatively a U-PVC control joint bead is inserted in position prior to render application. After the texture coat application, the bead is cut through and filled with *Selleys* Flexiseal. (Refer to the *Selleys* specification data sheet).

Placement of Expansion / Control Joints	Maximum Distance
Horizontal Wall Areas: Wall length 6 Metres	6 Metres
Vertically: Construction joints between floor levels and gable ends, where the total wall height including gable exceeds maximum distance	3 Metres
Scribed control joints: Above large window and door openings	
Note Internal Corner: When rendering, mesh up to but not across corner then later 'scribe' a control joint into the render, cutting (nick) the mesh intermittently to relieve the tension within the mesh. Fill with sealant prior to texture coating	

2.1.15 Fixing Guide:

Exsulite Thermal Facade Cavity System – Residential Housing Vol 2 Class 1 & 10							
Frame Type	Panel Thickness	Cavity Spacer	Starter Channel (weepholes)	Minimum Screw Length	Class	Gauge	Type
Timber	60mm	15mm	75mm	105mm	3	10	Bugle Needle Point
	75mm	25mm	100mm	130mm	3	10	Bugle Needle Point
	100mm	25mm	125mm	165mm	3	10	Bugle Needle Point
Metal	60mm	15mm	75mm	105mm	3	10	Bugle Needle Point for use up to 0.55mm steel
	75mm	25mm	100mm	130mm	3	10	Bugle Needle Point for use up to 0.55mm steel
	100mm	25mm	125mm	150mm	3	10	Bugle Needle Point for use up to 0.55mm steel

Exsulite Thermal Facade Non Cavity System – Residential Housing Vol 2 Class 1 & 10						
Frame Type	Panel Thickness	Starter Channel (weepholes)	Minimum Screw Length	Screw Type Class	Gauge	Type
Timber	60mm	60mm	105mm	3	10	Bugle Needle Point
	75mm	75mm	105mm	3	10	Bugle Needle Point
	100mm	100mm	130mm	3	10	Bugle Needle Point
Metal	60mm	60mm	105mm	3	10	Bugle Needle Point for use up to 0.55mm steel
	75mm	75mm	105mm	3	10	Bugle Needle Point for use up to 0.55mm steel
	100mm	100mm	130mm	3	10	Bugle Needle Point for use up to 0.55mm steel

NOTE: Needle point screws used for timber frame fixing applications can be used in light gauge steel frame fixing depending on the length of the screw. A minimum of 3 full threads need to be screwed through the steel. The needle points can pierce through 0.55mm steel. Where heavier gauge steel is used and exceeds 0.55mm a self drilling metal screw is required to be used. Within 1km of a coastal environment Class 4 screws must be used. This is deemed as medium to severe marine exposure in accordance with AS 3566.

Exsulite fixings Class 3 (non coastal areas) 10 Gauge screws with an *Exsulite* 40mm fixing disk is driven into the middle of the stud until the disk just penetrates the panel face. When fastened correctly, the screw head and the 40mm fixing disk should be slightly countersunk in a concave recess on the outer surface of the panel and located so as it retains its original shape.

NOTE: Care should be taken to not overdrive the fixing as this will strip the plastic disc and the fixing will be ineffective.

General vertical fixing spacings of 275mm (5 fixings at 275mm spacing / 25 per sheet with 50mm end distance at panel corner adds up to 1200mm panel width) with stud spacings at 600mm maximum and subject to panel span and thickness.

2.2.0 Installation Procedure

2.2.1 *Exsulite* Wall Wrap:

Install the *Exsulite* Breathable Wall Wrap with a staple gun to a properly prepared frame. Appropriate head flashings over the top of the building wrap must be fitted before a compatible building wrap tape is used to seal the junction of the head flashing and building wrap. If head flashings cannot be used, an acceptable alternative flashing must be provided.

NOTE: Wall wrap is to have neither tears nor break points.

Followed by installation of the *Exsulite* Cavity Spacer where a cavity system is being used, fixed to each stud.

2.2.2 Weatherproof Flashing Tape:

Install *Dulux AcraTex* supplied Flashing Tape; aluminium bituminous self-adhesive flashing tape for weatherproofing around all windows frames including sills, doors, openings, penetrations, intersections, connections, heads & jambs and must be flashed prior to panel installation. It must cover both wall wrap and substrate to ensure a closed weatherproof seal is achieved.

2.2.3 *Exsulite* Starter Channel with Weep Holes:

The starter channel must be installed 10-15mm above flashings and 25mm above the base of the wall frame and needs to be set to a 1 in 12 fall to allow drainage of any moisture that may occur from the top. Contact with the ground is not permitted and a 75mm gap must be maintained.

Substrate	*Exsulite* Starter Channel With Weep Holes	Fixing Type	Fixing Size
Timber Frame	Aluminium	Stainless Steel Clouts	30mm
	PVC	Galvanised Clouts	30mm
Steel Frame	Aluminium	Stainless Steel Screw With Twin Seal	25mm
	PVC	Self Drilling 12 Gauge Metal Screw	20mm
Concrete	Aluminium	Collated Drive Pin	27mm (install with a Powers Trak-It C5 tool)
	PVC	Round Head Nylon Nail Drive Anchor	25mm (pre-drill and knock in)

NOTE: No back filling

Therefore there will be no capillary, provided that the starter channel and coating are correctly installed.

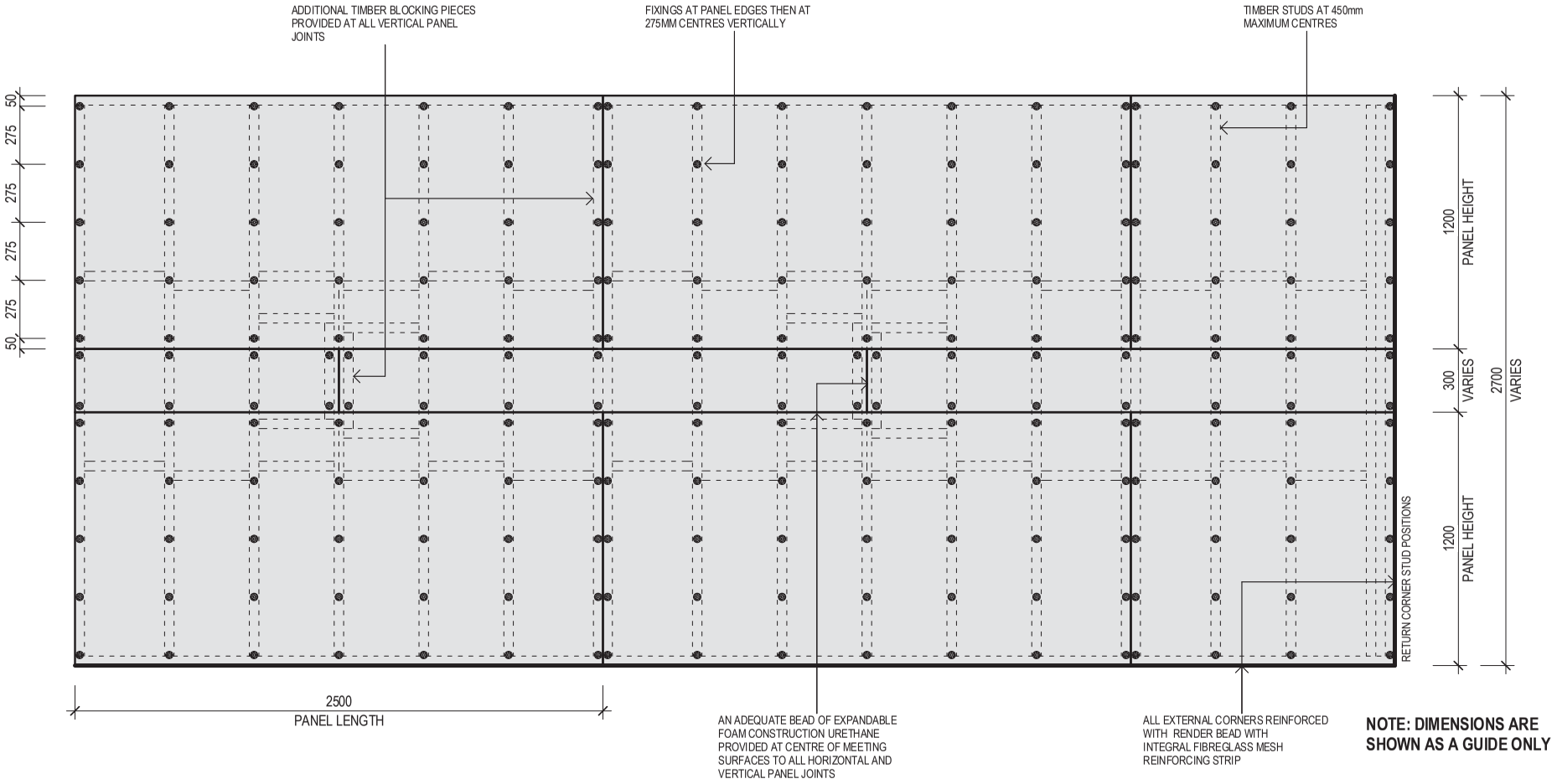
The starter channel must be butt joined and sealed on the junction with an approved PU sealant. Apply *Selleys Liquid Nails* Fast Grab to the inside base of the starter channel prior to installing the *Exsulite* panel to assist with adhesion of the panel to the starter channel. Once tacked into position, the screwing of the *Exsulite* Panels will secure the starter channel into its finishing position at the bottom.

(Refer to the ***Exsulite*** *Construction Drawings for "over roof or slab edge" details. This may vary subject to individual project requirements).*

When installing the *Exsulite* starter channel above a deck, flat or pitched roof, ensure a gap of a minimum 25mm is left between the bottom of the *Exsulite* starter channel and the finished level. Finally ensure that the deck, flat or pitched roof has had the correct flashing installed by others, is fit for purpose and is sloping away from the wall cladding.

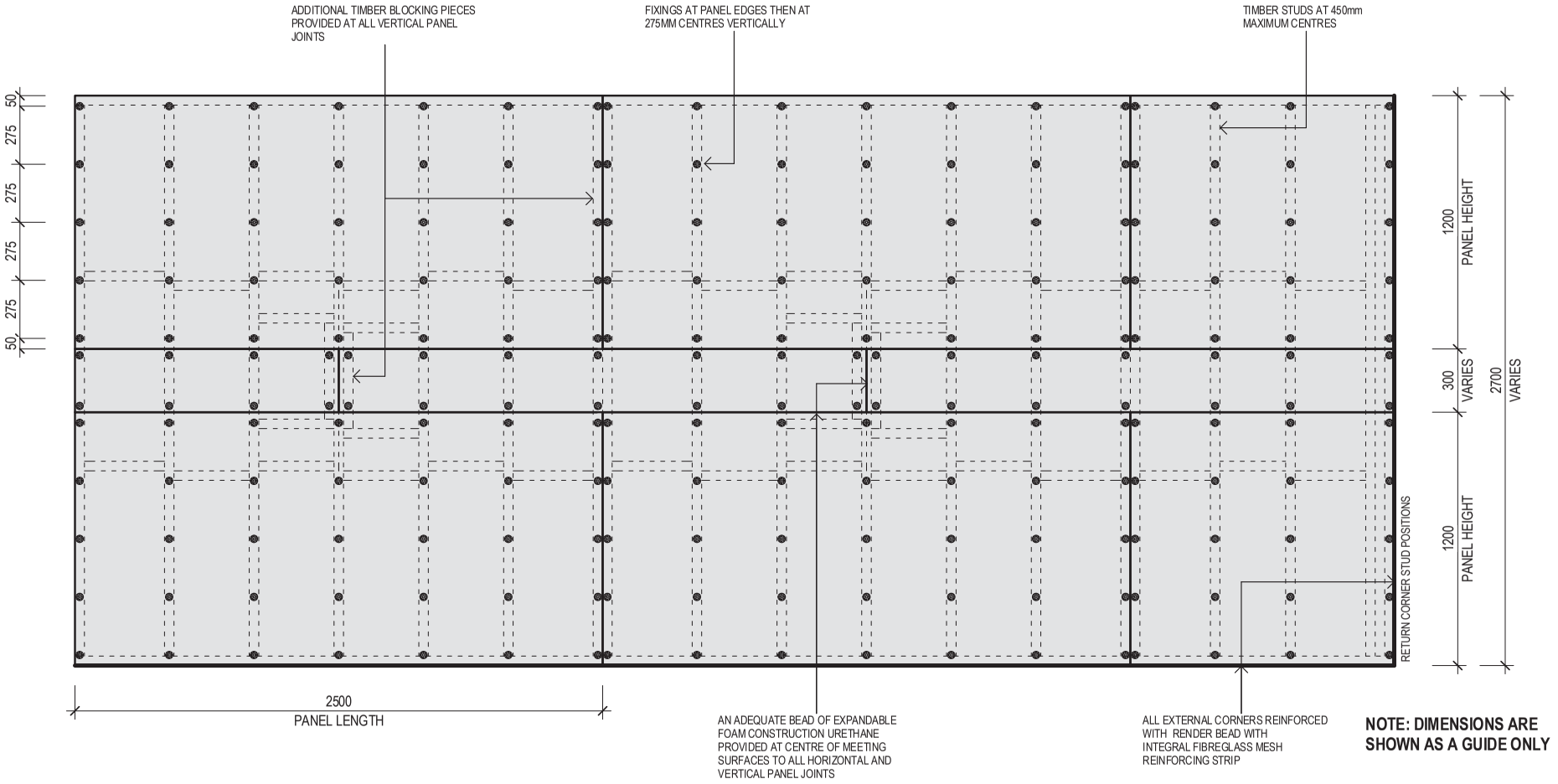
SET OUT ADVICE FOR 450 CENTRED STUD WALL:

60, 75 & 100MM *EXSULITE* PANEL



SET OUT ADVICE FOR 600 CENTRED STUD WALL:

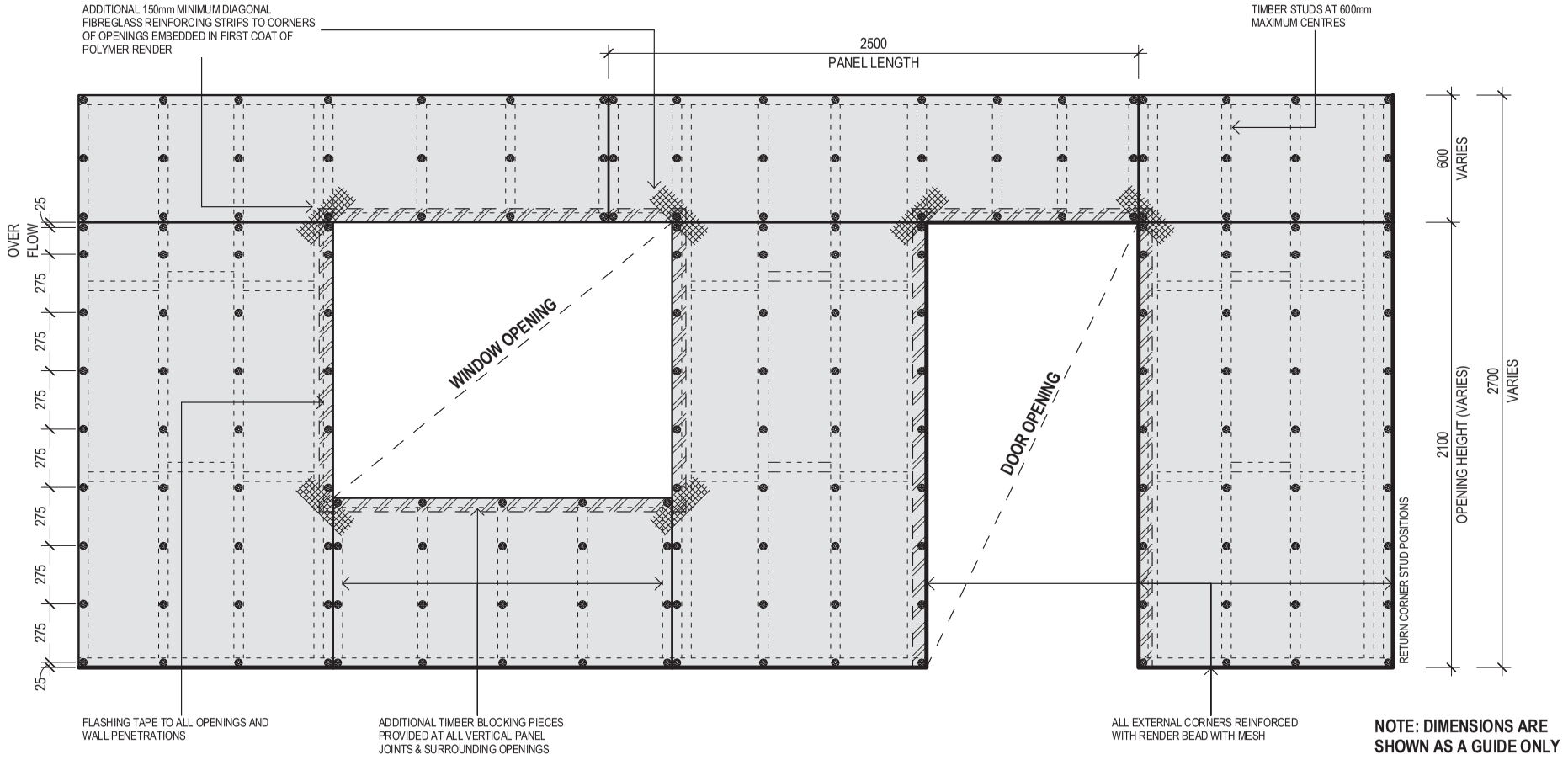
60, 75 & 100MM *EXSULITE* PANEL



NOTE: DIMENSIONS ARE SHOWN AS A GUIDE ONLY

SET OUT ADVICE FOR OPENINGS:

60, 75 & 100MM *EXSULITE* PANEL



NOTE: DIMENSIONS ARE SHOWN AS A GUIDE ONLY

*(Refer to the "**Exsulite** Construction Drawings" for above roof details).*

2.2.4 Cavity Spacer (for use in a Cavity System):

Vertically install "H" Grade EPS battens to each timber stud for residential housing construction using hot dipped galvanised clouts. Fix the cavity spacer onto all studs and around all windows & doors and ensure that it is finished hard down on the inside edge of the *Exsulite* starter channel. Once all cavity spacers are installed on each elevation or wall side, check with a straight edge to ensure the wall is level to within a 5mm tolerance over a 3 metre span. The panel is fixed to the vertical batten / cavity spacer to allow for drainage to the cavity closer / starter channel at the base of the wall.

2.2.5 *Exsulite* EPS Panel & Composite Panel Fixing:

Measure and cut *Exsulite* panels using a masonry diamond blade in a standard power saw or a sharp knife.

The panel to be installed oriented horizontally with a staggered brick joint layout and fixed at 275mm centres on stud lines. *Exsulite* fixings are to be used in all cases with no substitution allowed of non-approved alternative fixings. Fixings should be started at 50mm from the bottom of the first sheet at ground level. Typically 5 fixings are used per stud line, subject to wind classification.

The panel is required to be fixed to the stud, extra supporting (back blocking) members will be required at panel joints so each panel is individually fixed. Panels must not protrude beyond the cavity spacer / stud by more than 150mm. Back blocking requires full stud width.

NOTE: Adhesive fixed back blocking & merchant grade timber is not allowed.

On a single story frame, measure 1210mm up from the rebate at both ends of the wall and flick a chalk line. Starting from the corner fit your sheet horizontally and work to your starting line.

On a double story frame, first of all you must complete point 2.2.3 & 2.2.4 (above) relevant to the project by measuring 1210mm up from the rebate and fixing off the bottom row of panels.

Measure up from the top of the flooring 1200mm from both ends and chalk a line. Fix the first run of panels along this line. Work upwards to the soffit then from the bottom of the first run of sheets, measure down 1205mm and chalk a line and fix that run of sheets to the line, leaving a 5mm gap between the two runs of sheets for expansion. Then work down towards the bottom row of sheets that have been fitted to the starter channel.

Once the first run of panels have been fitted, start the second run by measuring down from the soffits / eaves 1200mm and flicking another chalk line then fix the top row of panels.

Once the two runs of sheets have been fixed you will be required to cut a piece to fit in between the panels and complete the cladding side of your first wall. Using a *Dulux AcraTex* approved construction PU foam adhesive, spray onto all panel edges where the panel is to be joined.

2.2.6 *Exsulite* Fixing Disks & Screws:

For 600mm stud centres: The required fixings are 5 per stud, fixed at 275mm ctrs and 50mm from the top and 50mm from the bottom edge. *(25 fixings per panel including sheet ends subject to project requirements & wind design).*

For 450mm stud centres: The required fixings are 5 per stud, fixed at 275mm ctrs and 50mm from the top and 50mm from the bottom edge. *(25 fixings per panel including sheet ends subject to project requirements & wind design).*

NOTE: Fixings are to be applied in accordance with Tables 1, 2 and 3 on page 10.

2.2.7 Adhesives:

Once the wall panels have been fixed, spray adhesive PU foam approved and supplied only by *Dulux AcraTex* into all panel joints. Once dry, cut off excess with a knife and then sand all joins flush. When the total

thickness is greater than 50mm, apply in multiple layers moisturising each layer.

2.2.8 Control Joints:

Good building practice provides for expansion joints at maximum 3m height & 6m wide intervals and at all building weak points or where potential cracking may occur e.g. in line with openings (windows / doors), horizontally between floor levels and at all interfaces of different building construction materials and / or as defined by the responsible Building Engineer. The placement and correct installation of control joints is the responsibility of the Building Engineer / Builder relative to the construction design. Refer to *"**Exsulite** Construction Drawings Manual"* for control joint details.

2.2.9 Corner Details:

Corners are butt joined and glued together with a suitable construction adhesive approved and supplied by *Dulux AcraTex* being Expanding PU foam adhesive. Refer to *"**Exsulite** Construction Drawings Manual"* for corner details.

2.2.10 Window Details:

The panel is fixed to the window head and sill as per section details with the reveals finished. *Exsulite* UV-PVC angles should be fixed on all panel edges of door and window reveals and thoroughly glued with construction adhesive and suitably covered with mesh and or reinforced.

Underneath all window sills, leave a 10mm-12mm gap and fit external trims around window. Fill the gap with an approved and supplied by *Dulux AcraTex* construction foam adhesive and when dry, cut off flush with the bottom of the window. This will allow adequate fall on the window sills at render stage. Refer to *"**Exsulite** Construction Drawings Manual"* for window details.

2.2.11 Parapet Detail:

Metal flashing is the preferred recommendation for waterproofing and should be approved by the project consultant, refer to *"**Exsulite** Construction Drawings Manual"* for preferred parapet detail. Where alternative waterproofing detail is required please refer to the *"**Exsulite** Construction Drawings Manual"* for alternative parapet details panels.

Where waterproofing is required, this should be in accordance with the project specification and project principal. Where alternative waterproofing detail is required please refer to the *"**Exsulite** Construction Drawings Manual"* for balcony details.

2.2.12 Balcony & Terraces:

Where waterproofing is required, this should be in accordance with the project specification and project principal. Where alternative waterproofing detail is required please refer to the *"**Exsulite** Construction Drawings Manual"* for balcony details.

2.2.13 *Exsulite* External Beads & Angles:

Once all of the wall area has been installed, it is important to go around with a straight edge and make sure that all external corners are plumb and true. Rasp off using sandpaper to make sure that all edges are perfectly straight and ready for installation for corner angles & beading.

Install 3.5mm *Exsulite* external bead with *Selleys Liquid Nails* Fast down the centre of both sides and one run of glue in the junction of the bead. Cut a 45 degree angle on both ends of the bead so it finishes flush with the soffit at the top and flush with the starter bead at the bottom. Once fitted check it using a straight edge for straightness and wipe off excess glue protruding through slots in the bead.

NOTE: External beads must be installed where the panels are installed adjacent to another substrate ie. brick & timber.

2.2.14 Joint Sealant:

Install *Selleys* Flexiseal PU sealant around all window & door frames, all openings, penetrations, electrical meter boxes, ducting, floor & joist penetrations, the gap that appears in between where different substrates meet and all other penetrations including plumbing and electrical conduit.

NOTE: Joint sealant can only be applied once the *Exsulite* Texture coating has been completed and before the *Exsulite* Membrane weatherproof topcoat.

(Refer to the **Selleys** *Flexiseal Product Data Sheet for installation guidelines and to the* **Exsulite** *Construction Drawings for details).*

2.2.15 Quality Control:

During the installation works as per above, the *Dulux AcraTex Exsulite* Trained & Registered Installer will complete the "*Exsulite* Certificate of Installation Installer Check List" to ensure job quality control. This then forms part of the project QC documentation confirming that the *Dulux AcraTex Exsulite* Trained & Registered Installer has installed in accordance with the *Exsulite* Facade System Specification & Installation Manual and is handed over to the project principal.

2.2.16 Weather & Temperature:

Weather conditions can affect application and drying time. Hot or dry conditions and limited working time can accelerate drying times and may require adjustments in the scheduling of work to achieve desired results (different to working times in the shade). Cool or damp conditions extend working and drying times and may require added measures of protection against wind, dust, dirt and rain. Refer to product data sheets for application guidelines and conditions prior to work commencing.

2.3.0 *Exsulite* Finishing System Application

Exsulite Matrix Basecoat with *Exsulite* Mesh;

In a clean 15 litre pail add 3.5-4 litres of clean water, slowly add *Exsulite Matrix Basecoat* while stirring until a cream trowelable paste is formed. Apply the basecoat layer of *Exsulite Matrix Basecoat* by stainless steel trowel to fully cover the panel surface with a 2-3 mm (min.) cover. Refer to the *Exsulite Matrix Basecoat* data sheet & application data sheet for full details. Approximate material usage of 1.7kg / m^2 / mm will vary with application technique.

Embed *Exsulite* Reinforcement Mesh into the 'wet' freshly applied *Exsulite Matrix Basecoat* layer. The *Exsulite* reinforcing mesh: (165gsm, 5mm x 5mm aperture). Once *Exsulite* mesh is installed and overlapped by min of 100mm on all edges, immediately apply additional *Exsulite Matrix Basecoat* mixture to completely cover and encapsulate the mesh with a minimum of 2mm cover and an overall minimum total thickness of 5mm.

Additional mesh is to be installed around window and door openings. Do not push the mesh to the surface of the cladding. Finish the *Exsulite Matrix Basecoat* layer by lightly scratching the surface to provide a surface "key" for subsequent levelling coats. Where additional impact resistance is needed, add extra mesh with basecoat.

NOTE: Where texture coating application is to occur within 7 days of *Exsulite Matrix Basecoat* completion, *Dulux AcraTex* recommends that one coat of *Dulux AcraTex Green Render Sealer* – a high alkali resistant primer is applied in accordance with relevant product data sheets. It will help consolidate the surface and enhance subsequent coating application and provide total system durability.

Exsulite Texture Coating;

Apply one coat of *Exsulite* Texture @ 0.8m^2 / L in accordance with the relevant product data & application data sheets.

PU Sealant Application;

Install *Selleys* Flexiseal PU sealant or other approved sealant around all window & door frames, all openings, penetrations, electrical meter boxes, ducting, floor & joist penetrations, fixings and any gap that appears where different substrates meet and all other penetrations including plumbing and electrical conduit.

NOTE: Joint Sealant can only be applied once the *Exsulite* Texture coating has been completed and before the *Exsulite* weatherproof membrane topcoat.

Exsulite Membrane Weatherproof protective top coat(s);

Apply *Exsulite* Membrane or *AcraShield* Advance or *AcraSkin* in accordance with the relevant product data and application data sheets.

NOTE: Material consumption will vary pending on surface porosity and application technique allowance is to be made when estimating material quantities. Spread rates nominated are theoretical maximum rates required to achieve the specified film builds for technical performance.

2.3.1 Standards Of Finish / Permissible Variation:

Design samples approved by the Contractor/Builder are provided as indicative examples only and are not intended as finished examples of onsite application. The appearance of the finished system shall, as near as practicable, match the approved **"onsite sample"** in terms of installation details, texture, colour and uniformity. Permissible variation and due regard shall be given for textural variation owing to multiple applicators, onsite restraints, scaffold limitations and angle or side light or illumination accentuating surface irregularities.

2.3.2 Care / Precaution:

The manufacturers recommendations for installation and application as specified in the installation & application guidelines must be observed at all times. The coating system must not be applied when rain is anticipated. Adequate protection against rain and dust must be provided for the coating during application. During periods of high temperature above +30°C, work needs to be scheduled during the coolest part of the day and away from direct sunlight. During periods of cooler temperatures 10-18°C, work needs to be scheduled during the morning and completed with adequate time to allow the coating to form a coherent film before the temperature falls below 10°C this is particularly important on exposed southern elevations and may require assistance to dry.

Refer to individual product data sheets for each component for additional precautions.

2.4.0 Care & Maintenance

The exterior coatings should be cleaned on a regular basis. This will help maintain your coatings aesthetic appearance and preserve your *Dulux AcraTex* Texture coating system. Cleaning on an annual basis will remove light soil as well as grime and airborne pollutants. Coastal exposure will have a build-up of salt contamination and a six month wash down is recommended. All joint sealants should be regularly checked to ensure no cracking is evident to allow water ingress. Where cracking is evident, sealant will need to be replaced immediately.

The exterior can be cleaned with a low-pressure water blast (less than 450psi) using a fanjet of cold water at a 45 degree angle from the wall (not perpendicular).The fan of the water blaster should be kept a minimum of 30cm from the surface of the *Dulux AcraTex* Texture coating in order to avoid damage.

Localised grime or ingrained dirt should be removed by cleaning with a scrubbing brush along with a solution of detergent and warm water. Under no circumstances should you attempt to remove heavy staining using a high-pressure water blaster.

Check for cracked, loose or missing sealant as part of your regular maintenance inspections. You will find sealant in most areas where different substrates meet ie. Above door openings & windows, pipes, where walls meet the soffit line and where electrical fittings and handrails have been attached to walls. Control joints should also be inspected as part of maintenance inspections. All deteriorated or damaged sealant should be removed and replaced as soon as it is apparent. We recommend that a paintable polyurethane sealant be used.

It is important to monitor areas that are heavily exposed to the elements such as parapets and balcony handrail tops. Due to the minimal slope on these areas it will tend to hold dirt and grime which can potentially lead to mould over time if not regularly washed. These building sections should also be checked for any movement over time due to the extremes of thermal movement so it is critical that they are inspected and maintained.

Any damage to the texture coating needs to be recoated from edge to edge of the effected wall area to ensure texture and colour consistency. If accidental damage occurs please feel free to contact your local *Dulux AcraTex* representative or phone *Dulux AcraTex* Customer Service on "1300 662 841" and they will provide the support or technical expertise required to help solve the problem. Visual cracks may indicate underlying structural problems; a professional should always inspect them.

Temporary repairs can be made to cracks by filling them with polyurethane paintable sealant until the inspection has been completed and permanent repairs undertaken.

During your inspections don't forget to check areas that are cold and dark such as behind heavy foliage. Dirt provides the perfect nutrient for mould and algae growth. The tiny roots that these organisms use to cling to your walls will cause your texture coating to deteriorate very quickly if not regularly cleaned.

Recoating is recommended after a minimum of 10 years to rejuvenate the surface appearance. This can be done by using *Dulux AcraTex AcraSkin* protective membrane coating to a selected *Dulux AcraTex* colour which will protect from air pollutants, water ingress and dirt accumulation to provide a new low maintenance surface.

2.4.1 Health & Safety:

Dulux AcraTex recommends safe work practices at all times including the use of personal protective equipment (face mask, safety goggles, safety shoes). Fine dust cuttings can be hazardous and personal protection equipment is recommended at all times. All cutting should be conducted in well ventilated spaces. Power tools should be up to date with "test & tagged" label in accordance with state OH&S regulations and should be fitted with dust extraction systems.

Refer to your local WorkCover or WorkSafe authority websites for your local OH&S regulations prior to commencement of work.

For all product handling procedures refer to the relevant product MSDS prior to work commencing, alternatively contact *Dulux AcraTex* on 13 23 77.

Safety Information;

Cutting Outdoors	Position the cutting area so that the wind will blow the dust away from workers Use a dust reducing circular saw equipped with vacuum extraction
Drilling / Machining Sanding / Cutting	Always wear a P2 mask when performing any activity which produces dust Keep other workers at least 3 metres from the operation
Safety Tips	Avoid using power saws indoors Only use saws fitted with vacuum extraction Always damp dust with water when sweeping Do not use grinders on this product Follow tool manufacturers instructions at all times
P2 Respirator	When performing any activity that produces dust always wear a P2 respirator mask If you have any concerns please contact a qualified industrial hygienist
Manual Handling	In order to prevent musculoskeletal injuries, manual handling of heavy panels should be kept to a minimum and where possible mechanical lifting devices should be employed Where mechanical assistance is not possible, more than one person should assist lifting when necessary Weights lifted by individuals should be kept to a minimum Employees should be trained in manual handling techniques A clean work site and good planning will assist in good general safety on site
Protective Clothing	The wearing of suitable clothing such as long sleeves and trousers and appropriate gloves is recommended

Exsulite®
Thermal Facade System by Dulux AcraTex

Certificate of Installation

The Exsulite® "Certificate of Installation" is for use by a *Exsulite* Trained & Registered Installer as a Quality Control Document to certify that the specified *Exsulite* system has been installed in accordance with the *Exsulite* Installation procedures as set out in the *Exsulite* Specification & Installation manual, *Exsulite* Construction Drawings manual & Dulux® AcraTex® specification.

The "Certificate of Installation" is used to record on site work procedures & substrate standards for the Installation of the *Exsulite* Thermal Facade System and the Application of *Dulux AcraTex* finishing system, signed off & handed over at job completion.

The *Exsulite* "Certificate of Installation" and *Exsulite* Warranty Job Registration forms are required for warranty purposes and forms part of the *Exsulite* warranty procedure. The *Exsulite* Trained Installer and *Exsulite* Trained Finisher can either be the same or separate entities who have attended the *Exsulite* Training Course.

System Used (Please tick one):

- ☐ *Exsulite* Thermal Facade Cavity System
- ☐ *Exsulite* Thermal Facade Non-Cavity System
- ☐ *Exsulite*-Kooltherm® Thermal Facade System
- ☐ *Exsulite* Composite Thermal Facade Cavity System
- ☐ *Exsulite* Composite Thermal Facade Non-Cavity System

Project Information

Project Start Date			☐ Timber Frame	☐ Steel Frame
Site Address				
☐ Within 1km of Coastal Area			☐ Wind pressures confirmed by engineer	
Project Builder			Contact Number	
Contact Name				
Ground Level Construction	☐ *Exsulite*	☐ AAC	☐ Brick	☐ Other
Upper Level Construction	☐ *Exsulite*	☐ AAC	☐ Brick	☐ Other
Exsulite Panel Wall Area	m^2	*Dulux* Specification Number		

Exsulite Trained Installer Entity

Company Name	Installer Name
Exsulite Installer No.	
Nominated Installer	Mobile
Nominated Installer No	

Exsulite Trained Finisher Entity

Company Name	Installer Name
Exsulite Installer No.	
Nominated Installer	Mobile
Nominated Installer No	

Site Access and Scaffolding Checklist	Yes	No	Comments / By Who
Is all access scaffolding set up to install the specified system?	☐	☐	
Is all scaffolding and access equipment checked and approved?	☐	☐	

Installer Checklist	Yes	No	Comments / By Who
All *Exsulite* components supplied by *Dulux* with no substitution	☐	☐	
Checked frame with straight edge up to 5mm tolerance.	☐	☐	
Was rectification required and if so by whom?	☐	☐	
Checked frame for additional back blocking to ensure double studs at vertical butt joints to panels.	☐	☐	

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Installer Checklist (continued)	Yes	No	Comments / By Who
Back blocking required and if so by who.	☐	☐	
Checked expansion joint locations and ensured double studs.	☐	☐	
Vertical expansions joints installed at max. 6.0m centres (Refer to *Exsulite* Construction Drawings manual for details).	☐	☐	
Horizontal expansions joints installed at max. 3.0m centres (Refer to *Exsulite* Construction Drawings manual for details).	☐	☐	
Checked gable area framing at 600mm max. centres.	☐	☐	
Backing plates for fixing of down pipe brackets before panel installation.	☐	☐	
Backing plates to clothes lines, pergolas and other external fixtures.	☐	☐	
Checked flashing over roof areas, parapets and balconies.	☐	☐	
Checked windows and doors installed with correct reveal size to suit cavity.	☐	☐	
Damp proof course installed to slab rebate.	☐	☐	
• *Exsulite* breathable absorbent wall wrap installed.	☐	☐	
• If not, state alternative breathable wrap installed.			
• *Exsulite* Cavity spacer installed.	☐	☐	Cavity spacer thickness mm
• If not, type of cavity spacer installed and by who.			Type mm

Panel Type						
Exsulite EPS Raw Panel	☐ 40mm	☐ 60mm	☐ 75mm	☐ 80mm	☐ 100mm	☐ Other
Exsulite Composite Panel	☐ 40mm	☐ 60mm	☐ 75mm	☐ 80mm	☐ 100mm	☐ Other
Exsulite-Kooltherm Panel		☐ 50mm	☐ 80mm	☐ Other		

Exsulite screws and washers installed at maximum 275mm vertically and maximum 600mm horizontally.	☐	☐	
Approved aluminium flashing tape installed around windows, doors, meter box, openings and all penetrations.	☐	☐	
Exsulite panels glued fully along abutting edges with approved foam adhesive.	☐	☐	
All exposed panel edges fully enclosed with PVC channel.	☐	☐	
Exsulite cavity closer with weep holes.	☐	☐	
Exsulite PVC external angles fixed with approved adhesive.	☐	☐	
Control Joints to masonry with 10mm gap and backing rod/strip.	☐	☐	
Exsulite panel to window sills cut at minimum 10 degrees.	☐	☐	
Detail at concrete slab rebate in accordance with *Exsulite* Construction details.	☐	☐	
All components have been installed fully in accordance with *Exsulite* Installation Manual and Construction Details.	☐	☐	
Collected all off cuts and placed in clear plastic bags for recycling collection.	☐	☐	

Installer sign-off			
Name	Installer No:	Signature:	Date of completion

Finisher Checklist

Applied PU sealant to expansion joints, control joints, and around windows, meter box and other penetrations. **(Do not overcoat sealant with Basecoat or Texture. Overcoat only with membrane)**	☐ Yes	☐ No	Comments:	
External PVC angles installed and by who.	☐ Yes	☐ No	By Who	
Protective drop sheets to roof and adjacent areas.	☐ Yes	☐ No		
Exsulite Matrix Basecoat™ applied.	Date:		Batch No:	Quantity (bags):
	Comments:			
Exsulite mesh embedded into basecoat, overlapped min. 100mm, diagonal strips at corners of openings.	☐ Yes	☐ No	Comments:	
Green Render Sealer (when texture coating within 5 days of base coat application).	☐ Yes	☐ No	Date:	Comments:
Exsulite Texture coat applied.	Date:		Batch No:	Quantity (buckets):
	Product:		Colour:	Comments:
Exsulite Membrane top coat applied.	Date:		Batch No:	Quantity (buckets):
	Product:		Colour:	Comments:
Applied in accordance with *Dulux AcraTex/Exsulite* product data sheets and product specifications	☐ Yes	☐ No	Comments:	

Finisher sign-off

Name:	Installer No:	Signature:	Date of completion:

Project Specific Checklist

Item/Description	Yes	No	Comments/By Who
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	
	☐	☐	

Other Comments

On completion of this form, it is the responsibility of the *Exsulite* Trained Installer to forward it to *Dulux AcraTex* by email to sales@exsulite.com.au or by fax to +61 8 8347 1963 as part of job registration process.

Exsulite®

Thermal Facade System by Dulux AcraTex

For further information go to **www.exsulite.com.au**

Dulux AcraTex Customer Service 1300 662 841

1 Jeanes Street, Beverley SA 5009 Australia

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