K-SERIES EXTERNAL INSULATION & FINISH SYSTEM_

> SUPER-HIGH PERFORMANCE
> THERMAL RATING UP TO R4.0
> BUSHFIRE ATTACK LEVEL BAL 40

K-SERIES TECHNICAL DOCUMENT_ 27.03.2018
SYSTEM INSTALLATION & CONSTRUCTION DETAILS

DIRECT TO FRAME SYSTEM

K-SERIES
K-SERIES.
A SUPER-HIGH PERFORMANCE INSULATED WALL CLADDING SYSTEM.

FIXINGS:
Pre-assembled 50mm button and class 3 screw sets provide the right fix for every situation.

POLYURETHANE FOAM SEALANT:
100% flexibility ensures integrity and weatherproofing of joints.

KOOLTHERM® PANEL:
Super-high performance insulated panel (Thicknesses: 50/80mm R 2.50/4.0)

ALLOY EXTERNAL CORNERS:
With integrated reinforcing mesh for strength.

POLYURETHANE FOAM SEALANT:
100% flexibility ensures integrity and weatherproofing of joints.

ALLOY EXTERNAL CORNERS:
With integrated reinforcing mesh for strength.

K-SERIES.
K-SERIES

TIMBER STUD FRAME.

INTERNAL PLASTERBOARD LINING.

MASTERWALL BREATHER WRAP:
A superior translucent breather frame wrap which provides high performance vapor control.

PREMIUM QUALITY MODIFIED LIQUID SEALANT:
Creates a gasket seal between back of panel and the flashing tape.

ALUMINIUM OR TIMBER WINDOW.

NO NEED FOR POST FORM REVEALS:
No need to double frame to achieve brick like reveals.

MASTERWALL SELF ADHERING FLASHING TAPE:
A high performance flashing system uniquely formulated for MasterWall.

POLYURETHANE FOAM SEALANT:
All cavities around penetrations filled with polyurethane sealant.

RENDER PROCESS:
Minimum 5mm approved polymer render system including fiberglass mesh embedded in to first layer and jointing tape to all panels and 45° to all corners of openings - see Construction Details Manual.

Note: Diagram not to scale.
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80mm Kooltherm® panel
50mm Kooltherm® panel

SET OUT ADVICE FOR OPENINGS
50 & 80mm Kooltherm® panel

SET OUT ADVICE FOR MASONRY WALL
50mm & 80mm Kooltherm® panel

SET OUT ADVICE FOR MASONRY WALL WITH OPENINGS
50mm & 80mm Kooltherm® panel

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50mm & 80mm Kooltherm® panel

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KOOLTHERM® PANEL / KOOLTHERM® PANEL
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KOOLTHERM® PANEL / KOOLTHERM® PANEL
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KOOLTHERM® PANEL / BRICK VENEER
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K - SERIES

Description

Kooltherm® panel is an external lightweight, reinforced, insulating wall panel, mechanically fixed to the outer face of the building. The panels are completed by the application of an approved polymer render, trims, sealants, opening flashings and decorative and waterproof coatings.

Traditional sand/cement render is not suitable on the Kooltherm® panels.

Kooltherm® panels are comprised of a super high performance CFC/HCFC - free rigid thermoset phenolic foam core. The facing of the panel is reinforced with a fibreglass tissue and is compatible with approved polymer render and decorative finishes.

Kooltherm® panels, completed with a polymer render finish, have a 25 year history in Europe. K-Series complies with the Building Code of Australia - Alternative Solutions, National Construction Code (N.C.C.) of Australia - Alternative Solutions and has achieved certification from Codemark as a building system.

Application

K-Series is appropriate for use on timber and steel-framed residential and commercial buildings. It may also be applied to concrete and masonry substrates.

The lightweight panels are convenient to install and add minimum weight to the structure.

The product’s thermal insulation properties contribute to the energy efficiency of the building.

The ability to accept a range of approved acrylic render and decorative finishes allows a variety of aesthetic styles to be achieved, including traditional, heritage and modern.

The large panels are speedily installed, providing early enclosure and weatherproofing – assisting in the early achievement of lock-up stage.

Composition

Panel: Dense grade thermoset phenolic fire resistant foam core.

Facing: Flexible fibreglass tissue designed for both excellent mechanical fix and natural bond with the binders and polymers found in approved polymer render systems. The panel surface has a light colour with a fibre texture. K-Series Cyclonic panel is pre-coated with an alkali resistant fibreglass reinforcing mesh, suspended in a cementitious flexible coating.

Manufacture

The panels are currently manufactured in the United Kingdom by Kingspan Insulation. The fibreglass tissue facing is bonded during the manufacturing process. Kooltherm® panels have a recycled/renewable content of 1.3%.

The cementitious coating required for the K-Series Cyclonic panel is mechanically applied by MasterWall Australia in Australia.

⚠️ As water ingression into timber frame can cause significant movement and thus risk cracking the external render, total frame protection from weather ingression should be implemented prior to the installation of the K-Series System. If for any reason, moisture is apparent in the timber frame after installation, this should be allowed to dry out thoroughly prior to the application of render.

⚠️ It is recommended that the installation of internal linings to all external walls should be completed prior to the start of the render process of the K-Series System. If installing internal linings after the completion of external render, use screw fixings only, as hammering nails will crack external render.
Sizes & Thicknesses

Standard panel size: 2270mm x 1200mm
Nominal thickness: 50mm, 80mm
Area: 2.724m²

<table>
<thead>
<tr>
<th>Thickness</th>
<th>50mm</th>
<th>80mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>kg/m²</td>
<td>2.4</td>
<td>2.9</td>
</tr>
<tr>
<td>Total sheet kg</td>
<td>6.9</td>
<td>8.4</td>
</tr>
</tbody>
</table>

If other thicknesses are required, please consult MasterWall Australia.

Manufacturing Tolerances

Length: 2270mm ± 10mm
Width: 1200mm ± 5mm
Thickness: ± 1.0mm

Density
50kg/m³

Compressive Strength
Typically exceeds 120 kPa at 10% compression.

Water Vapour Resistance
>300 MN.s/g

Panel Fire Performance AS 1530.3
a. Spread of flame = 0
b. Smoke developed = ≤ 4
c. Group 1 classification (AS/NZS 3837)

Colour & Packaging
The reinforced facing has a distinctive light colour. The panels are shrink-wrapped in plastic when delivered to site to protect from damage. K-Series Cyclonic pre-coated panels have a fibreglass reinforced cementitious coating on the face, which is light grey in colour.

Warranty - 7 years

MasterWall Australia Pty Ltd warrants that its products are free from defects in materials and workmanship for a period of 7 years from the date of purchase. For a full description of the Warranty refer to the MasterWall Australia website under the main section “Technical Support” (http://www.masterwall.com.au/techsupport.htm)

Limitation of Liability
Except as provided for in the warranty above, MasterWall Australia Pty Ltd is not liable for any direct, indirect or consequential loss which any user suffers, incurs or is liable for in connection with the supply of MasterWall Australia Pty Ltd’s products, including without limitation, direct, indirect or consequential loss arising from third party claims occasioned by defects in products.
PROPERTIES

Thermal Performance

**Kooltherm® panel R Rating Values**

<table>
<thead>
<tr>
<th>Thickness</th>
<th>Rating</th>
<th>R(^*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50mm</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>80mm</td>
<td>4.0</td>
<td>4.5</td>
</tr>
</tbody>
</table>

*An allowance R 0.5 can be attributed to a standard stud frame internally lined with 10mm plasterboard. R\(^*\) - Total Wall System Thermal Rating. Building Code of Australia (BCA) states that external walls of residences must demonstrate an R Rating of a minimum of R 2.8.*

As significant variations occur in both thickness and/or number of layers applied (as well as the types of approved polymer render used on external walls), an R Rating is not applied to the completed render finish.

The optional thicknesses of the panel provide the opportunity to achieve higher R Ratings without the need to install additional materials.

Although the finished Kooltherm® panels are water resistant, a breathable frame wrap is required over framing. If a reflective insulation is required for enhanced thermal performance or to achieve other construction characteristics, that material is to be a breather grade – to allow for vapour transmission.

Acoustic Performance

In common with lightweight closed-cell materials, Kooltherm® panels offer limited absorption of airborne sounds. However, the same structure limits the transference of structure-borne and impact sounds. Sound Insulation Panel only 80mm = RW 18 (-1 ; -1).

Fire Resistance & Bushfire Attack Level (BAL)

Kooltherm® panels do not achieve a FRL fire rating for boundary/party walls on their own, but can be used as an external insulative cladding system installed over approved FRL wall systems. The core of Kooltherm® panel is fire resistant and will char (not melt) when exposed to high temperatures.

The complete K-Series BAL 40 (System) has achieved a Bushfire Attack Level rating of BAL 40 to AS1530.8.1-2007. This applies to the entire K-Series BAL 40 System including a specific set of supporting materials and a render specification. Consult MasterWall Australia Pty for further information.

In a fire situation, Kooltherm® panels – in common with timber and other building materials - generate carbon dioxide and carbon monoxide. Contact the manufacturer for further details.

Impact Resistance

When correctly installed, Kooltherm® panels offer similar resistance to impact and damage as other common non-metallic sheet materials. In addition to this feature, the panels will not shatter or fracture beyond the area of impact.

The K-Series System has completed a successful impact test AS/NZS 4040.5 – 1996

Moisture Resistance

Kooltherm® panels have excellent resistance to moisture and do not support capillary action. When correctly installed with the properly detailed flashings and material combinations, K-Series System provides a weatherproof face to the building. This includes the installation of a breathable frame wrap over framing.

M.S.D.S.

A Material Safety Data Sheet (MSDS) is available for K-Series panels. Please contact MasterWall Australia.
Substrates

Timber framing must comply with:
AS 1684 - National Timber Framing Code.

Metal framing must comply with:
AS 3623 - Domestic metal framing.

Masonry walls must comply with:
AS 3700 - Masonry Structures.

Precast / Tilt-Up walls must comply with:
AS 3600 / AS 3850 - Precast and Tilt-Up Panel Construction.

Structural bracing is to be integral to the wall frame system.

K-Series System does not contribute to the structural integrity of the framing.

The control factors for installation of Kooltherm® panels are:

Support Spacing: 450mm & 600mm framing.
Building Classes: 1 to 10
Wind Loadings: N1 to N5 (classes 1 & 10). All loadings engineered to suit building requirements for classes 2 to 9.
Cyclonic: C3 & C4 on 450mm steel or timber stud spacings.
(K-Series Cyclonic pre-coated panel only).

For installation outside these control factors, please contact MasterWall Australia.

BAL 40 (Bushfire Attack Level)

The K-Series BAL 40 System must be comprised of a precise group of specified materials to meet the Bushfire Attack Level standard as tested (AS1530.8.1-2007). This includes the Kooltherm® panel with all of the K-Series ancillaries, i.e. MasterWall® breather frame wrap, window flashing tape, fixings, fixing buttons, urethane sealants, foam sealants, external render trims and fibreglass mesh.

The render system applied must strictly follow the render specification of various render system manufacturers for the K-Series System to achieve a BAL 40 rating (contact MasterWall Australia for further information).

Reinforcing Mesh

An alkaline-resistant 5mm x 5mm fibreglass mesh, minimum 1000mm width, (minimum 145gsm) must be installed over the entire face of the paneled wall. For K-Series Cyclonic pre-coated panel, a 150mm - 200mm wide fibreglass reinforcing mesh tape must be installed over all panel joints. Full wall mesh is not required as the K-Series Cyclonic panel already features fibreglass mesh over the entire panel.

Trims

Alloy corner trims are preferred and are to be applied to all external corners/openings and exposed bottom edges of panels if applicable. Galvanised or stainless steel trims are not recommended.

Flashing Tape (Framing Application Only)

Flexible adhesive backed Aluminium MasterWall® Flashing Tape typically used around windows, doors and underneath control joints as a high quality adhesive flashing system.

Joint Sealant

A flexible urethane foam sealant should be applied to all butt joints - see K-Series Installation Manual and Construction Details.
Window Flashing Sealant
A premium quality modified liquid sealant applied to the face of the window flashing. Urethane foam sealants are not to be used in this application.

Screw Fixings
Class (3) screws, 10 gauge fitted with a 50mm diameter K-Series plastic button. 40mm diameter K-Series plastic button for Cyclonic pre-coated panel.

Class (3) screws are specified regardless of the geographic location, as Kooltherm® panels always contain differing levels of water vapour.

Fixing spacing according to wind load:

<table>
<thead>
<tr>
<th>Frame &amp; Masonry Substrates</th>
<th>Wind Classification to AS 4055</th>
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</thead>
<tbody>
<tr>
<td>Stud spacing</td>
<td>Location (mm)</td>
</tr>
<tr>
<td>450</td>
<td>Within 1200 of building edge</td>
</tr>
<tr>
<td></td>
<td>Elsewhere</td>
</tr>
<tr>
<td>600</td>
<td>Within 1200 of building edge</td>
</tr>
<tr>
<td></td>
<td>Elsewhere</td>
</tr>
</tbody>
</table>

The screws are selected to suit either timber framing or steel framing, and are available in the following lengths.

<table>
<thead>
<tr>
<th>Length</th>
<th>Type</th>
<th>Gauge</th>
<th>Relevant Panel Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>75mm</td>
<td>Chip</td>
<td>10</td>
<td>50mm Self Driller</td>
</tr>
<tr>
<td>75mm</td>
<td>Chip</td>
<td>10</td>
<td>50mm Needle Point</td>
</tr>
<tr>
<td>100mm</td>
<td>Bugle</td>
<td>10</td>
<td>80mm Self Driller</td>
</tr>
<tr>
<td>105mm</td>
<td>Bugle</td>
<td>10</td>
<td>80mm Needle Point</td>
</tr>
</tbody>
</table>

- Timber Frame - Screw lengths should always be a minimum of 25mm longer than the thickness of the panel specified.
- Steel Frame - Screw lengths should always be a minimum of 15mm longer than the thickness of the panel specified.

Cyclonic fixing spacing - K-Series pre-coated Cyclonic panels:

<table>
<thead>
<tr>
<th>Frame</th>
<th>Stud spacing 450 maximum</th>
<th>Location (mm)</th>
<th>Edge of panel</th>
<th>Elsewhere on panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>Within 1200mm of building edge</td>
<td>300</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elsewhere</td>
<td>300</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>C4</td>
<td>Within 1200mm of building edge</td>
<td>200</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elsewhere</td>
<td>300</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

For all Wind Load test results please contact MasterWall Australia.

Render System
Typically a minimum 5mm polymer render system will be applied utilising 5mm x 5mm fibreglass mesh embedded into 3mm polymer render, followed by a 2mm polymer render levelling coat and a colour tinted trowel-on acrylic texture. For all render system specifications consult MasterWall Australia.
**INSTALLATION**

**Breather Frame Wrap (Framing Application Only)**

MasterWall Australia recommends use of MasterWall® Breather Frame Wrap or similar.

Note: Under no circumstances should a non-breathable paper be used behind Kooltherm® panels.

**Layout**

Kooltherm® panels may be laid either vertically or horizontally (for either frame or masonry substrates) according to the best fit for the 2270mm x 1200mm sheet - horizontal, staggered joint layout is always the preferred option.

If the wall height is less than or equal to 2270mm, then practicality may dictate that the Kooltherm® panel be laid vertically - but horizontal layout is the preferred option.

If the wall height is greater than 2270mm, then the panels should always be laid horizontally, in a brickwork or stretcher bond pattern, with each 1200mm vertical joint staggered up through the height of the wall.

A horizontal layout is the preferred option.

**Supporting Framework**

Edges of the Kooltherm® panels require support on studs, noggings or other intermediate blocking.

Kooltherm® panels may be cantilevered or projected beyond supports by the same distance as a given panel’s thickness.

Fixed-back blocking techniques are mandatory. Full-stud width (min 90mm) support is required. Back blocking timber must be MGP 10 or greater. Merchant grade is not permitted. Adhesive fixed back blocking is not permitted.

Supports to intermediate joints are required, as shown in this table.

<table>
<thead>
<tr>
<th>Panel Thickness</th>
<th>50mm</th>
<th>80mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint Orientation</td>
<td>V</td>
<td>H</td>
</tr>
<tr>
<td>Studs 450 crs</td>
<td>✔</td>
<td>✘</td>
</tr>
<tr>
<td>Studs 600 crs</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

(V = Vertical) (H = Horizontal)

Supports/blocking are required to all edges around openings.

**Cutting**

(a) **Masonry Blade:** For 50mm & 80mm Kooltherm® panels, a diamond-tipped masonry blade is an accurate, time-efficient way to cut/trim panels (see MSDS).

(b) **Hand Saw:** A fine-tooth saw is also an efficient way of cutting the 50mm Kooltherm® K5 panel.

Kooltherm® panels should be accurately cut to size to produce close butt joints between panels.

**Health & Safety**

Use of personal protective equipment (face masks and safety goggles) is recommended. The fine dust created by mechanical cutting is hazardous, and protection is recommended, including face masks and safety goggles.

Mechanical cutting should be performed in well-ventilated spaces. Power tools can be fitted with effective dust-extraction systems. Refer to Kooltherm® Material Safety Data Sheet (MSDS).
Fixing To Framing

(a) Centres: On a stud spacing of either 450mm or 600mm, fixings are to be at a maximum 300mm centres vertically to all perimeter and intermediate supports. Fixings around perimeter of panels should be 50mm in from the edge of the panel. Average 12 fixings per m² (see Wind Load Fixing Chart page 12).

(b) Fixings: Fixing screws and buttons should be the type and suitability as set out in this guide.

(c) Appearance: When fastened correctly, the screw head and button should be slightly countersunk in a concave recess on the outer surface of the panel, and located so as to not crush the edge of the panel. The button should always retain its circular shape i.e. if the button begins to flare or fold it has been screwed too far towards the frame.

Fixing To Masonry/Concrete

Kooltherm® panels can be fixed to masonry and concrete substrates by either:

(a) Directly fixing to the masonry substrate utilizing a combination of MasterWall® approved masonry anchors (spaced at 600mm maximum vertical lines at 400mm spacings) with intermediate daubs of MasterWall® approved adhesive between fixings. (See Construction Details on pages 22 & 23).

Note: This method cannot be used in cyclonic zones.

(b) Directly fixing to masonry substrate with MasterWall® approved anchors only. Note: This method must be used for cyclonic zones, fixing layout is the same as frame fixing method on wind load chart (see page 12).

(c) On timber or metal battens over masonry and concrete substrates spaced at either 450mm or 600mm centers with fixing centres as per frame fixing spacings on page 12.

Note: For more information on appropriate MasterWall masonry anchors please contact MasterWall Australia.

Sealing - Joints

Prior to closing up of all joints between panels (and between panels and other building elements), a flexible urethane foam is required to the centre the gap between panels.

This forms a mechanical seal for weatherproofing, and converts the many individual panels into a single monolithic, insulated skin.

Foam urethane sealant is therefore required to:

(a) All butt joints

(b) All external corners and butt jointed internal corners

Sealing - Openings (Framing Applications Only)

Prior to the application of the panel, all openings must be flashed from the reveal to the frame. This is now a Building Code requirement. MasterWall Australia Pty Ltd recommends and supplies adhesive aluminium MasterWall® Flashing Tape for just this purpose, and is suitable for both aluminium and timber windows. This proven flashing method reduces the risk of water penetration. In turn, the panels are then to be sealed with a premium quality modified liquid sealant (not foam) to the face of the flashing tape to form a gasket seal around the opening.

Note: Kooltherm® panels should not be externally sealed to window/door reveals at this point, post installation and prior to render application. Sealants should never be rendered over, as render systems, with limited movement capabilities, will restrict a sealant’s ability to move according to manufacturer’s specification. Sealants for openings should be applied after the render system has been applied - never before!
Sealing – Other Penetrations (including wiring, plumbing, joists, ducting)

Where possible all penetrations through the K-Series System should be treated as per window detail, incorporating flashing tape and liquid urethane sealant. This is of high importance for floor and pergola joist penetrations, electrical meter boxes, ducting and the like.

It is then recommended that a 10mm minimum clearance gap be left between the Kooltherm® panel and the penetration and caulked using MasterWall® flexible expanding foam urethane sealant prior to render application.

Smaller penetrations such as plumbing or electrical conduit should have a 10mm minimum clearance gap between the Kooltherm® panel and the pipe and caulked using MasterWall® approved flexible expanding foam urethane sealant prior to render application.

Note: Extra mesh tape is required around the penetration for added reinforcing during the render process.

MasterWall Australia Pty Ltd recommends the use of liquid sealants to all timber windows after the rendering process has been completed. Please note that render systems are not sealants i.e. an opening cannot be sealed by the application of a polymer render system. Render systems are water-shedding technologies, not weather-proofing technologies.

Control Joints and Articulation Relief Joints

Control joints for expansion should coincide with control joints within the building structure and substrate, and should be placed at all perceived stress points or weak areas of excessive movement within the building structure. Control joints should be placed at a maximum of walls that are over 20 meters long and at all mid-floor breaks. It is recommended that panel area below windows that is less than 300mm in height should be relieved with ‘Articulation Relief Joints’ of the render coating, at the corners of the opening (see Finishing: page 16). Contact MasterWall Australia for further information.

Articulation relief joints of the render coating are to be formed by cutting or forming a ‘V’ groove into the completed base coats, only to 70% depth of the render, not into the Kooltherm® panel. The applied top coats shall replicate the ‘V’ groove to leave a visible line.

Where control joints are part of the building construction, the joint is to be expressed in the Kooltherm® panels as an open joint, free of construction urethane, and finished as for all other open edges (including external corners applied to each edge).

Panel to panel control joints should be located on double studs, which are then to be sealed with flashing tape, which is then sealed to the rear of each panel with the use of a premium quality modified liquid sealant (not foam).

All control joints should feature either Ableflex (or similar) or backer rod as the primary seal, which should be set back in the control joint a minimum of 8mm where it must be caulked by others after the render process has been completed. – See Construction Details Manual. All Control Joints should be free of render products.

Corners, Edges, Openings & Returns

All panels to external corners must be butt joined (square) to give maximum strength to the corner.

Butt joints are required to all internal corners. Foam urethane sealant is required in this butt joint.

To form a total weatherproof face, all joints and abutments require sealing with foam urethane sealant.

MasterWall® Alloy External Corners should be applied to all of the following areas:

(a) All external corners
(b) All openings
(c) All bottom edges of panel

These trims are to be in long lengths and set accurately to be plumb, level and straight.
MasterWall® Skyline System

The Skyline System is an architectural concealed waterproofing detail for use on parapet designs, featuring clean, uninterrupted lines. The Skyline System is concealed by the applied render finish and eliminates the need for unsightly pressed metal capping. It is also used as a waterproofing detail for fixing blocks within the MasterWall and K-Series System.

The Skyline System membrane is a pressure sensitive self-adhesive butyl tape, 0.75mm in thickness, containing a non-woven polyester fibre face, ready for the application of high polymer render. Able to withstand building movement, it has 35% elongation breaking limit and is serviceable from -10˚ to 100˚ Celsius.

Important Note: As the Skyline System is a total waterproofing detail, no fixings should ever penetrate the horizontal surface of the completed parapet. All fixings of balustrades and the like should only be mounted on the vertical wall surface only.

Curved Walls

Kooltherm® panels cannot be curved under any circumstances. The option of using MasterWall® pre-coated polystyrene panels on curved elevations in conjunction with Kooltherm® panels is a possibility. Contact MasterWall Australia for further information.

Soffits

Kooltherm® panels can be installed as a soffit. Application and finishing requirements are as for walls. Contact MasterWall Australia for details.

Finishing

When all Kooltherm® panels have been installed (complete with sealants and edge trims) a 5mm minimum thickness of an approved polymer render system is required. The reinforcing mesh over the entire wall is incorporated in the first skim coat of render.

The approved polymer render is applied using conventional techniques. The render also flush finishes all mechanical fixings. Traditional sand/cement renders are not suitable for application to Kooltherm® panels.

When the skim coats are dry, the selected approved finishing coat can be applied. This coat can be smooth or textured, and coloured as preferred.

A minimum acceptable result can be achieved by the following sequence:

• 3mm skim coat (including Reinforcing Mesh)
• 2mm skim coat
• 1.5mm top coat and/or paint finish
• When applying K-Series System approved render systems, ensure to follow the render system manufacturer’s specifications.

Articulation relief joints of the render coating are to be formed by cutting or forming a ‘V’ groove into the completed base coats, only to 70% depth of the render, not into the Kooltherm® panel. The applied top coats shall replicate the ‘V’ groove to leave a visible line.

Storage, Handling, Protection

Kooltherm® panels delivered to site should be stored flat and evenly supported. They should be covered or otherwise protected from damage or soiling.

If stored outside panel stacks are to be covered, a material/canvas cover should be utilized. Under no circumstances should a black plastic cover be used.

During installation, the Kooltherm® panels should be handled with care to prevent edge damage or fracture.
Particular care is required during windy conditions, as unsecured panels can be severely damaged.

Continuous exposure may result in deterioration and minor fretting of exposed edges of the panel. This is to be removed prior to proceeding with finishing or sealing. As with all sheet materials, protection from impact damage is required.

The application of the approved polymer render should, wherever possible, follow the installation of internal services, fittings and linings – when the risk of damage is minimised.

Timely application of the render will complete the wall system - and protect the panels from damage.

**Repair**

Panels that are fractured or severely damaged (before or after fixing) should be rejected or cut down to size for use.

Minor penetrations, edge fractures or crushed areas may be site-patched with the reinforcing mesh and an approved acrylic patching render.

**Waste Management**

Being lightweight, the panel material is readily dispersed by the wind. To prevent a nuisance, all off-cuts and residue from cutting should be stored in tied plastic bags for removal to a place of legal disposal. Attention to detail - in particular to spacing of backblocking - will contribute to a reduction in the amount of waste and off-cut materials.

**Disclaimer**

Whilst every effort has been made to ensure the information in this manual is correct at the time of printing, MasterWall Australia Pty Ltd reserves the right to change the specifications of all products referred to in this manual at any time. All changes made to this manual are uploaded on to our website www.masterwall.com.au.
SET OUT ADVICE FOR 450 CENTRED STUD WALL:

**50mm & 80mm Kooltherm® PANEL**

**ELEVATION OF Kooltherm® PANELS**

- An adequate bead of expandable foam construction urethane provided at centre of meeting surfaces to all horizontal and vertical panel joints.
- External corner panels butt jointed.
- Vertical joints staggered by at least one stud spacing.
- All external corners reinforced with alloy render bead with integral fiberglass mesh reinforcing strip.
- Additional timber blocking pieces provided at all vertical panel joints.
- Fixings at panel edges and then at 300mm centres vertically.
- Timber studs at 450mm centres.

**PLAN VIEW**

- Internal corner panels butt jointed.
- External corner panels butt jointed.

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
SET OUT ADVICE FOR 600 CENTRED STUD WALL:

- **External corner panels** butt jointed
- Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual.
- Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.

An adequate bead of expandable foam construction urethane provided at centre of meeting surfaces to all horizontal and vertical panel joints.

All vertical and horizontal joints are to be reinforced with alloy render bead with integral fiberglass mesh reinforcing strip.

**Timber studs at 600mm centres**
- Vertical joints staggered by at least one stud spacing
- Additional timber blocking pieces provided at all vertical panel joints
- Fixings at panel edges and then at 300mm centres vertically

80mm Kooltherm® PANEL

- **Fixings** at panel edges and then at 300mm centres vertically
- MasterWall Class 3 Screw and PVC Button (50mm)

**Kooltherm® Panels**

The details, specifications and illustrations within this manual are to be installed strictly in accordance with the instructions detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
SET OUT ADVICE FOR 600 CENTRED STUD WALL:

- Fixings at panel edges and then at 300mm centres vertically.
- MasterWall Class 3 Screw and PVC Button (50mm) for Kooltherm® Panels.

ELEVATION OF Kooltherm® PANELS:
- Additional timber back blocking provided at all vertical and horizontal joints.
- Fixings at panel edges and then at 300mm centres vertically.
- Timber studs at 600mm centres.
- An adequate bead of expandable foam construction urethane provided at centre of meeting surfaces to all horizontal and vertical panel joints.
- Vertical joints staggered by at least one stud spacing.
- Additional timber blocking pieces provided at all vertical panel joints.
- All external corners reinforced with alloy render bead with integral fiberglass mesh reinforcing strip.

PLAN VIEW:
- Internal corner panels butt jointed.
- External corner panels butt jointed.

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
SET OUT ADVICE FOR OPENINGS:

220

Additional 150mm minimum diagonal fibreglass reinforcing strips to corners of openings embedded in first coat of polymer render.

50 & 80mm Kooltherm® PANEL

ELEVATION OF Kooltherm® PANELS

Additional Timber Blocking pieces provided at all Vertical Panel joints & surrounding openings.

Fixings at panel edges and then 300mm centres vertically.

An adequate bead of expandable foam construction urethane provided at centre of meeting surfaces to all horizontal and vertical panel joints.

All external corner panels butt jointed.

External corner panels reinforced with alloy render bead with integral fibreglass mesh reinforcing strip.

50 & 80mm Kooltherm® PANELS

These details are indicative for the purpose of illustrating the typical installation of Kooltherm panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
SET OUT ADVICE FOR MASONRY WALL:

50mm & 80mm Kooltherm® PANEL

Fixings at panel edges and then at 400mm centres vertically with intermediate daubs of approved adhesive. Fixings to be placed minimum 50mm in from edge panel.

For Cyclonic Wind Loadings (K-Series Pre-Coated Panel) use mechanical fastners only - see page 12

- Masonry Substrate
- Kooltherm® Panels
- MasterWall Approved Masonry Fastner
- Corner Bead
- Daub of MasterWall Approved Adhesive

An adequate bead of expandable foam construction urethane provided at centre of meeting surfaces to all horizontal and vertical panel joints.

All external corners reinforced with alloy render bead with integral fiberglass mesh reinforcing strip.

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
50mm & 80mm Kooltherm® PANEL

ELEVATION OF Kooltherm® PANELS

SET OUT ADVICE FOR MASONRY WALL WITH OPENINGS:

- Fixings at panel edges and then at 400mm centres vertically with intermediate dabs of approved adhesive in first coat of polymer render.
- Additional 150mm minimum diagonal fibreglass reinforcing strips to corner of openings embedded in first coat of polymer render.
- All openings to be caulked post render.
- An adequate bead of expandable foam construction urethane provided at centre of meeting surfaces to all horizontal and vertical panel joints.
- All external corners reinforced with alloy fiber glass mesh reinforcing strip.
- External corner panels butted up.
- Internal corner panels butt jointed.

50mm & 80mm Kooltherm® PANEL

- Elevations of Kooltherm® PANELS
- MasterWall Approved Masonry Fastner
- MasterWall Approved Adhesive
- Masonry Substrate
- Corner Bead
- MasterWall Approved Acrylic Render

For Cyclonic Wind Loadings (K-Series Pre-Coated Panel) use mechanical fastners only – see page 12

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
TYPICAL CORNER JOINTS:

INTERNAL CORNER - PLAN VIEW

Adequate bead of expandable foam construction urethane at midpoint of panel thickness to all joints.

Kooltherm® Panels Butt Jointed

EXTERNAL CORNER - PLAN VIEW

Adequate bead of expandable foam construction urethane at midpoint of panel thickness to all joints.

Kooltherm® Panels Butt Jointed

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
TYPICAL JOINTS BETWEEN PANELS:

Vertical joint at stud. Double stud required.

Vertical panel joints between studs. Back blocking required fixed to frame.

NOTES FOR ALL FIGURES
Screw fixing must be at least 25mm greater in length than thickness of Kooltherm® panel
Adequate bead of expandable foam construction urethane at midpoint of panel thickness to all joints

Horizontal panel joints at stud.

Horizontal joints of 50mm panel on 600mm centre studs. Back blocking fixed to frame required between studs.

50mm & 80mm Kooltherm® PANEL

MasterWall class 3 screw and PVC button (50mm)

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / BRICK VENEER EXTERNAL CORNER: 
JUNCTION - 1

All external corners reinforced with alloy render bead with integral fiberglass mesh reinforcing strip
Min. 8mm gap

Kooltherm® PANEL / BRICK VENEER EXTERNAL CORNER: 
JUNCTION - 2

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / BRICK VENEER CONSTRUCTION CONTROL JOINT:
JUNCTION - 3

- Adequate bead of premium quality modified liquid sealant
- MasterWall Breather Frame Wrap
- Minimum 5mm approved mesh reinforced polymer modified render system
- All external corners reinforced with alloy render bead with integral fiberglass mesh reinforcing strip
- Min. 8mm gap
- Abellflex backing strip or backer rod
- Approved sealant
- MasterWall Breather Frame Wrap
- Sisalation (Taped to MasterWall Breather Frame Wrap)
- Brickwork veneer
- MasterWall Adhesive Flashing Tape
- Internal plasterboard lining

Kooltherm® PANEL / BRICK VENEER INTERNAL CORNER:
JUNCTION - 4

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / FIBRE CEMENT BOARD:
JUNCTION

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
**Kooltherm® PANEL / Kooltherm® PANEL:**

**CONSTRUCTION CONTROL JOINT - MID FLOOR BREAK**

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / BRICK VENEER:
JUNCTION - FIRST FLOOR LEVEL STEP OUT

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / BRICK VENEER JUNCTION:
FIRST FLOOR LEVEL FLUSH JOINT

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL:
OVERHANGING FIRST FLOOR LEVEL

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Kooltherm® PANEL:
LOWER ROOF JUNCTION WITH ADDITIONAL FAUX FLASHING

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Kooltherm® PANEL / INTERNAL CORNER: UNIVERSAL JUNCTION

Kooltherm® PANEL / SOLID MASONRY: UNIVERSAL JUNCTION

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
**Kooltherm® PANEL:**

**RENDERED PARAPET WALL WITH SKYLINE SYSTEM WATER PROOFING**

SUITABLE FOR BAL 12.5, 19 & 29. FOR BAL 40 SEE DETAIL NEXT PAGE.

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.

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- **MasterWall approved adhesive**
- **Polystyrene H Grade wedge**
- **Minimum 5mm approved mesh reinforced polymer modified render system**
- **Fibreglass reinforcing mesh**
- **Skyline Membrane (to be applied as per Skyline System Specification)**
- **F/C sheet 4.5mm**
- **Box gutter**
- **MasterWall Breather Frame Wrap**

**Note:** Do not pierce Skyline membrane with mechanical fasteners through the horizontal plane.

- **Rafter**
- **Minimum 5mm approved acrylic render system**
- **Kooltherm® panel**
- **Fullers Toolbox Adhesive**
- **Rafter**
- **Polystyrene H Grade wedge**
- **MasterWall approved adhesive**
- **Fibreglass reinforcing mesh**
- **Skyline membrane (to be applied as per Skyline System Specification)**

Box gutter

**MasterWall Breather Frame Wrap**

F/C sheet 4.5mm returned into box gutter

Min 7° fall

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Kooltherm® PANEL:
BAL 40 RENDERED PARAPET WALL
WITH SKYLINE SYSTEM WATER PROOFING

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / ROOF JUNCTION:
PARAPET WALL

*Thermal insulation to roof construction to meet required energy rating

Selected metal deck roofing

Min 7° fall

Rigid pressed metal capping

MasterWall Breather Frame Wrap

Kooltherm® panel

Minimum 5mm approved mesh reinforced polymer modified render system

Box gutter

Roof beam

Timber stud

Internal wall lining

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**Kooltherm® PANEL / ALUMINIUM WINDOW:**

**TYPICAL HEAD DETAIL**

- Timber stud wall
- Internal wall lining
- Architrave
- Min. 20mm clearance
- Timber reveal by window manufacturer - nominal 100mm wide
- Aluminium window frame

**Kooltherm® PANEL / ALUMINIUM WINDOW:**

**TYPICAL SILL DETAIL**

- Minimum 5mm approved mesh reinforced polymer modified render system
- MasterWall Breather Frame Wrap
- Kooltherm® panel
- MasterWall Adhesive Flashing Tape
- An adequate bead of premium quality modified liquid sealant
- All external corners reinforced with alloy render bead with integral fibreglass mesh reinforcing strip
- Minimum 5mm approved mesh reinforced polymer modified render system
- Caulking (optional)

**Kooltherm® PANEL / ALUMINIUM WINDOW:**

**TYPICAL SIDE JAMB DETAIL**

- Minimum 5mm approved mesh reinforced polymer modified render system
- Kooltherm® panel
- MasterWall Breather Frame Wrap
- Packing piece
- Timber stud
- Internal wall lining

Note: Window system to be self draining.

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**Kooltherm® PANEL & BRICKWORK JUNCTION:**

**GROUND LEVEL**

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Kooltherm® PANEL & CONCRETE STUMP CONSTRUCTION:
PROTRUDING PANEL

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Kooltherm® PANEL & GROUND SLAB JUNCTION
WITHIN REBATE

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
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Kooltherm® PANEL / EXTERNAL WALL:
EXTERNAL SUPPORT WITH SKYLINE SYSTEM
WATER PROOFING

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
TYPICAL FIXING SUPPORT FOR DOWN PIPE:

50mm & 80mm THICK 80mm Kooltherm® PANEL

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® KG Panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Kooltherm® PANEL / ALUMINIUM SLIDING DOOR - TYPICAL HEAD DETAIL

Kooltherm® PANEL / ALUMINIUM SLIDING DOOR - TYPICAL SILL DETAIL

Kooltherm® PANEL / ALUMINIUM SLIDING DOOR - TYPICAL JAMB DETAIL

These details are indicative for the purpose of illustrating the typical installation of Kooltherm® panels. Panels are to be installed strictly in accordance with the specifications detailed in the forward section of this manual. Substrate construction to be in accordance with the Building Regulations & Statutory Requirements.
Masterwall Australia supports all of its products with a comprehensive Technical Advisory Service for specifiers, stockists and contractors.

This includes a software-powered service designed to give fast, accurate technical advice. Simply phone the Masterwall Australia Technical Service Department with your project specifications. Calculations can be carried out to provide a Condensation (Dew Point) Risk Analysis, and/or a Total Wall (RT) System Thermal Value so that the correct insulation thicknesses can be determined for any given project.

K-Series is powered by Kingspan Kooltherm® panels to deliver exterior insulation systems with superior high performance.

For national Technical and Sales contact MasterWall Australia:

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