# 5175F FORMAN KOOLTHERM INSULATED PLASTERBOARD

## 1. GENERAL

Masterspec sections must be customised to suit the project being specified, by removing irrelevant information and adding project-specific information and selections.

This section relates to the supply, fixing and finishing of Kingspan **Kool**therm® K17 and Kingspan **Kool**therm® K18 Insulated Plasterboard and accessories;

- to timber and steel framed walls,

- brick, block, stone or concrete walls.

Modify / expand this clause to suit requirements of this specification section.

This is a pre-insulated system comprising composite lining and insulation boards. Kooltherm Insulated Plasterboards are backed with phenolic foam and have either glass tissue back facing (Kooltherm® K17 ) or aluminium foil back facing (Kooltherm® K18) depending on the fixing medium application (plaster dab/adhesive bonding or mechanical fixing) and substrate type. The tapered edge to the plasterboard enables a flat seamless surface

### 1.1 RELATED WORK

Refer to ~ for ~

Include cross references only to other work sections where they include directly related work.

**Documents**

### 1.2 DOCUMENTS

Refer to the general section \*\*\* 684 \*\*\*. The following documents are specifically referred to in this section:

NZBC H1/AS1 Energy efficiency

AS 1397 Steel sheet and strip - hot-dip, zinc-coated, or aluminium/zinc- coated

AS/NZS 2589 Gypsum linings - Application and finishing

NZS 4218:2004 Energy efficiency - Small building envelope

NZS 4243 Energy efficiency - Large buildings - Building thermal envelope

AS/NZS 4600 Cold-formed steel structures

AS/NZS 4859.1 Materials for the thermal insulation of buildings - General criteria and technical provisions

BS EN ISO 9001 Quality management systems - Requirements - Technical Corrigendum 1

NZS 4218:2004 Energy Efficiency - Small Building Envelope, is recognised by NZBC, NZS 4218:2009 Thermal Insulation - Housing and Small Buildings, has not at the time of writing been recognised by NZBC. Consult with the BCA as to their requirements.

Delete from the DOCUMENTS clause any document not cited. List any additional cited documents.

The following are related documents and if referred to in the work section need to be added to the list of DOCUMENTS.

NZBC H1/VM1 Energy efficiency

BS 8212 Code of practice for dry lining and partitioning using gypsum plasterboard

NZECP 54 is available on [www.energysafety.govt.nz](http://www.energysafety.govt.nz).

### 1.3 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer’s and supplier’s documents relating to this part of the work:

Kingspan **Kool**therm® K17 Insulated Plasterboard brochure

Kingspan **Kool**therm® K18 Insulated Plasterboard brochure

Manufacturer/supplier contact details

Company: **Forman Building Systems**

Web: [www.forman.co.nz](http://www.forman.co.nz)

Email: info@forman.co.nz

Telephone: 0800 45 4000

It is important to ensure that all personnel on site have access to accurate, up to date technical information on the many products, materials and equipment used on a project. In most cases individual products are not used in isolation, but form part of a building process. Also a particular manufacturer’s and/or supplier’s requirements for handling, storage, preparation, installation, finishing and protection of their product can vary from what might be considered the norm. Access to technical information can help overcome this potential problem.

**Warranties**

### 1.4 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty:

10 years: For **Kool**therm® K17 Insulated Plasterboard

10 years: For **Kool**therm® K18 Insulated Plasterboard

- Provide this warranty on the manufacturer/supplier standard form.

- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section \*\*\* 687 \*\*\* for additional requirements.

Modify or expand the clause to suit project or manufacturer/supplier requirements, options include:

- Change the standard form to be used (check with the manufacturer/supplier, use the general section \*\*\* 2 \*\*\* if required)

- Commence the warranty from the date of purchase (check with the manufacturer/supplier)

### 1.5 WARRANTY - INSTALLER/APPLICATOR

Provide an installer/applicator warranty:

~ years: For **Kool**therm® K17 Insulated Plasterboard installation

~ years: For **Kool**therm® K18 Insulated Plasterboard installation

- Provide this warranty on the installer/applicator standard form.

- Commence the warranty from the date of practical completion of the contract works.

Refer to the general section \*\*\* 687 \*\*\* for additional requirements.

Modify or expand the clause to suit project or installer/applicator requirements, options include:

- Change the standard form to be used (check with the installer/applicator, use the general section \*\*\* 2 \*\*\* if required)

- Commence the warranty from the date of installation (check with the installer/applicator)

**Requirements**

### 1.6 QUALIFICATIONS

Plasterboard installers and stoppers to be experienced competent workers, familiar with materials and techniques specified. Submit evidence of experience on request. For example:

- National Certificate of Interior Systems; or

- Certified Business member of AWCINZ.

### 1.7 NO SUBSTITUTIONS

Substitutions are not permitted to any of the specified systems, components and associated products listed in this section.

**Performance**

### 1.8 ENERGY EFFICIENCY

Maintain the energy efficiency requirements to NZBC H1/AS1: **Energy efficiency, 2.0 Building thermal envelope**. Install to NZS 4218 for small buildings, to NZS 4243 for large buildings and to the **Kool**therm® plasterboard technical requirements.

Modify to suit requirements, particularly if using NZBC H1/VM1. NZBC H1 requires that the building performance index (BPI) of the complete envelope does not exceed a set figure. NZBC H1 sets the minimum requirements. NZS 4218 and NZS 4243 provide a schedule, a calculation and a modelling method for determining insulation. Ensure SELECTIONS reflect this.

## 2. PRODUCTS

**Materials**

### 2.1 KOOLTHERM® K17 INSULATED PLASTERBOARD

Kingspan **Kool**therm® K17 Insulated Plasterboard to AS/NZS 4859.1, comprising fibre free rigid thermoset insulation core, sandwiched between a 10mm front facing of tapered edge gypsum based plasterboard and a reverse tissue based facing autohesively bonded to the insulation core during manufacture. The glass tissue back facing facilitates plaster dab bonding. Manufactured under quality control systems approved to BS EN ISO 9001.

Applied using a variety of traditional or modern dry-lining techniques. These include traditional plaster dab bonding and proprietary adhesive bonding methods.

NOTE: The particular system employed will depend on the construction or design of the wall Kooltherm® K17 is to be fixed to.

### 2.2 KOOLTHERM® K18 INSULATED PLASTERBOARD

Kingspan **Kool**therm® 18 Insulated Plasterboard to AS/NZS 4859.1, comprising fibre free rigid thermoset insulation core, sandwiched between a 12.5mm front facing of tapered edge gypsum based plasterboard and a reverse aluminium foil based facing autohesively bonded to the insulation core during manufacture. The aluminium foil back facing facilitates mechanical fixing. Manufactured under quality control systems approved to BS EN ISO 9001.

Applied using mechanical fixing techniques. These include fixing to metal furring systems and timber framing/battens.

WARNING: The aluminium foil is a vapour barrier. Refer to Forman for advice on where to install Kooltherm® 18 due to condensation risks.

### 2.3 CORNICE

Plasterboard, scotia pattern.

**Components**

Mutually exclusive clauses follow depending on Kooltherm® Insulated Plasterboard type, substrate type and the fixing medium. Delete components not applicable to the project specified.

### 2.4 GYPSUM ADHESIVE - PLASTER DAB

Gypsum adhesive around perimeter wall, ceiling junctions and openings to provide a seal.

Use with Kooltherm® K17 for application to brick, concrete block or concrete masonry walls which are free from moisture penetration. Delete when using another application.

### 2.5 PLASTER ADHESIVE - PLASTER DAB

Plasterboard adhesive applied progressively in the background.

Use with Kooltherm® K17 for application to brick, concrete block or concrete masonry walls which are free from moisture penetration. Delete when using another application.

### 2.6 ACRYLIC SEALANT ADHESIVE - ADHESIVE BONDING

Acrylic sealant adhesive applied to the wall or back of the board.

Use with Kooltherm® K17 for application to sound, plane concrete (tilt-up) or plastered wall surfaces which are free from moisture penetration. Delete when using another application.

### 2.7 FIXINGS - VERTICAL TIMBER- MECHANICAL FIXING

Plasterboard screws long enough to allow a minimum 25mm penetration of the framing.

Use with Kooltherm® K18 for mechanical fixings to vertical timber framing/battens/metal stud and track stud.

### 2.8 FIXINGS - METAL FURRING SYSTEMS - MECHANICAL FIXING

Self drilling and tapping, countersunk, surface coated screws placed at 150 centres, to screw fix **Kool**therm**®** K18to each metal framing section.

Use with Kooltherm® K18 for mechanical fixings to vertical timber framing/battens/metal stud and track stud.

### 2.9 SECTIONS AND TRIM MATERIAL

Form from galvanized steel of a coating class not less than ZM275 to AS 1397 and fix with 30mm x 2.5mm galvanized clouts.

### 2.10 EXTERNAL ANGLE

Perforated.

### 2.11 INTERNAL REINFORCING ANGLE

Perforated.

### 2.12 CONTROL JOINT

With plastic protective tape.

### 2.13 TAPE ON EDGE TRIMS

Tape-on paper tape and galvanized steel trims and edges.

### 2.14 EDGE PROFILES

Pre-formed aluminium profiles, with perforated edge trims.

**Accessories**

### 2.15 NAIL ANCHOR - PLASTER DAB

Masonry nail anchor to be applied after the adhesive to compliment the plaster dab.

For Kooltherm® K17 Insulated Plasterboard.

### 2.16 JOINTING COMPOUNDS

System match bedding compound and finishing compound. Refer to the sheet manufacturer's literature and follow their requirements on which compounds to use with which accessory and in which location, to achieve the required level of finish.

### 2.17 JOINTING TAPE

System match reinforcing tape.

**Finishes**

### 2.18 SKIMCOAT PLASTER

Proprietary spray-on surface finish.

Used to achieve a Level 5 finish over a plasterboard surface prepared to AS/NZS 2589 Level 4. Can be applied by roller, although best applied by airless spray. Proprietary surface sealers are also available to use here or in the painting section/s.

## 3. EXECUTION

NOTE: The fixing medium employed will depend on the construction or design of the wall Kooltherm® Insulated Plasterboards is to be fixed to.

**Conditions**

### 3.1 DELIVERY, STORAGE AND HANDLING

Take delivery of **Kool**therm® Insulated Plasterboards and accessories; store on site and protect from damage in dry conditions stored indoors out of direct sunlight in neat flat stacks on either an impervious plastic sheet or clear of the floor with no sagging and avoiding damage to ends, edges and surfaces. Reject damaged material.

The general section \*\*\* 693 \*\*\* describes how deliveries are to be managed and the goods stored.

### 3.2 SUBSTRATE

Do not commence work until the substrate is dry, plumb, level and to the standard required by the sheet manufacturer's requirements.

### 3.3 LEVELS OF PLASTERBOARD FINISH

Provide the selected plasterboard surfaces to the pre decorative levels of finish specified in AS/NZS 2589.

The levels of finish range from "3" the lowest, up to "5." In specifying the installed orientation of plasterboard sheets, the aim should be to install linings such that directed light falls parallel to jointed areas and not across. Therefore the relevant EXECUTION clauses on levels of finish and lining method must be included. Specify the moisture content of framing in 3821 TIMBER FRAMING.

Note that specifying Level 5 finish will result in an additional cost. Only specify this level of finish when circumstances justify this.

### 3.4 CONFIRM LEVELS OF PLASTERBOARD FINISH ACCEPTANCE

Before commencing work, agree in writing upon the surface finish assessment procedure towards ensuring that the quality of finish expectations are reasonable and are subsequently obtained and acceptable.

Do not apply decorative treatment until it is agreed in writing by the contractor, subcontractors and decorator that the specified plasterboard Level of Finish has been achieved.

"Levels of plasterboard finish" is a tool for specifying the required quality of finish when installing and flush stopping plasterboard priorto the application of a range of decorative finishes under various lighting conditions. Refer to AS/NZS 2589.

Use this clause with the LEVELS OF FINISH clause. Do not use this clause if the earlier INSPECTIONS AND ACCEPTANCE clause has been included. It shall not be assumed that visual comparison of a decorated wall or ceiling against a reference sample area when illuminated by one light source is an adequate test. Colours may match under on light source but appear quite different under another. High intensity 500 or 1000 W quartz halogen floodlights are commonly used to provide light for work areas or application purposes but are not deemed suitable for performing a subjective visual inspection of interior surfaces for the purpose of acceptance/rejection after decoration. There is a likelihood of uncertainty and dispute about colour and finish quality unless a test light source is specified and an agreed inspection procedure is adopted. In the first instance, there is a need to assess the finish of a wall and ceiling prior to decoration against the level of finish criteria specified. Subsequently there is a need to subjectively assess the acceptability or otherwise of the final decorated wall or ceiling, or both, against a sample reference area or against alternative agreed standards. The visual inspection procedure must aim at providing a standardised approach for all parties and may be called up in contract documents.

While the method may rely on an artificial light source, it is intended to provide a standardised method of inspection for surfaces which may be subjected to either natural or artificial lighting.

### 3.5 TIMBER FRAME MOISTURE CONTENT

Maximum allowable moisture content to AS/NZS 2589 for timber framing at lining is 18% or less for plasterboard linings.

### 3.6 METAL FRAMING

Metal framing, to which **Kool**therm® Insulated Plasterboard is fixed, shall comply with AS 1397 or AS/NZS 4600, as applicable. Where adhesion of gypsum linings is required, surfaces shall be free of oil, grease, dust and other foreign materials. Refer to the metal framing manufacturers specifications where high density gypsum linings (>800 kg/m³) are specified for fixing to light gauge steel framing.

**Application - general**

### 3.7 PREPARATION

Ensure ceiling lining in position before wall lining commences.

Wall mounted fittings such as electrical sockets to be fitted to take into account the additional wall thickness. Heavy surface mounted fittings require provision for the fixing load to be applied direct to the supporting wall and not to the Kooltherm® K18 Insulated Plasterboard in isolation.

Modify the clause to suit project specified.

NOTE: Ensure fire stopping details meet the fire rating requirements of the wall.

### 3.8 EXISTING SUBSTRATES

On existing constructions all surfaces to be clean and free of loose or flaking materials. Wallpaper to be stripped and surface mounted fittings removed.

### 3.9 WINDOW/DOOR REVEALS AND SOFFITS

Where plasterboard is returned into the opening, narrow widths of board to be cut and rebated to allow a plasterboard / plasterboard joint at the angle. Fixing to employ the same method as is used for the plain wall areas.

Ensure the cavity in cavity wall constructions is not bridged by the board or fixing medium in such a manner that would allow the passage of water through to the inner leaf.

Where adhesives are employed, soffit boards and boards at window heads should be temporarily supported.

### 3.10 CUTTING

Cutting to be carried out using either a fine toothed saw, or a sharp knife to cut through the insulation and paper backing of the plasterboard, then snapping the board face down over a straight edge and cutting the paper facing of the plasterboard on the other side. Ensure accurate trimming to achieve close butting joints and continuity of insulation.

**Application - Kooltherm® K17**

Applied using a variety of traditional or modern dry-lining techniques. Select the fixing medium clause to suit project requirements and delete the other.

### 3.11 PLASTER DAB BONDING

Fix **Kool**therm® K17 to manufacturer's fixing instructions. Set out a continuous fillet of gypsum adhesive around perimeter wall and ceiling junctions, and around any openings to provide a seal. Apply dabs of gypsum adhesive to the wall. The number, size and lay out of the dabs will depend on the chosen gypsum adhesive manufacturer’s recommendations.

Locate **Kool**therm® K17 against the adhesive dabs and tap back to align with predetermined guidelines on the floor and ceiling.

Use mechanical fixings to complement the plaster dab bond. Apply at a rate of 2 per board after the plaster dabs have set, positioned 15mm in from the board edge and at mid height with a nominal 25mm embedment into the solid wall, excluding plaster dab thickness to manufactures instructions.

Position mechanical fixings in the tapered edge of the boards to ensure they are covered when the board is finished, (e.g. joints taped and skim coating) at mid height. Fit boards tight to the ceiling/joist.

Delete when using proprietary adhesive bonding option below. This method is for applications to brick, block or concrete masonry cavity walls.

### 3.12 PROPRIETARY ADHESIVE BONDING

Fix **Kool**therm® K17to manufacturer's fixing instructions. Gun apply blobs of acrylic sealant adhesive to wall or back of the board approximately 25mm in diameter (single squeeze), at 300mm centres in both directions or to specific adhesive manufacturer’s instructions. Ensure that the blobs adjacent to a board joint are approximately 25mm in from the edge to avoid bridging the joint.

Tap the board back firmly using a straightedge, ensuring that the vertical edge is plumb. Apply fixings in the same manner as Traditional Plaster Dab Bonding.

Delete when using plaster dab bonding option above. This method is for application to sound, concrete tilt-up or plastered wall surfaces which are free from moisture penetration.

**Application - Kool**therm® K18

Applied using mechanical fixing techniques. Select the fixing medium clause to suit project requirements and delete the others.

### 3.13 MECHANICAL FIXING TO VERTICAL TIMBER FRAMING/BATTENS

Fix **Kool**therm® K18 to manufacturer's fixing instructions to timber framing/battens set at maximum 600mm centres and positioned horizontally at floor and ceiling level. Ensure the timbers are run vertically and wide enough to offer a minimum 20mm support to all four edges of board.

Place drywall screws, long enough to allow a minimum 25mm penetration of the timber, at 150 mm centres and not less than 10mm from the edges of the board. Ensure screws are driven straight, with heads embedded just below surface of the board. Do not to overdrive nails/screws.

This method is for application to be used on timber frame constructions or on any dry masonry walls that will support and retain the battens and associated fixings.

### 3.14 MECHANICAL FIXING TO METAL FURRING SYSTEMS

Ensure the metal frame is fixed to the masonry or concrete wall to the manufacturer’s instructions providing a true and level base for the board. Ensure the frame is set vertically at a maximum of 600mm centres to coincide with board joints and midpoint of board. Ensure short lengths of metal framing are fixed horizontally between the vertical pieces at skirting level, at the midpoint of the board and just below the ceiling or soffit level. Ensure provision for horizontal services behind the board, using two pieces of metal framing set no more than 300 mm apart.

Fix **Kool**therm® K18 to manufacturer's fixing instructions by screw fixing to each metal framing section with self drilling and tapping, countersunk, surface coated, screws placed at 150 mm centres.

Site screws no less than 10mm from the edges of the board. Drive screws straight until heads are slightly below the paper surface of the plasterboard facing. Do not to overdrive screws.

This method is for application to proprietary metal framing systems to brick, block, stone or concrete walls.

### 3.15 MECHANICAL FIXING TO TIMBER JOISTS OR RAFTERS

Fix **Kool**therm® K18 to line ceilings to manufacturer's fixing instructions. Ensure boards are placed with the long edge running across the joists, rafters or battens and with all edges supported.

Ensure timbers offer a minimum 20mm support to all four edges of the board. Ensure noggings placed between the joists/rafters coincide with the long edges of board.

Fix board with dry wall screws. Ensure screw have a minimum 25mm penetration of the supporting timber, are placed not less than 10mm from the edges of the board and are spaced at 150mm intervals along all supporting timbers.

This method of installation is similar to that of standard plasterboard to line ceilings.

### 3.16 MECHANICAL FIXING DIRECT TO MASONRY SUBSTRATES

Ensure the wall is sound, dry and level, as surface irregularities may impede fixing of the board. Fix **Kool**therm® K18 to manufacturer's fixing instructions and fully restrain using mechanical fixings.

Ensure the number and type of such fixings comply with the fixing supplier’s recommendations and are evenly distributed over the whole area of the board. Fixings must not overlap board edges.

This method is for application to fair finished brick, block and concrete cavity walls where Kingspan Kooltherm® K18 Insulated Plasterboard is to be finished with gypsum plaster.

**Application - finishing sections and trim**

### 3.17 FIX EXTERNAL ANGLE

Fix full length to external corners with clouts at 100mm centres each side staggered to the sheet manufacturer's details and requirements.

### 3.18 FIX INTERNAL REINFORCING ANGLE

Fix full length to internal corners with clouts at 100mm centres each side staggered to the sheet manufacturer's details and requirements.

### 3.19 FORM CONTROL JOINTS

Provide at maximum 9 metre centres in long unbroken walls and 12 metre centres to ceilings to the sheet manufacturer's details and requirements. Fix control joint section into joint by staples at 150mm both sides. Fill gap in voids with sound rated sealant. Remove plastic tape after stopping.

### 3.20 FIX CORNICE

Fix with adhesive required by the sheet manufacturer and joints mitred to the sheet manufacturer's details and requirements

### 3.21 FORM SQUARE STOPPED CORNERS

Form taped reinforced square stopped ceiling-to-wall angles to the sheet manufacturer's requirements.

### 3.22 INSTALL TAPE-ON TRIMS

Install in accordance with the trim manufacturer's requirements.

**Finishing - stopping**

Some special finishing plasters do not require sanding. Refer to the sheet manufacturer's specifications.

### 3.23 FORM JOINTS

Fill recess with bedding compound, centre the reinforcing tape, apply a second coat of bedding compound followed by a coat of finishing compound. Allow to dry and lightly sand off, to the sheet manufacturer's details and requirements.

### 3.24 STOPPING NAILS AND SCREWS

Apply two successive coats of bedding compound and a coat of finishing compound to the sheet manufacturer's requirements.

### 3.25 SQUARE STOPPED CORNERS

Fill with bedding compound, centre reinforcing tape into internal angle and apply a coat of finishing compound and complete to the sheet manufacturer's details and requirements.

### 3.26 EXTERNAL ANGLES

Apply two coats of bedding compound followed by a coat of finishing compound to the sheet manufacturer's requirements.

### 3.27 END BUTT JOINTS

Fill, tape and coat as for tapered edge joints except that each stage is doubled in width.

### 3.28 APPLYING SKIMCOAT PLASTER

Apply spray-on surface finish in accordance with the sheet manufacturer's requirements.

Used to achieve a Level 5 finish over a plasterboard surface prepared to Level 4. Can be applied by roller, although best applied by airless spray. Proprietary surface sealers are also available to use here or in the painting section/s.

**Completion**

### 3.29 REPLACE

Replace damaged sheets or elements.

### 3.30 CLEAN DOWN

Clean down completed surfaces to remove irregularities and finally sand down with fine paper to the sheet manufacturer's requirements, to leave completely smooth and clean to the standard required for following trades.

### 3.31 REMOVE

Remove debris, unused materials and elements from the site.

## 4. SELECTIONS

For further details on selections go to [www.forman.co.nz](http://www.forman.co.nz).

Substitutions are not permitted to the following.

Select the options to suit the project and delete options not specified.

**Materials**

### 4.1 INSULATED PLASTERBOARD

Location/substrate: ~/~

Type/ product: **Kingspan Kool**therm® K17

Fixing method: ~

Size: 2400mm x 1200mm (2.88m²)

Board thickness: ~mm

R value: ~

Options:

Fixing method: Plaster dab bonding

Proprietary adhesive bonding

Board thickness (includes plasterboard): 35mm, 40mm, 50mm, 60mm, 70mm, 80mm

R value:

|  |  |
| --- | --- |
| Product thickness (including plasterboard) | Product R-value |
| 35mm | R1.3 |
| 40mm | R1.5 |
| 50mm | R2.0 |
| 60mm | R2.6 |
| 70mm | R3.1 |
| 80mm | R3.6 |

The R-value is the product R-value; refer to [www.forman.co.nz](http://www.forman.co.nz).for Total R-value depending on wall application.

### 4.2 INSULATED PLASTERBOARD

Location/substrate: ~/~

Type/ product: **Kingspan Kool**therm® K18

Fixing method: ~

Size: 2400mm x 1200mm (2.88m²)

Board thickness: ~mm

R value: ~

Options:

Fixing method: Mechanical fixing to vertical timber framing/battens

Mechanical fixing to metal furring systems

Mechanical fixing to timber joists or rafters

Mechanical fixing direct to masonry substrates

Board thickness (includes plasterboard): 35mm, 40mm, 50mm, 60mm, 70mm, 80mm

R value:

|  |  |
| --- | --- |
| Product thickness (including plasterboard) | Product R-value |
| 35mm | R1.3 |
| 40mm | R1.5 |
| 50mm | R2.0 |
| 60mm | R2.6 |
| 70mm | R3.1 |
| 80mm | R3.6 |

The R-value is the product R-value; refer to [www.forman.co.nz](http://www.forman.co.nz).for total R-value depending on wall application.

### 4.3 INSULATED PLASTERBOARD FINISH

System: ~

Finish: Level ~

Options:

System: Wall, ceiling

Finish: The default Level of Finish is Level 4 with Level 5 for where a very high quality is required.