CLEGG GEREMIA
ARCHITECTURE

Clegg Geremia Architecture Ltd

P R O J E C T S P E C I F I C A T I O N

Brown Extension and New Garage

472 Speagrass Flats Road
Dalefield
Queenstown

Issued for Consent

CG.2511

PROJECT OVERVIEW

Scope

Extention to existing house and new constructiopn of 3 car garage

Address

Site Address	472 Speagrass Flats Road
Suburb	Dalefield
City	Queenstown
Lot #	3
DP #	381575

Site Conditions

Wind Zone	VH - Very High Wind Speed
Earthquake Zone	Zone 3
Exposure Zone	Zone B - Low
Snow Loading Zone	Zone N5

Related Parties

Designer

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1 STONEWORK

1.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

1.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

3604:2011(NZS)	Timber-framed buildings
4210:2001(NZS)	Masonry construction: Materials and workmanship
4236:2002(SNZHB)	Masonry veneer wall cladding

1.3 Schistwork

1.3.1 Scope

Supply the specified Schistwork and install as shown on the drawings.

1.3.2 Materials

Schist stone shall include variable colours ranging through ochres, umbers and greys. The schist shall be broken (and edge guillotined) into the finished stones before delivery to the site.

Mortar - Refer NZS 4210, strength 12.5 MPa at 28 days. Incorporate admixture exactly to the manufacturer's recommendations. Sand correctly graded to NZS 3103 and kept clean.

1.3.3 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All work shall be by or under the direct supervision of Registered Masons certified by the NZ Mason's Registration Committee or, through reference to several completed projects, the Main Contractor must show that the proposed Subcontractor is fully competent to produce the required results. All aspects of the schistwork shall be to generally recognised best (local) trade practice.

Co-operate with the Contractor to ensure that all support foundations, nibs, and framed substrates are completely appropriate for the schistwork required, and that blockwork walls and fireplace insitu concrete walls have been fully waterproofed. Co-ordinate with all trades to build all necessary fixings, sleeves, or electrical or plumbing devices etc. into the schistwork and check that positions are correct before finish grouting. Coordinate with all trades to form all required holes, openings etc. in their exact positions.

Carefully select schist stones for sizes and faces and position to produce a well bonded (approximating stretcher bond) mass with the required face finish. Finish jambs and ends to clean straight lines.

Use mortar dry enough to avoid slurry trickles on the finished schist faces but moist enough to provide a good bond with the schist. No retempering of partially set or dried mortar. Keep the wall faces clean as

work proceeds and regularly inspect for mortar droppings etc. Turn back scaffold planks at night and during rain. On completion thoroughly clean all surfaces affected by this work.

Paving work by tradespersons experienced with schist paving and competent to produce the required result. No exterior paving during inclement weather.

1.3.4 Schistwork Walls

Solid reinforced (nominally 400mm thick) to the areas shown on the drawings.

Facing (nominally 200mm thick) to the areas shown on the drawings.

Veneer (nominally 200mm thick) to timber framed walls shown on the drawings.

Solid unreinforced (nominally 400mm thick) to the areas shown on the drawings.

All wall faces shall have a random layout of the full range of different sized stones, and the long axis of the visible face of every stone shall be horizontal.

All stones carefully selected to neatly build the wall faces - average mortar bed depth approx. 15mm, and the minimum mortar bed for any stone shall be 6mm.

Maintain plumb corners and reasonable coursing throughout all vertical schistwork. Vertical surfaces shall be evenly true to face, variation +10mm for almost all of the stones. Fill solid to the substrate behind the facing stones so that all schist pieces are fully encased in well bonding mortar.

Build the low solid walls and freestanding (landscaping) walls with two faces, and more or less from both faces concurrently, and with a reasonable number of stones bonding through from one side through to, or close to, the other face. Ensure that all reinforcing steel is well encased in mortar moist enough to bond well into the surrounding stonework. Where appropriate cap the wall with full width stones.

For facing work to blockwork or concrete incorporate 16mm dia. conduit tube as drawn to form small weepholes at approx 400mm centres in the bottom course mortar. Install wall ties (complying with NZS 4210) to facing schistwork, at 300mm centres above the first layer of stones, and averaging at 600mm centres horizontal and 350mm centres vertical across the full surface of the schistwork facing. Ties fixed with hot dip galvanised hex head 14 gauge x 55mm screws into the blockwork / concrete.

For veneer work to timber framing ensure that the substrate and timber framing has been installed correctly before commencing schistwork, and that the stud positions are accurately marked for ties fixing. Incorporate 16mm dia. conduit tube as drawn to form small weepholes at approx 400mm centres in the bottom course mortar (to drain any moisture that reaches the cavity. Install Duo King Size (or equal approved complying with NZS 4210) ties to the veneer schistwork, at 400mm centres above the first layer of stones, and averaging 400mm centres horizontal and vertical across the full surface of the schistwork veneer. Ties fixed with 14 x 100mm hot dip galvanized screws or equal approved through battens and into the timber studs.

Select even thickness schist slabs to form neat sill tiles to windows as detailed on the drawings.

2 CARPENTRY

2.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

2.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1170.0:2002 SUPP1(AS/NZS)	Structural design actions - General principles - Commentary
1170.2:2011(AS/NZS)	Structural design actions - Wind actions
2295:2006(NZS)	Pliable, permeable building underlays
2728:2013(AS|NZS)	Prefinished/prepainted sheet metal products for interior/exterior building applications - Performance requirements
2904:1995(AS/NZS)	Damp-proof courses and flashings
3604:2011(NZS)	Timber-framed buildings
4200.1:2017(AS|NZS)	Pliable building membranes and underlays - Part 1: Materials
4200.2:1994(AS/NZS)	Pliable building membranes and underlays - Installation requirements
4389:2015(AS/NZS)	Roof safety mesh
NZBC F2	Hazardous Building Materials
NZBC G12	Water Supplies
NZMRM Code of Practice	NZ Metal Roof and Wall Cladding Code of Practice - Version 3.0
SNZ HB 3604:2011	Timber-framed buildings - Selected extracts from NZS 3604:2011

2.3 General

This section includes the receiving, stacking and storage of all Carpenter's materials and the fabrication, erection and fixing of all framing, sheathings and finishing timbers, including all work incidental to neatly finishing in other trades and all temporary work and temporary bracing.

The Carpenter shall attend upon all trades, and shall supply and fix all obviously necessary but not specifically mentioned fixings and materials.

2.4 Metalcraft Longrun Roofing

2.4.1 Scope

Supply and install Metalcraft Longrun Roofing, as specified herein, to the locations and details shown on the design drawings, complete with all necessary components and accessories required for proper installation and performance. All aspects of this work shall comply with the NZ Building Code, related Metalcraft Longrun Roofing technical literature and publications (check http://www.metalcraftgroup.co.nz or call (0800) 766 369 for the latest editions), and other relevant product manufacturers' recommendations.

No substitutions are permitted for Metalcraft Longrun Roofing.

For the purpose of this specification, Metalcraft Longrun Roofing is referred to as 'Longrun Roofing', and all 'Metalcraft' associated technical literature and publications, including the 'Metalcraft Product Technical Statement', installation instructions and drawings, are collectively referred to as the 'technical literature'.

Extent of work:

The following is a list and/or general description of the extent of the Metalcraft Longrun Roofing works, which are more specifically defined in the contract documents, required for the completion of the contract works:

2.4.2 Requirements

2.4.2.1 Rainwater Run-off used as Potable Water:

Roofing for collecting potable water will be to the requirements of NZBC G12/AS1.

2.4.2.2 Safety:

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

2.4.2.3 Warranty:

Warranty for Manufacturer or Supplier:

- 15 years minimum for coatings

Commence the warranty from the date of installation.

Warranty - Installer/ Applicator:

Warrant this work under normal environmental and use conditions against weatherproofing failure.

Workmanship – Refer to Supplier.

2.4.2.4 Substitutions:

The Metalcraft Longrun Roofing shall be as specified herein and on the design drawings. The substitution of the Metalcraft Longrun Roofing for an alternative brand is not permitted under any circumstances.

The substitution of the specified Metalcraft Longrun roofing or ancillary component for an alternative Metalcraft Longrun Roofing system or ancillary component by the Contractor shall only be permitted with the Contract Administrator's written authorisation and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate an alternative Metalcraft Longrun Roofing or ancillary component to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

2.4.2.5 Samples:

As required, provide samples of the specified Metalcraft Longrun Roofing for verification by the Contract Administrator.

2.4.2.6 Producer statement (PS3):

The Metalcraft Longrun Roofing installer shall furnish a fully completed PS3 Producer Statement (Construction) at time of application for Code Compliance Certificate. The Producer Statement shall accurately reflect the scope of the installation of the Metalcraft Longrun Roofing in accordance with the consented drawings and specifications.

2.4.2.7 Inspections & reporting:

Inspections shall take place at each of the stages as scheduled in the building consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Carry out all necessary pre-installation and installation inspections for each area of the works.

Complete all necessary pre-installation checklists prior to installation, and all necessary installation checklists.

Complete all necessary final checklists and installation sign-off certificates before handing over completed work.

2.4.2.8 Quality assurance:

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of the work are carried out to the highest standard.

2.4.2.9 Defective materials & workmanship:

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected Metalcraft Longrun Roofing materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator without delay and at no additional cost to the Principal.

2.4.3 Profile

Metalcraft - Corrugate roof sheet - a corrugated profile; 18mm rib height and 760mm effective cover based on the selected BMT.

Material type - Refer to ‘Roof Sheet Material’ clause.
Thickness - 0.40mm BMT (G300), 0.55mm BMT (G550) and 0.9mm (Aluminium)
Windload – Refer to 'technical literature'
Mass (KG/M2)- Refer to ‘Metalcraft’
Minimum pitch - 8 degrees

- Sheets shall be continuous from ridge to gutter, or where a step is designed into the roof, sheets shall be continuous from ridge to step and step to gutter.
- Sheet ends must be stop-ended under flashings.

Installed in accordance with the manufacturer's requirements to the locations and details shown on the drawings.

Installed Location:
Thickness:

2.4.4 Roof Sheet Material

Zincalume® to selected BMT. Hot-dipped aluminium/zinc alloy coated steel coil manufactured to AS 1397. 150g/m² coating weight.

Galvsteel® to selected BMT. Hot-dipped coated steel coil manufactured to ISO 5660 Part 1 and Part 2.

COLORSTEEL Altimate® to selected BMT. Pre-painted marine grade aluminium conforming with AS/NZS 2728.

Colour:

COLORSTEEL Maxam ® to selected BMT. Pre-painted hot dipped aluminium/zinc/magnesium alloy coated steel coil, with a minimum coating weight of 150g/m², conforming with AS/NZS 2728 Class 6. COLORSTEEL®

Colour:

2.4.5 Roof Ancillary Components & Accessories

Fit and lap roofing underlay over the netting/mesh or use a self-supporting underlay. Lay underlay horizontally or vertically with a 150mm side lap, over-sailing the spouting and/or gutters by 10mm, in accordance with 'technical literature'.

Non self-supporting underlay must be supported by hexagonal wire mesh, safety mesh or alternative support, as specified and/or as shown on the approved drawings, in accordance with the roofing underlay manufacturer's recommendations.

Underlay shall be installed in a manner so that it is sufficiently tensioned without sagging, overhangs fascia boards 20mm - 25mm, and finished along roof edges, ridges, valley gutters, roof/wall junctions and at penetrations to the details shown on the drawings.

Underlayment for fully-supported roofing shall be in accordance with NZMRM Code of Practice.

Separate roof underlay from chimneys and flues in accordance with the requirements of NZBC Acceptable Solutions C/AS2 to C/AS6, Paragraph 7.5.9.

Cladding screw fastener type and durability shall comply with AS 3566 Class 4 or Class 5, as appropriate, and be no less than the durability of the material being fixed. Fastener type and placement (frequency) shall be appropriate for the environmental conditions and the specified cladding profile and material and the supporting structure material; all in accordance with the NZMRM Code of Practice and E2 External Moisture.

COLORSTEEL Altimate® must be installed with CL 4% screw with 30mm minimum embedment. Screws must be installed through a clearance hole. All fasteners to be fitted with a bonded sealing washer.

Metal Flashings. Profiled metal cladding flashings shall be fabricated from material with the same coating as the cladding material, to maintain durability and compatibility requirements. Flashings shall be 0.55BMT G300 steel or H34 Aluminium coated to the same standards as the profiled cladding sheets, and notched/scribed when installed across the cladding profile or provided with a soft edge – in accordance with selected roof sheet material and NZMRM Code of Practice requirements.

Flashings, flashing fastenings and fastening frequency shall be in accordance with the NZMRM Code of Practice.

Do not construct flashing joints and flashing junctions in a manner that relies entirely on sealant to maintain weathertightness.

Rivet Fastenings. Rivets shall be sealed aluminium minimum 4mm diameter.

Use only neutral-curing silicone or MS polymer sealant, compatible with the specified metal cladding and flashing materials and finishes, that is suitable for the required application and use in accordance with the sealant manufacturer's instructions and to NZMRM Code of Practice requirements. All sealed joints must be mechanically fastened, and excess sealant neatly removed to prevent unnecessary dirt build-up. Sealant shall only be used to seal between two metal surfaces, do not fill holes or gaps with sealant.

Proprietary Collar Flashings. EDPM or silicone-polymer proprietary flexible collar flashings for weatherproofing cladding-penetrating pipes/flues/ducts. Sized to suit the applicable pipe/flue/duct and installed in strict accordance with the manufacturer's requirements and the NZMRM Code of Practice.

Profiled Foam Closure Strip. Non-bituminous, compressible, closed-cell foam strips profiled to fit the specified cladding profile. Installed to the details shown on the drawings and in accordance with selected roof sheet material and NZMRM Code of Practice recommendations.

2.4.6 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades, as required, on the assembly and installation of the Metalcraft Longrun Roofing to the required layout, details and tolerances.

2.4.7 Qualifications & Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques and suitably qualified to install Metalcraft Longrun Roofing, to fully comply with all warranty requirements in accordance with the manufacturer's requirements.

All cutting, fixing and installation techniques, fastenings and sealants shall be exactly as recommended by and in accordance with the NZMRM Code of Practice, and carried out with the use of suitable tools and equipment appropriate for the application.

Always maintain isolation of dissimilar materials in accordance with the NZMRM Code of Practice Section 4.10. Isolate dissimilar materials (metal and non-metal) in close proximity as necessary by fitting separator strips. Place isolators between metals and treated timber or cement-based materials.

Do not allow unpainted lead-sheet or copper materials to come in contact with, or allow water run-off from these onto Zincalume or galvanised materials.

All work shall be such as to leave a neat, efficient, robust and weathertight installation.

2.4.8 Delivery & Handling

Store Metalcraft Longrun Roofing, flashings and accessories clear of level ground, on bearers at evenly spaced centres as recommended by the NZMRM Code of Practice. Keep stored materials and accessories dry and protected from damage and contamination at all times.

Do not use damaged or defective materials or products, or products that are beyond their designated shelf life.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the material, including surface marking.

2.4.9 Preparation

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades have been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others are complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades are complete.

Supporting timber structures shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content in accordance with the requirements of NZS 3602 at the time of installation.

Supporting light-gauge steel framed structures shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria.

Supporting heavy steel structures shall comply with NZS 3404 and the NZ Building Code.

Roof Structure - check all aspects of preparatory works, including but not limited to:

- Check that the purlins are installed to the required set-out and spacings, are straight and true to line and plane, and are securely fixed.
- Check that all barge and fascia boards have been installed to the correct line and plane with all edge blocking complete and secure.
- Check that valley gutter and hidden gutter framing is to the required dimensions with solid backing supports securely fixed, true to line and plane.
- Check that internal gutter membrane linings are properly dressed back and adhered to a solid substrate along the roof edge as shown on the design drawings.
- Check that all trimming for roof penetrations, all roof/wall junction blocking, and all necessary work by other trades are complete.
- Check that solid backing required for fully supported roofing is complete and securely fixed in accordance with the design drawings.

2.4.10 Installation

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use and shall use appropriate safety gear when handling materials. Installers shall conform with all relevant WorkSafe NZ Guidelines Working at Heights.

Prevent contact with, or run-off from, incompatible materials in accordance with the recommendations in the NZMRM Code of Practice.

Protect the finished surface from damage at all times; replace the whole sheet where a significant depth of the finish has been damaged (including flashings).

Accurately set-out the planned cladding layout prior to fixing to ensure true and accurate cladding lines and incorporate correct relationships with other design features shown on the drawings; maintain this accurate set-out throughout installation.

Keep cladding lines consistent and true along the roof; with side-laps of sheets to be straight, true and accurately aligned up and down. Check for and eliminate any creep and/or spread of sheets during installation.

Cut metal cladding and flashings by shear only - do not use abrasive cutting tools. Do not use black lead pencils for marking pre-finished metal cladding and flashings.

All cladding jointing techniques and sealants shall be in accordance with the NZMRM Code of Practice and shall be compatible with the cladding material and finish. Joints shall be sealed with an approved neutral-cure sealant or approved closed-cell lap tape.

Install fasteners in a straight line with a consistent fastening pattern on each sheet in accordance with 'technical literature' requirements. Fasteners are to be set using a snug fitting socket and a setting tool that does not unduly damage the finish coating of the screw. Depth of setting is to be sufficient to achieve slight compression of the sealing washer without distorting the profile or the sealing washer itself.

Aluminium rivets are to be sealed type minimum 4mm diameter. Clip-fastened sheets shall be fixed with concealed proprietary fastening clips appropriate for the cladding profile and material, substrate/structure and the environment in accordance with the NZMRM Code of Practice recommendations.

Install flashings as detailed on the drawings and in accordance with the Zealand Metal Roofing Code of Practice. All flashings shall be neatly formed and finished, securely fastened to the structure, weatherproof, and lapped such that any water will run down to the exterior. For highly visible flashings, plan each flashing joint and/or junction with specific regard to aesthetic requirements. Penetration flashings shall be as per the design details and shall not rely solely on silicone sealant to achieve weathertightness of the flashing.

Handle sheets carefully to avoid scratching and denting. Do not walk on cladding sheets prior to installation. Remove strippable film, if applied, immediately after installation of roof cladding to avoid resin staining. Ensure sealant is trapped between joint surfaces and not exposed to the visual surface.

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use and shall use appropriate safety gear when handling materials. Installers shall conform with all relevant WorkSafe NZ Guidelines Working at Heights.

Prevent contact with, or run-off from, incompatible materials in accordance with the recommendations in the NZMRM Code of Practice.

Protect the coated surface from damage at all times; replace the whole sheet where a significant depth of the coating has been damaged (including flashings).

Accurately set-out the planned cladding layout prior to fixing to ensure true and accurate cladding lines and incorporate correct relationships with other design features shown on the drawings; maintain this accurate set-out throughout installation.

Keep cladding lines consistent and true along the roof; with side-laps of sheets to be straight, true and accurately aligned up and down. Check for and eliminate any creep and/or spread of sheets during installation.

Cut metal cladding and flashings by shear only - do not use abrasive cutting tools. Do not use black lead pencils for marking pre-finished metal cladding and flashings.

Screw fastenings for pre-painted metal must be pre-painted prior to installation for an accurate colour match.

All cladding jointing techniques and sealants shall be in accordance with the NZMRM Code of Practice and shall be compatible with the cladding material and finish. Joints shall be sealed with an approved neutral-cure sealant or approved closed-cell lap tape.

Install fasteners in a straight line with a consistent fastening pattern on each sheet in accordance with 'technical literature' requirements. Fasteners are to be set using a snug fitting socket and a setting tool that does not unduly damage the finish coating of the screw. Depth of setting is to be sufficient to achieve slight compression of the sealing washer without distorting the profile or the sealing washer itself.

Aluminium rivets are to be sealed type pre-painted to match cladding, minimum 4mm diameter. Clip-fastened sheets shall be fixed with concealed proprietary fastening clips appropriate for the cladding profile and material, substrate/structure and the environment in accordance with the NZMRM Code of Practice recommendations.

Install flashings as detailed on the drawings and in accordance with the Zealand Metal Roofing Code of Practice. All flashings shall be neatly formed and finished, securely fastened to the structure, weatherproof, and lapped such that any water will run down to the exterior. For highly visible flashings, plan each flashing joint and/or junction with specific regard to aesthetic requirements. Penetration flashings shall be as per the design details and shall not rely solely on silicone sealant to achieve weathertightness of the flashing.

Handle sheets carefully to avoid scratching and denting. Do not walk on wall cladding sheets prior to installation. Remove strippable film, if applied, immediately after installation of roof cladding to avoid resin staining. All accessories are to be colour matched prior to installation, do not use colour match paint for repairing any blemishes. Ensure sealant is trapped between joint surfaces and not exposed to the visual surface.

2.4.11 Compatibility

Ensure material is isolated from incompatible materials. It must not be in contact with, or receive run off from, less noble metals such as copper, brass and lead. It should not be in wet contact with stainless steel. Sustained wet contact with timber, either treated or untreated, must be avoided.

2.4.12 Completion

Check that the Metalcraft Longrun Roofing and associated components and flashings have been installed and finished correctly. Check for defective work, damage and surface marking - replace and/or repair as necessary. Ensure that the work of other trades does not reduce the clearances of the cladding to ground, deck or roof that are required by the NZ Building Code.

Leave all work complete and weathertight and to the required standard in accordance with the New Zealand Metal Roofing Code of Practice.

Leave the completed works and surrounding surfaces clean and free of debris and rubbish. Remove all rubbish and excess material from the site.

Maintenance should be carried out in accordance with Metalcraft maintenance requirements.

2.5 Thermakraft Underlay, DPM, DPC & Tapes

2.5.1 Scope

Supply and install Thermakraft Underlays and Membranes, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with Thermakraft Ltd technical information and installation requirements (check www.thermakraft.co.nz, or call 0800 806 595 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the design drawings.

No substitutions are permitted for the specified products from Thermakraft Ltd.

The following is a list and a general description of the extent of the Thermakraft Underlays and Membranes works, which are more specifically defined in the contract documents, required for the completion of the contract works:

2.5.2 Requirements

2.5.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

2.5.2.2 Warranty

Kingspan Thermakraft Product Warranty Statement:

- 15 Years Warranty - for all Thermakraft warranted products installed, according to the warranty conditions.
- Provide the Thermakraft Ltd Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

2.5.3 Damp-Proof Membrane

Thermathene Black (250µm). A 250 micron thick (0.25mm), tear resistant, recycled polyethylene film sheet concrete underlay. Coloured black.

Installed over nominal 10mm (max. 25mm) thick compacted sand blinding layer, over a properly prepared base course, as a moisture vapour barrier under concrete slabs on-ground (prior to concreting), in accordance with the manufacturer's requirements and as shown on the drawings (Install Guide).

Thermathene Black must be laid in a continuous manner with all laps minimum 150mm, and penetrations to be taped with Thermakraft White General Purpose Tape. Tape-seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Installed Location:

Thermathene Orange™, a super heavy duty high impact polythene film, 300 microns thick and manufactured from recycled alloyed polythene materials. Commonly used on commercial sites where increased robustness is required. Coloured orange.

Installed over nominal 10mm (max. 25mm) thick compacted sand blinding layer, over a properly prepared base course, as a moisture vapour barrier under concrete slabs on-ground (prior to concreting), in accordance with the manufacturer's requirements and as shown on the drawings (Install Guide).

Thermathene Orange must be laid in a continuous manner with all laps minimum 150mm, and penetrations to be taped with Thermakraft White General Purpose tape or Aluband Window Flashing Tape. Thermathene Orange must not be left exposed for more than 30 days. Tape-seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Installed Location:

2.5.4 Damp-Proof Course

Supercourse 500 DPC. A 0.75mm thick, high-impact, single-layer Polyethylene film, embossed on both sides. Available in 50mm 75mm, 90mm, 100mm, 150mm, 200mm, 250mm, 300mm, and 500mm roll widths. Supercourse 500 DPC is suitable for use as a separation barrier between most incompatible and dissimilar materials.

Used as a general damp proof course (DPC) for separating timber and wood-based products and metal from concrete, masonry, brick, and stone surfaces, and as a moisture barrier (Install Guide).

Also used as a concealed flashing behind brick veneer cladding in accordance with NZS 4229 and NZBC E2/AS1.

Installed in accordance with the manufacturer's requirements, BRANZ Appraisal No.329, and as shown on the drawings.

Perimeter. A bitumen saturated, heavy Kraft lightly coated with Perlite. Available in 50mm, 75mm, 90mm, 100mm, 150mm, 200mm, 250mm and 300mm roll widths. Perrimeter DPC is used as a general damp proof course (DPC) for separating timber and wood-based products and metal from concrete, masonry, brick, and stone surfaces, and as a moisture barrier.

Also used as a concealed flashing behind brick veneer cladding in accordance with NZS 4229 and NZBC E2/AS1.

Installed in accordance with the manufacturer's requirements, and as shown on the drawings (Install Guide).

2.5.5 Wall Underlay

Covertek 215. A grey-coloured, economic, versatile and lightweight self-supporting, non-fire-retardant, absorbent, breathable, synthetic non-woven polyolefin roof and wall underlay. Constructed with a microporous water-resistant film between spun-bonded polyolefin layers, providing resistance to shrinkage, tearing, and moisture ingress.

Can only be used in lined applications. Section E2 NZBC defines a lining as "the rigid sheet covering for wall, ceiling or other interior surface." Must not be used in unlined buildings such as unlined garages, sheds, soffits or canopies.

Installed as a roof or wall underlay over timber or steel framing in accordance with the manufacturer's requirements and BRANZ Appraisal No. 1229. Suitable for use in NZS 3604 wind zones up to and including Extra High (roof) and Very High (wall).

Covertek 215 roof underlay can be used directly under direct-fixed roof claddings or under roof cavity battens, including profiled metal, metal tile and masonry tile roofing. It must be installed taut, with a minimum 150mm lap, and fixed at maximum 300mm centres. Printed side must face outwards.

Covertek 215 roof underlay must be installed in a manner that prevents ponding of water and span no more than 1200mm without additional support. When run vertically at pitches from 3° up to 10°, additional support is required (see Install Guide).

Do not leave Covertek 215 exposed on roofs for more than a total of 7 days before covering. For wall applications, maximum exposure is 60 days. Cannot be used under translucent roof sheeting.

2.5.6 Roof Underlay

Covertek 215. A grey-coloured, economic, versatile and lightweight self-supporting, non-fire-retardant, absorbent, breathable, synthetic non-woven polyolefin roof and wall underlay. Constructed with a microporous water-resistant film between spun-bonded polyolefin layers, providing resistance to shrinkage, tearing, and moisture ingress.

Can only be used in lined applications. Section E2 NZBC defines a lining as "the rigid sheet covering for wall, ceiling or other interior surface." Must not be used in unlined buildings such as unlined garages, sheds, soffits or canopies.

Installed as a roof or wall underlay over timber or steel framing in accordance with the manufacturer's requirements and BRANZ Appraisal No. 1229. Suitable for use in NZS 3604 wind zones up to and including Extra High (roof) and Very High (wall).

Covertek 215 roof underlay can be used directly under direct-fixed roof claddings or under roof cavity battens, including profiled metal, metal tile and masonry tile roofing. It must be installed taut, with a minimum 150mm lap, and fixed at maximum 300mm centres. Printed side must face outwards.

Covertek 215 roof underlay must be installed in a manner that prevents ponding of water and span no more than 1200mm without additional support. When run vertically at pitches from 3° up to 10°, additional support is required (see Install Guide).

Do not leave Covertek 215 exposed on roofs for more than a total of 7 days before covering. For wall applications, maximum exposure is 60 days. Cannot be used under translucent roof sheeting.

2.5.7 Underlay Support

Thermakraft Thermastrap. A 19mm wide x 0.4mm thick polythene embossed rigid strap. For use as a support for non-self support roof underlays, and to restrict the bellowing of flexible wall underlays in

drained cavities. Suitably tensioned when installed to avoid any sagging and to keep the flexible underlay in a flat plane. Installed at right angles to roof purlins or walls studs, at maximum 300mm centres.

Application/Use:

Thermakraft Stud Strap. A 25mm wide x 0.4mm thick polypropylene woven and coated flexible strap. For use as a support for non-self support roof underlays, and to restrict the bellowing of flexible wall underlays in drained cavities. Suitably tensioned when installed to avoid any sagging and to keep the flexible underlay in a flat plane. Installed at right angles to roof purlins or wall studs, at maximum 300mm centres.

Application/Use:

2.5.8 Window Flashing Tape

2.5.8.1 Aluband Bituminous Adhesive Flexible Window Flashing Tape

Aluband Window Flashing Tape. A polymeric faced, bituminous modified, self-adhesive tape with a release backing paper. Must be used in conjunction with the Thermakraft Corner Moulds, and when used with the declared Kingspan Thermakraft flexible underlays is part of the Thermakraft OneWrap System.

Aluband Window Flashing Tape is part of the Thermakraft ONE WRAP System - a total building wrap solution.

Aluband Window Flashing Tape is suitable for use on timber or steel framed buildings, in conjunction with a compatible flexible underlay, around framed joinery openings as a secondary weather barrier, in NZS 3604 Wind Zones up to and including 'Extra High'.

Aluband Window Flashing Tape can be used on the sill and lintel of framed joinery openings, and to seal flashing upstands to a flexible underlay.

Physical Properties:
- Thickness: 0.65mm.
- Installation temperature range: minimum 5°C; maximum 30°C.
- Maximum UV exposure: 42 days.
- Tape width: Available in 75mm, 150mm, and 200mm wide rolls.

The width of Aluband Window Flashing Tapes used shall be selected to suit the depth of framed openings and Thermakraft installation requirements.

Installed in accordance with the requirements of the Thermakraft Aluband Application & Installation Guide and BRANZ Appraisal No.878, to the locations and details shown on the drawings.

Compatible with all Thermakraft building underlays. Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.

Thermakraft Corner Moulds MUST be used at flashing corners (see installation guide).

Do not leave Aluband Window Flashing Tape exposed to weather and UV light for more than 42 days after installation.

Flashing Tape Size:
Installed Location:

2.5.8.2 Thermaflash High Adhesion Synthetic Window Flashing Tape

Thermaflash High Adhesion Synthetic Window Flashing Tape. Thermaflash Synthetic Window Flashing tape is part of the Thermakraft ONE WRAP System - a total building wrap solution. The advanced adhesive technology provides a high strength bond to most building surfaces and wall underlays. It is suitable for window and door installation as well as other wall penetrations. Thermaflash can be installed in a wide range of temperatures and can withstand UV exposure for up to 180 days.

Thermaflash Window Flashing Tape is suitable for use on timber or steel framed buildings, in conjunction with a compatible flexible underlay, around framed joinery openings as a secondary weather barrier.

Thermaflash Window Flashing Tape can be used as a flexible flashing system around window and door joinery openings on timber and steel framed buildings within the following scope:
• Installed into and around joinery openings over the wall underlay and exposed frame to cover both the face and edge of the opening as a secondary weather resistant barrier.
• To assist the overall weathertightness performance of window and door joinery installations.
• To be used in conjunction with air seals and joinery flashing systems. Installer must check for air seal product compatibility with Thermaflash.
• Situated in NZS3604 Wind Zones up to, and including,
'Extra High'.
• Suitable for residential builds (E2/AS1 timber framed and
E2/AS4 steel framed) and medium rise buildings (E2/VM2)

General
Physical Properties:
- Thickness: 400 µm.
- Installation temperature range: minimum -10°C.
- Maximum UV exposure: 180 days.
- Tape width: Available in 75x23mm, 150x23mm, and 200x23mm wide rolls.

The width of Thermaflash Window Flashing Tape used shall be selected to suit the depth of framed openings and Thermakraft installation requirements.

Installed in accordance with the requirements of the Thermaflash Window Flashing Tape Installation Guide and BRANZ Appraisal No.1122 (2020), to the locations and details shown on the drawings.

Compatible with all Thermakraft building underlays. Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.
Corner Moulds are optional however butterfly strips must be used in the absence of a corner mould (see installation guide).

Do not leave Thermaflash Window Flashing Tape exposed to weather and UV light for more than 180 days after installation.

Flashing Tape Size:
Installed Location:

2.5.9 Joining Tapes

2.5.9.1 Thermakraft Premium Joining Tapes

Thermakraft Premium Joining Tapes are high-end construction tapes to join James Hardie RAB sheets. They can also be used to join a wide range of flexible underlays and rigid sheathing products. The thick layer of acrylic adhesive, bonds to common construction substrates and supports a wide range of operating temperatures.

Thermakraft Premium Joining Tape is part of the RAB™ Board system by James Hardie™. It can be used to join the laps of wall and roof underlays, damp proof membranes, vapour control products such as foil underlays and rigid sheathing products (e.g., plywood rigid underlay, OSB board, fibre cement and insulation panels). Installer or designer must check the compatibility of Thermakraft Premium Joining Tape with the substrate manufacturer.

• With flexible underlays that meet the performance requirements outlined in standard NZS 2295.2006.
• Is suitable to use with air barrier underlays in unlined wall spaces.
• Is suitable to be used in conjunction with thermal breaks on steel framed buildings.
• Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent to flash off in a well-ventilated area. Recommended minimum 7 days.

General
Physical Properties:
- Thickness: 400 µm.
- Installation temperature range: minimum -10°C.
- Maximum UV exposure: 180 days.
- Tape width: Available in 75x23mm wide rolls.

Limitations :
- Thermakraft Premium Joining Tape is NOT a window flashing tape and must NOT be used as a window flashing tape.
- Must NOT be used in areas where the tape is permanently exposed to the weather or UV.

Installed in accordance with the requirements of the Thermakraft Premium Joining Tape Installation Guide, to the locations and details shown on the drawings.

2.5.9.2 Thermakraft White General Purpose Tape

Thermakraft White General Purpose Tapes is an acrylic adhesive giving providing bonding in a wide range of environments. It is commonly used on synthetic underlays, or damp-proof membranes such as Thermathene. The tape is also ideal for sealing edges of vapour control layers.

It can be used to join the laps of wall and roof underlays, damp proof membranes, vapour control products such as foil underlays. Installer or designer must check the compatibility of Thermakraft White General Purpose Tape with the substrate manufacturer.

• With flexible underlays that meet the performance requirements outlined in standard NZS 2295.2006.
• Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent to flash off in a well-ventilated area. Recommended minimum 7 days.

General
Physical Properties:

- Installation temperature range: minimum +10°C.
- Tape width: Available in 66mx60mm wide rolls.

Limitations :

- Thermakraft White General Purpose Tape is NOT a window flashing tape and must NOT be used as a window flashing tape.

- Must be stored undercover well away from direct moisture, rainfall and sunlight (UV). Care should be taken not stack other materials on top of the product.

Installed in accordance with the requirements of the Thermakraft White General Purpose Tape Installation Guide, to the locations and details shown on the drawings.

2.5.10 Underlay Penetration Seals

2.5.10.1 OneSeal - Multi-fit pipe and cable penetration seals

Thermakraft OneSeal, multi-fit pipe and cable penetration seals. A range of pipe and service penetration seals consisting of soft, flexible EPDM membrane with a self-adhesive flange.

OneSeal multi-fit pipe and cable penetration seals are part of the Thermakraft ONE WRAP System - a total building wrap solution, and are a patented airtight solution for round or rectangular pipes, cables or conduits when passing through underlay barriers.

Pipe Seals
Four pre-notched rings for pipes sized from 15mm to 110mm diameter.

Cable Seals
1 x conduit – 55mm to 80mm diameter;
OR
2 x cables – 10mm to 22mm diameter; and
4 x cables – 7mm to 10mm diameter.
Installed in accordance with the manufacturer's requirements and BRANZ Appraisal No.942, with stand-alone flexible wall underlay over timber or steel wall framed walls on buildings situated in NZS 3604 Wind Zones up to and including 'Very High'.

Installed in accordance with the manufacturer's requirements and BRANZ Appraisal No.942, with flexible wall underlay used over a rigid wall underlay on buildings situated in NZS 3604 Wind Zones up to and including 'Extra High'.

2.5.11 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install Thermakraft Underlays, DPMs, and DPCs as required.

2.5.12 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

All cutting, joining, and fixing techniques shall be exactly as recommended by the manufacturer, and carried out with the use of suitable tools and equipment appropriate for the application. All work shall be such as to leave a neat, efficient, and weathertight installation.

2.5.13 Delivery & Handling

Store underlay rolls on end, undercover, on a flat, clean and dry surface. Keep stored materials dry, out of direct sunlight, and protected from damage and contamination at all times.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the product.

Do not used damaged or defective materials, or products that are beyond their designated shelf life.

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry, as well as the Best practice guidelines for working on roofs for roofing installations.

2.5.14 Preparation

2.5.14.1 General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content of 20% at the time of cladding installation. Allow LOSP treated timber to sufficiently flash-off before installing Thermakraft building underlays and foils.

Supporting light structural steel framing shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. Comply with the light structural steel framing fabricator's specifications and requirements for fixing cladding and roofing components.

Supporting heavy steel structures shall comply with NZS 3404.

2.5.14.2 Under-Slab Basecourse

Under-Slab Basecourse - prior to laying under-slab DPM, check all aspects of preparatory works, including but not limited to:
- Check that the under-slab basecourse has been correctly laid and compacted as specified.
- Check that the surface has been properly prepared and compacted to the required standard, and is smooth and flat.

- Ensure any sand blinding is free of aggregate, sharp protrusions.
- Ensure the final surface is free of hollows and ponded water prior to laying the DPM.

2.5.14.3 Under-Slab Tidy Slab

Under-Slab Tidy Slab - prior to laying under-slab DPM, check all aspects of preparatory works, including but not limited to:
- Check that the tidy slab blinding has been laid and finished to the required standard.
- Ensure the finished tidy slab is dry and free of all loose aggregate and sharp protrusions.
- Ensure the final surface is free of hollows and ponded water prior to laying the DPM.

2.5.14.4 Wall Framing

Wall Framing - prior to wall underlay installation check all aspects of preparatory works, including but not limited to:
- Check that wall framing has been completed as shown on the drawings, complies with the relevant design and construction standards.
- Check that framing is securely fixed, true to line and plane, is plumb and level where required, and is trimmed at edges, openings and penetrations as required.
- Check that there are no projections due to structural bracing and bracketry etc.
- Check that the required clearances from ground, deck, balcony or lower roof to the bottom edge of the underlay/cladding are in accordance with NZBC E2/AS1.

2.5.14.5 Roof Structure

Roof Structure - prior to roof underlay installation check all aspects of preparatory works, including but not limited to:
- Check that the supporting purlins or battens are set-out to the required set-out and spacings, are straight and true to line and plane, and are securely fixed.
- Check that all barge and fascia boards have been installed to the correct line and plane with all edge blocking complete and secure.
- Check that valley gutter and hidden gutter framing is to the required dimensions with solid backing supports securely fixed, true to line and plane.
- Check that internal gutter membrane linings are complete, and dressed back and adhered to a solid substrate along the roof edge as shown on the approved drawings.
- Check that all trimming for roof penetrations, all roof/wall junction blocking, and all necessary work by other trades is complete.
- Check that solid sarking required for fully-supported roofing is complete and securely fixed in accordance with the approved drawings.
- Check that any required anti-ponding boards for tiled roofs have been correctly installed to a minimum 5° (1:12) fall to the eaves gutter.

2.5.15 Installation - Wall Underlay

2.5.15.1 Aluband Window Flashing Tape

Install Aluband Window Flashing Tape in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Window Sills:
- Fit Thermakraft Corner Moulded Piece to the bottom corners of the opening.
- Cut Aluband Window Flashing Tape to the length of the sill trimmer plus an additional 400mm.
- Apply the tape over the underlay along the sill trimmer, with the back edge flush with the inside edge of the framing, and returned minimum 200mm up both trimming studs.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press the tape firmly in place over the underlay to ensure a continuous weathertight seal is maintained.

Window & Door Lintels:
- Install Aluband Window Flashing Tape to the top corners of framed window and door openings, over the underlay and 200mm along the lintel and 200mm down the trimming stud, with the back edge flush with the inside edge of the framing.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press firmly in place over the underlay to ensure a weathertight seal.
- Apply a 100mm strip of Aluband Window Flashing Tape at 45° over the taped outside face of each corner.

Avoid joining Aluband Window Flashing Tape. Where necessary, form joins with minimum 100mm overlap, keep any required joining to an absolute minimum.

Do not over-stretch tape during installation, and ensure adequate adhesion and weathertightness is maintained against the underlay.

Do not leave Aluband Window Flashing Tape exposed to weather and UV light for more than 42 days after installation - replace with new window flashing tape if 42 day's exposure is exceeded.

2.5.15.2 Thermaflash Window Flashing Tape

Thermaflash Window Flashing Tape in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Window Sills:
- Fit Thermakraft Corner Moulded Piece to the bottom corners of the opening.
- Cut Thermaflash Window Flashing Tape to the length of the sill trimmer plus an additional 400mm.
- Apply the tape over the underlay along the sill trimmer, with the back edge flush with the inside edge of the framing, and returned minimum 200mm up both trimming studs.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press the tape firmly in place over the underlay to ensure a continuous weathertight seal is maintained.

Window & Door Lintels:
- Install Thermaflash Window Flashing Tape to the top corners of framed window and door openings, over the underlay and 200mm along the lintel and 200mm down the trimming stud, with the back edge flush with the inside edge of the framing.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press firmly in place over the underlay to ensure a weathertight seal.
- Apply a 100mm strip of Thermaflash Window Flashing Tape at 45° over the taped outside face of each corner.

Avoid joining Thermaflash Window Flashing Tape. Where necessary, form joins with minimum 100mm overlap, keep any required joining to an absolute minimum.

Do not over-stretch tape during installation, and ensure adequate adhesion and weathertightness is maintained against the underlay.

Do not leave Thermaflash Window Flashing Tape exposed to weather and UV light for more than 180 days after installation - replace with new window flashing tape if 180 day's exposure is exceeded.

2.5.15.3 Thermakraft Premium Joining Tape

Thermakraft Premium Joining Tape, in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Thermakraft Premium Joining Tape must be handled with care to prevent damage such as tearing, excessive puncture and roll deformation. The product must be stored under cover well away from direct moisture, rainfall contact and sunlight (UV). Care should be taken not stack other materials on top of the product

Apply the Thermakraft Premium Joining Tape just before the installation of the external cladding. This will reduce the chance of overexposing the tape to UV and strong wind undoing the tape as the underlay flexes heavily. Note, the maximum UV or weather exposure for Thermakraft Premium Joining Tape is 180 days.

Ensure the underlay has a minimum lap space of 150mm
Always ensure Thermakraft Premium Joining Tape is applied to surfaces that are clean and free of dust, contaminates, solvents, oil or waxes
Peel off the release liner from the Thermakraft Premium Joining Tape.
Firmly press Thermakraft Premium Joining Tape down and peel off more release liner from the tape as needed. Do not stretch or pull the tape at any point during the installation.
Lap join distance between Thermakraft Premium Joining Tape must be minimum 50mm.
For rigid sheathing or rigid underlay application, always check the compatibility of Thermakraft Premium Joining Tape with the substrate manufacturer before mass installation.
Note: Tape damages due to installation or site activities must be repaired by applying a second layer over the damaged area. Lap join distance is minimum 50mm.

Thermakraft Premium Joining Tape must be handled with care to prevent damage such as tearing, excessive puncture and roll deformation. The product must be stored under cover well away from

2.5.16 Installation - Roof Underlay

2.5.16.1 Covertek 215 - synthetic roof underlay

Covertek 215 Roof Underlay shall be installed without additional support on roofs with slopes 10° or greater, provided the span between supports does not exceed 1200mm. Lay the underlay horizontally across the roof slope, over rafters or purlins, starting at the gutter or lowest point and progressing upwards to the ridge. Extend no more than 20mm into gutters. Provide a minimum 150mm shiplap at side and end laps, ensuring all laps are formed to shed water to the exterior. The underlay must be installed tight and without creases or sagging, with fasteners “capturing” the underlay at each purlin to prevent downward slippage.

Fix Covertek 215 at maximum 300mm centres to timber framing using 8–12mm stainless steel staples, 20mm large-head galvanised clouts, proprietary galvanised underlay fixings, or self-drilling wafer-head screws. For steel-framed buildings, refer to the NZ Metal Roof and Wall Cladding Code of Practice for appropriate fixing methods.

Where the span exceeds 1200mm or where roof pitch is between 3° and 10°, additional underlay support must be provided using AUSMESH Roof Safety Mesh, AUSNET hexagonal netting, or Thermastrap, as recommended by Kingspan Thermakraft. Horizontal installation must not be used where purlin spacing exceeds 1200mm.

For concrete or pressed metal tile roofs, install Covertek 215 over rafters and over anti-ponding boards in accordance with NZBC E2/AS1. Fix at maximum 300mm centres before tile battens are installed. Allow the underlay to drape no more than 20mm into the gutter.

Complete all roof edge, ridge, valley, and penetration detailing in accordance with the Thermakraft Covertek 215 Installation Guide and the NZ Metal Roof and Wall Cladding Code of Practice. For penetrations, cut the underlay at 45° from each corner and lap-tape around upstands and ducts using

Thermakraft Premium Joining Tape, White General Purpose Tape, or Aluband (note: Aluband must not be used near polybutene piping). Maintain a minimum clearance of 50mm to the outer liner of flue penetrations.

Can only be used in lined applications

Covertek 215 can only be used in lined applications. It provides temporary weather protection for a maximum of 7 days and should be covered with roofing as soon as practicable.

2.5.17 Completion

Check that all underlays have been installed correctly and are properly supported, and that all underlay edges, joins and ends are correctly finished prior to closing off with claddings - all in accordance with Thermakraft installation requirements.

Check installed membranes and underlays for defective work and damage - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard in accordance with the manufacturer's warranty requirements.

Issue to the Owner a copy of the Thermakraft maintenance requirements and the Thermakraft product warranties for the installed products.

3 ROOFING

3.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

3.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1170.2:2011(AS/NZS)	Structural design actions - Wind actions
2295:2006(NZS)	Pliable, permeable building underlays
2904:1995(AS/NZS)	Damp-proof courses and flashings
3604:2011(NZS)	Timber-framed buildings
4200.1:2017(AS|NZS)	Pliable building membranes and underlays - Part 1: Materials
4200.2:1994(AS/NZS)	Pliable building membranes and underlays - Installation requirements
4389:2015(AS/NZS)	Roof safety mesh
NZMRM Code of Practice	NZ Metal Roof and Wall Cladding Code of Practice - Version 3.0
SNZ HB 3604:2011	Timber-framed buildings - Selected extracts from NZS 3604:2011

3.3 Metalcraft Roofing Wall Cladding

3.3.1 Scope

Supply and install the selected Metalcraft Roofing Profiled Metal Cladding as a wall cladding to the walls identified on the drawings complete with all accessories. All aspects of this work shall be in complete accordance with Metalcraft Roofing guides and technical manuals, (check 0800 766 369 for the latest editions), and other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Metalcraft Roofing Profiled Metal Wall Cladding.

3.3.2 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works, including membranes, wraps, rigid air barriers and trims, and any other related works are completed to specification and as shown on the drawings.
Coordinate with trades the locations of pipes, outlets, cables, meter boards and other fittings installed by others.

3.3.3 Material

Steel, 0.55mm BMT.

3.3.4 Product

COLORSTEEL® Maxam™ to selected BMT. Pre-painted hot dipped aluminium/zinc/magnesium alloy coated steel coil, with a minimum coating weight of 150g/m², conforming with AS/NZS 2728 Class 6.
COLORSTEEL®

Colour:

Zincalume.

3.3.5 Profile

Corrugate.

3.3.6 Colour

Azure.

Bone White.

Cloud.

Desert Sand.

Ebony.

Grey Friars.

Gull Grey.

Iron Sand.

Karaka.

Lichen.

Lignite.

Mist Green.

New Denim Blue.

Pacific Blue.

Permanent Green.

Pioneer Red.

Rivergum.

Sandstone Grey.

Scoria.

Smooth Cream.

Storm Blue.

Stone.

Terracotta.

Titania.

Foam.

Gable Green.

Indigo Blue.

Ivorie.

Kelp.

Maple.

Mirage.

Smokey.

Sorrell.

Spring Green.

Straw.

Thunder Grey.

3.3.7 Components & Accessories

Profiled metal cladding flashings shall be fabricated from the same material and coating as the cladding material, to maintain durability and compatibility requirements.
Unless otherwise noted or specified, flashings shall be formable grade 0.55 BMT for galvanised, aluminium/zinc-coated and pre-painted steel, and 0.9mm BMT for aluminium, to the same standards as the profiled cladding sheets, and notched/scribed when installed across the cladding profile or provided with a soft edge - in accordance with the manufacturer's requirements.
Flashings, flashing fastenings and fastening frequency shall be in accordance with the manufacturer's technical literature and the NZMRM Code of Practice.
Do not construct flashing joints and flashing junctions in a manner that rely entirely on sealant to maintain weathertightness.

Profiled Foam Closure Strip. Non-bituminous, compressible, closed-cell foam strips profiled to fit the specified cladding profile. Installed to the details shown on the drawings and in accordance with the profiled metal cladding manufacturer's recommendations.

Compressible Foam Sealing Tape. Self-adhering, compressible foam sealing tape for sealing metal flashings and generally as required in accordance with the manufacturer's requirements and the NZMRM Code of Practice.

Metal Cladding Sealant. Use only neutral-curing silicone sealant, compatible with the specified metal cladding and flashing materials and finishes, that is suitable for the required application and use in accordance with the sealant manufacturer's instructions and to the profiled metal cladding manufacturer's requirements. All sealed joints must be mechanically fastened, and excess sealant neatly removed to prevent unnecessary dirt buildup. Sealant shall only be used to seal between two metal surfaces, do not fill holes or gaps with sealant.

Proprietary Collar Flashings. Approved EDPM or silicone-polymer proprietary flexible collar flashings for weatherproofing cladding-penetrating pipes/flues/ducts. Sized to suit the applicable pipe/flue/duct and installed in strict accordance with the manufacturer's requirements and the NZMRM Code of Practice. Use only high-temperature silicone (not EDPM) collar flashings for heated flues and pipes with temperature range between 60°C - 200°C.

3.3.8 Preparation

Check all aspects of preparatory works, including but not limited to:-
- Check that the timber wall framing complies with NZS 3604, has studs at maximum 600mm centres and nogs/dwangs at maximum 480mm centres for vertical cladding, is plumb and in true alignment, includes all blocking required for cavity battens, and fixing at openings, joints, corners and soffits etc., and has a maximum moisture content of 18% at the time of Metalcraft Roofing Wall Cladding installation.
- Check that the building wrap as specified has been installed in accordance with NZBC requirements and the manufacturer’s recommendations, and with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.
- Where the studs are at greater than 450mm centres, check that appropriate additional restraint is correctly installed to the wrap, to keep bulk insulation from pushing the wrap into the cavity.
- Check that all preparatory materials are lapped such that any water will run down to the exterior.

Check all aspects of preparatory works, including but not limited to:-
- Check that the timber wall framing complies with NZS 3604, has studs at maximum 600mm centres and dwangs at maximum 800mm centres for horizontal cladding, is plumb and in true alignment, includes all blocking required for cavity battens, and fixing at openings, joints, corners and soffits etc., and has a maximum moisture content of 18% at the time of Metalcraft Roofing Wall Cladding installation.
- Check that the building wrap as specified has been installed in accordance with NZBC requirements and the manufacturer’s recommendations, and with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.
- Where the studs are at greater than 450mm centres, check that appropriate additional restraint is correctly installed to the wrap, to keep bulk insulation from pushing the wrap into the cavity.
- Check that all preparatory materials are lapped such that any water will run down to the exterior.

Check all aspects of preparatory works, including but not limited to:-
- Check that the timber wall framing complies with NZS 3604, has studs at maximum 600mm centres and dwangs at maximum 800mm centres for horizontal cladding, is plumb and in true alignment, includes all blocking required for cavity battens, and fixing at openings, joints, corners and soffits etc., and has a maximum moisture content of 18% at the time of Metalcraft Roofing Wall Cladding installation.
- Check that the rigid air barrier as specified has been installed in accordance with NZBC requirements and the manufacturer’s recommendations, with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.
- Check that all preparatory materials are lapped such that any water will run down to the exterior.

Check all aspects of preparatory works, including but not limited to:-
- Check that the steel wall framing has been inspected and approved by the BCA, has studs at maximum 600mm centres and dwangs at maximum 480mm centres for vertical cladding, is plumb and in true alignment, and includes all blocking required for cavity battens fixing at openings, joints, corners and soffits etc.
- Check that the building wrap as specified has been installed in accordance with NZBC requirements and the manufacturer’s recommendations, and with all finishing tapes, flashings etc. at windows, doors, corners and penetrations all correctly incorporated to provide a continuous seal.
- Where the studs are at greater than 450mm centres, check that appropriate additional restraint is

correctly installed to the wrap, to keep bulk insulation from pushing the wrap into the cavity.
- Check that all preparatory materials are lapped such that any water will run down to the exterior.
- Ensure that thermal break strips are applied to steel framing fixing lines before fixing the Metalcraft Roofing Wall Cladding.

3.3.9 Cavity Battens

Ex 50 x 25mm H3.1 treated Radiata cavity battens.
Non-structural cavity batten fixings: 40x2.5mm hot-dipped galvanized flat head nails at 800mm maximum centres.
Structural cavity batten fixings: 60 x 2.8mm hot-dipped galvanized flat head nails at 500mm maximum centres.

45 x 18mm Cavibat, extruded polypropylene, Cavity Battens.
Cavibat cavity batten fixings: 40x2.5mm hot-dipped galvanized flat head nails at 800mm maximum centres.

3.3.10 Vented Cavity Closure Material

PVC cavity closure strip.

3.3.11 Thermal Barrier Strip

MDPE tape thermal barrier strip, for steel cladding direct fixed to steel framing over a building wrap.
Ensure that thermal break strips are applied directly over the building wrap to steel framing before fixing cladding sheets and flashings.

3.3.12 Installation

All installation work shall be carried out by experienced tradesmen familiar with the techniques and materials specified. All fixing, jointing and sealing, techniques and materials shall be exactly as recommended by Metalcraft Roofing.
Handle cladding material without damaging or scratching. Store undercover and off the ground on even bearers, and keep dry until installed.

Fix cavity battens to the timber framing as noted on the drawings.
Sheets set out vertically with side laps away from the main line of sight, to straight plumb line. Keep cladding lines consistent and true along walls and around corners. Check for and eliminate any creep and/or spread of sheets during installation.

Screws to comply with AS 3566 (Class 4 minimum and not less than the roofing material) and must be of a compatible material and finish with the cladding. Screws for pre-painted cladding should be factory pre-painted for an accurate colour match. Use only low carbon (<15%) non-conductive sealing washers. Set exposed fixings to level string lines. Screw fixings to be in accordance with Metalcraft Roofing requirements and as noted on the drawings.
Screw fix through cladding trough/pan and cavity battens, minimum 30mm embedment into timber framing, at centres noted on the drawings.

All jointing techniques, fixings and sealants to be in accordance with Metalcraft Roofing recommendations, as noted on the drawings, and compatible with the cladding material and finish.

Flashings shall all be matching Colorsteel or other specified material, and shaped as shown on the drawings. Flash and seal services penetrations to details shown on the drawings.

Protect the coated surface from damage at all times; replace the whole sheet where a significant depth of the coating has been damaged. Completely clean off all drill and power-saw swarf as the work proceeds.

3.3.13 Completion

Ensure that the work of other trades does not reduce the cladding to ground, deck or roof clearances that are required by the NZ Building Code. Clean up thoroughly and remove debris and unused material from site.
Issue to the Main Contractor a copy of the Metalcraft Roofing maintenance requirements together with the Metalcraft Roofing Wall Cladding Warranty for the completed works.

3.4 Thermakraft Underlay, DPM, DPC & Tapes

3.4.1 Scope

Supply and install Thermakraft Underlays and Membranes, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with Thermakraft Ltd technical information and installation requirements (check www.thermakraft.co.nz, or call 0800 806 595 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the design drawings.

No substitutions are permitted for the specified products from Thermakraft Ltd.

3.4.2 Requirements

3.4.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

3.4.2.2 Warranty

Kingspan Thermakraft Product Warranty Statement:
- 15 Years Warranty - for all Thermakraft warranted products installed, according to the warranty conditions.
- Provide the Thermakraft Ltd Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

3.4.2.3 Substitutions

Thermakraft Ltd products shall be as specified herein and as indicated on the approved drawings. The substitution of Thermakraft branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified Thermakraft product for an alternative Thermakraft branded product by the Contractor shall only be permitted with the Contract Administrator's written authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative Thermakraft branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Contractor.

3.4.3 Damp-Proof Membrane

Thermathene Black (250µm). A 250 micron thick (0.25mm), tear resistant, recycled polyethylene film sheet concrete underlay. Coloured black.

Installed over nominal 10mm (max. 25mm) thick compacted sand blinding layer, over a properly prepared base course, as a moisture vapour barrier under concrete slabs on-ground (prior to concreting), in accordance with the manufacturer's requirements and as shown on the drawings (Install Guide).

Thermathene Black must be laid in a continuous manner with all laps minimum 150mm, and penetrations to be taped with Thermakraft White General Purpose Tape. Tape-seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Installed Location:

Thermathene Orange™, a super heavy duty high impact polythene film, 300 microns thick and manufactured from recycled alloyed polythene materials. Commonly used on commercial sites where increased robustness is required. Coloured orange.

Installed over nominal 10mm (max. 25mm) thick compacted sand blinding layer, over a properly prepared base course, as a moisture vapour barrier under concrete slabs on-ground (prior to concreting), in accordance with the manufacturer's requirements and as shown on the drawings (Install Guide).

Thermathene Orange must be laid in a continuous manner with all laps minimum 150mm, and penetrations to be taped with Thermakraft White General Purpose tape or Aluband Window Flashing Tape. Thermathene Orange must not be left exposed for more than 30 days. Tape-seal around penetrations. Inspect immediately before pouring concrete and repair any holes or other damage.

Installed Location:

3.4.4 Damp-Proof Course

Supercourse 500 DPC. A 0.75mm thick, high-impact, single-layer Polyethylene film, embossed on both sides. Available in 50mm 75mm, 90mm, 100mm, 150mm, 200mm, 250mm, 300mm, and 500mm roll widths. Supercourse 500 DPC is suitable for use as a separation barrier between most incompatible and dissimilar materials.

Used as a general damp proof course (DPC) for separating timber and wood-based products and metal from concrete, masonry, brick, and stone surfaces, and as a moisture barrier (Install Guide).

Also used as a concealed flashing behind brick veneer cladding in accordance with NZS 4229 and NZBC E2/AS1.

Installed in accordance with the manufacturer's requirements, BRANZ Appraisal No.329, and as shown on the drawings.

Perimeter. A bitumen saturated, heavy Kraft lightly coated with Perlite. Available in 50mm, 75mm, 90mm, 100mm, 150mm, 200mm, 250mm and 300mm roll widths. Perrimeter DPC is used as a general damp proof course (DPC) for separating timber and wood-based products and metal from concrete, masonry, brick, and stone surfaces, and as a moisture barrier.

Also used as a concealed flashing behind brick veneer cladding in accordance with NZS 4229 and NZBC E2/AS1.

Installed in accordance with the manufacturer's requirements, and as shown on the drawings (Install Guide).

3.4.5 Wall Underlay

Covertek 215. A grey-coloured, economic, versatile and lightweight self-supporting, non-fire-retardant, absorbent, breathable, synthetic non-woven polyolefin roof and wall underlay. Constructed with a microporous water-resistant film between spun-bonded polyolefin layers, providing resistance to shrinkage, tearing, and moisture ingress.

Can only be used in lined applications. Section E2 NZBC defines a lining as "the rigid sheet covering for wall, ceiling or other interior surface." Must not be used in unlined buildings such as unlined garages, sheds, soffits or canopies.

Installed as a roof or wall underlay over timber or steel framing in accordance with the manufacturer's requirements and BRANZ Appraisal No. 1229. Suitable for use in NZS 3604 wind zones up to and including Extra High (roof) and Very High (wall).

Covertek 215 roof underlay can be used directly under direct-fixed roof claddings or under roof cavity battens, including profiled metal, metal tile and masonry tile roofing. It must be installed taut, with a minimum 150mm lap, and fixed at maximum 300mm centres. Printed side must face outwards.

Covertek 215 roof underlay must be installed in a manner that prevents ponding of water and span no more than 1200mm without additional support. When run vertically at pitches from 3° up to 10°, additional support is required (see Install Guide).

Do not leave Covertek 215 exposed on roofs for more than a total of 7 days before covering. For wall applications, maximum exposure is 60 days. Cannot be used under translucent roof sheeting.

3.4.6 Roof Underlay

Covertek 215. A grey-coloured, economic, versatile and lightweight self-supporting, non-fire-retardant, absorbent, breathable, synthetic non-woven polyolefin roof and wall underlay. Constructed with a microporous water-resistant film between spun-bonded polyolefin layers, providing resistance to shrinkage, tearing, and moisture ingress.

Can only be used in lined applications. Section E2 NZBC defines a lining as "the rigid sheet covering for wall, ceiling or other interior surface." Must not be used in unlined buildings such as unlined garages, sheds, soffits or canopies.

Installed as a roof or wall underlay over timber or steel framing in accordance with the manufacturer's requirements and BRANZ Appraisal No. 1229. Suitable for use in NZS 3604 wind zones up to and including Extra High (roof) and Very High (wall).

Covertek 215 roof underlay can be used directly under direct-fixed roof claddings or under roof cavity battens, including profiled metal, metal tile and masonry tile roofing. It must be installed taut, with a minimum 150mm lap, and fixed at maximum 300mm centres. Printed side must face outwards.

Covertek 215 roof underlay must be installed in a manner that prevents ponding of water and span no more than 1200mm without additional support. When run vertically at pitches from 3° up to 10°, additional support is required (see Install Guide).

Do not leave Covertek 215 exposed on roofs for more than a total of 7 days before covering. For wall applications, maximum exposure is 60 days. Cannot be used under translucent roof sheeting.

3.4.7 Vapour Barrier

3.4.7.1 Thermakraft Vapour Shield

Thermakraft Vapour Shield. Vapour Shield is a tear resistant polyethylene vapour barrier layer with one side that is white and one side that is black and can be laid either side up. Roll width 2130mm.

Thermakraft Vapour Shield is tear resistant, moisture proof and impervious to rot mildew and most chemicals, and can withstand climate extremes. Suitable as underlayment for roof construction where condensation and moisture control is required.

Thermakraft Vapour Shield is suitable for use in all NZS 3604 Wind Zones up to and including 'Extra High' when installed in strict accordance with the manufacturer's requirements and the NZMRM Code of Practice.

Thermakraft Vapour Shield must be installed with minimum 150mm side and end laps - lapped such that any moisture will be shed to the outside of the membrane. Seal all membrane laps and joints with Thermakraft White General Purpose Tape 60mm. Where battens are nailed through the membrane, cover pre-nail battens with sealastic at nail points. Any other projections and penetrations through the membrane and must be sealed. Ensure a minimum clearance of 200mm is maintained from the outer liner of chimney flue stacks (Install Guide).

Do not leave Thermakraft Vapor Shield exposed to atmospheric conditions and UV light for more than 7 days before covering.

Thermakraft Vapour Shield is not fire retardant.

Installed Location:

3.4.8 Underlay Support

Thermakraft Thermastrap. A 19mm wide x 0.4mm thick polythene embossed rigid strap. For use as a support for non-self support roof underlays, and to restrict the bellowing of flexible wall underlays in drained cavities. Suitably tensioned when installed to avoid any sagging and to keep the flexible underlay in a flat plane. Installed at right angles to roof purlins or walls studs, at maximum 300mm centres.

Application/Use:

Thermakraft Stud Strap. A 25mm wide x 0.4mm thick polypropylene woven and coated flexible strap. For use as a support for non-self support roof underlays, and to restrict the bellowing of flexible wall underlays in drained cavities. Suitably tensioned when installed to avoid any sagging and to keep the flexible underlay in a flat plane. Installed at right angles to roof purlins or wall studs, at maximum 300mm centres.

Application/Use:

3.4.9 Window Flashing Tape

3.4.9.1 Aluband Bituminous Adhesive Flexible Window Flashing Tape

Aluband Window Flashing Tape. A polymeric faced, bituminous modified, self-adhesive tape with a release backing paper. Must be used in conjunction with the Thermakraft Corner Moulds, and when used with the declared Kingspan Thermakraft flexible underlays is part of the Thermakraft OneWrap

System.

Aluband Window Flashing Tape is part of the Thermakraft ONE WRAP System - a total building wrap solution.

Aluband Window Flashing Tape is suitable for use on timber or steel framed buildings, in conjunction with a compatible flexible underlay, around framed joinery openings as a secondary weather barrier, in NZS 3604 Wind Zones up to and including 'Extra High'.

Aluband Window Flashing Tape can be used on the sill and lintel of framed joinery openings, and to seal flashing upstands to a flexible underlay.

Physical Properties:
- Thickness: 0.65mm.
- Installation temperature range: minimum 5°C; maximum 30°C.
- Maximum UV exposure: 42 days.
- Tape width: Available in 75mm, 150mm, and 200mm wide rolls.

The width of Aluband Window Flashing Tapes used shall be selected to suit the depth of framed openings and Thermakraft installation requirements.

Installed in accordance with the requirements of the Thermakraft Aluband Application & Installation Guide and BRANZ Appraisal No.878, to the locations and details shown on the drawings.

Compatible with all Thermakraft building underlays. Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.

Thermakraft Corner Moulds MUST be used at flashing corners (see installation guide).

Do not leave Aluband Window Flashing Tape exposed to weather and UV light for more than 42 days after installation.

Flashing Tape Size:
Installed Location:

3.4.9.2 Thermaflash High Adhesion Synthetic Window Flashing Tape

Thermaflash High Adhesion Synthetic Window Flashing Tape. Thermaflash Synthetic Window Flashing tape is part of the Thermakraft ONE WRAP System - a total building wrap solution. The advanced adhesive technology provides a high strength bond to most building surfaces and wall underlays. It is suitable for window and door installation as well as other wall penetrations. Thermaflash can be installed in a wide range of temperatures and can withstand UV exposure for up to 180 days.

Thermaflash Window Flashing Tape is suitable for use on timber or steel framed buildings, in conjunction with a compatible flexible underlay, around framed joinery openings as a secondary weather barrier.

Thermaflash Window Flashing Tape can be used as a flexible flashing system around window and door joinery openings on timber and steel framed buildings within the following scope:
• Installed into and around joinery openings over the wall underlay and exposed frame to cover both the face and edge of the opening as a secondary weather resistant barrier.
• To assist the overall weathertightness performance of window and door joinery installations.
• To be used in conjunction with air seals and joinery flashing systems. Installer must check for air seal

product compatibility with Thermaflash.
• Situated in NZS3604 Wind Zones up to, and including, 'Extra High'.
• Suitable for residential builds (E2/AS1 timber framed and E2/AS4 steel framed) and medium rise buildings (E2/VM2)

General
Physical Properties:
- Thickness: 400 µm.
- Installation temperature range: minimum -10°C.
- Maximum UV exposure: 180 days.
- Tape width: Available in 75x23mm, 150x23mm, and 200x23mm wide rolls.

The width of Thermaflash Window Flashing Tape used shall be selected to suit the depth of framed openings and Thermakraft installation requirements.

Installed in accordance with the requirements of the Thermaflash Window Flashing Tape Installation Guide and BRANZ Appraisal No.1122 (2020), to the locations and details shown on the drawings.

Compatible with all Thermakraft building underlays. Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent chemical to flash off in well ventilated area. Recommended minimum 7 days.
Corner Moulds are optional however butterfly strips must be used in the absence of a corner mould (see installation guide).

Do not leave Thermaflash Window Flashing Tape exposed to weather and UV light for more than 180 days after installation.

Flashing Tape Size:
Installed Location:

3.4.10 Joining Tapes

3.4.10.1 Thermakraft Premium Joining Tapes

Thermakraft Premium Joining Tapes are high-end construction tapes to join James Hardie RAB sheets. They can also be used to join a wide range of flexible underlays and rigid sheathing products. The thick layer of acrylic adhesive, bonds to common construction substrates and supports a wide range of operating temperatures.

Thermakraft Premium Joining Tape is part of the RAB™ Board system by James Hardie™. It can be used to join the laps of wall and roof underlays, damp proof membranes, vapour control products such as foil underlays and rigid sheathing products (e.g., plywood rigid underlay, OSB board, fibre cement and insulation panels). Installer or designer must check the compatibility of Thermakraft Premium Joining Tape with the substrate manufacturer.

• With flexible underlays that meet the performance requirements outlined in standard NZS 2295.2006.
• Is suitable to use with air barrier underlays in unlined wall spaces.
• Is suitable to be used in conjunction with thermal breaks on steel framed buildings.
• Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent to flash off in a well-ventilated area. Recommended minimum 7 days.

General
Physical Properties:
- Thickness: 400 µm.
- Installation temperature range: minimum -10°C.
- Maximum UV exposure: 180 days.
- Tape width: Available in 75x23mm wide rolls.

Limitations :
- Thermakraft Premium Joining Tape is NOT a window flashing tape and must NOT be used as a window flashing tape.
- Must NOT be used in areas where the tape is permanently exposed to the weather or UV.

Installed in accordance with the requirements of the Thermakraft Premium Joining Tape Installation Guide, to the locations and details shown on the drawings.

3.4.10.2 Thermakraft White General Purpose Tape

Thermakraft White General Purpose Tapes is an acrylic adhesive giving providing bonding in a wide range of environments. It is commonly used on synthetic underlays, or damp-proof membranes such as Thermathene. The tape is also ideal for sealing edges of vapour control layers.

It can be used to join the laps of wall and roof underlays, damp proof membranes, vapour control products such as foil underlays. Installer or designer must check the compatibility of Thermakraft White General Purpose Tape with the substrate manufacturer.

• With flexible underlays that meet the performance requirements outlined in standard NZS 2295.2006.
• Unaffected by LOSP or other solvent based treated timber. However, LOSP or other solvent based treated timber must have sufficient time for the solvent to flash off in a well-ventilated area. Recommended minimum 7 days.

General
Physical Properties:
- Installation temperature range: minimum +10°C.
- Tape width: Available in 66mx60mm wide rolls.

Limitations :

- Thermakraft White General Purpose Tape is NOT a window flashing tape and must NOT be used as a window flashing tape.

- Must be stored undercover well away from direct moisture, rainfall and sunlight (UV). Care should be taken not stack other materials on top of the product.

Installed in accordance with the requirements of the Thermakraft White General Purpose Tape Installation Guide, to the locations and details shown on the drawings.

3.4.11 Underlay Penetration Seals

3.4.11.1 OneSeal - Multi-fit pipe and cable penetration seals

Thermakraft OneSeal, multi-fit pipe and cable penetration seals. A range of pipe and service penetration seals consisting of soft, flexible EPDM membrane with a self-adhesive flange.

OneSeal multi-fit pipe and cable penetration seals are part of the Thermakraft ONE WRAP System - a total building wrap solution, and are a patented airtight solution for round or rectangular pipes, cables or conduits when passing through underlay barriers.

Pipe Seals
Four pre-notched rings for pipes sized from 15mm to 110mm diameter.

Cable Seals
1 x conduit – 55mm to 80mm diameter;
OR
2 x cables – 10mm to 22mm diameter; and
4 x cables – 7mm to 10mm diameter.
Installed in accordance with the manufacturer's requirements and BRANZ Appraisal No.942, with stand-alone flexible wall underlay over timber or steel wall framed walls on buildings situated in NZS 3604 Wind Zones up to and including 'Very High'.

Installed in accordance with the manufacturer's requirements and BRANZ Appraisal No.942, with flexible wall underlay used over a rigid wall underlay on buildings situated in NZS 3604 Wind Zones up to and including 'Extra High'.

3.4.12 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install Thermakraft Underlays, DPMs, and DPCs as required.

3.4.13 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All installation work shall be carried out by experienced and competent tradespersons, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

All cutting, joining, and fixing techniques shall be exactly as recommended by the manufacturer, and carried out with the use of suitable tools and equipment appropriate for the application. All work shall be such as to leave a neat, efficient, and weathertight installation.

3.4.14 Delivery & Handling

Store underlay rolls on end, undercover, on a flat, clean and dry surface. Keep stored materials dry, out of direct sunlight, and protected from damage and contamination at all times.

Handle materials in accordance with the manufacturer's requirements and in a manner that prevents damage to or deterioration of the product.

Do not used damaged or defective materials, or products that are beyond their designated shelf life.

Installers shall be familiar with and comply with the manufacturer's safe handling requirements and precautions for use, and shall use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry, as well as the Best practice guidelines for working on roofs for roofing installations.

3.4.15 Preparation

3.4.15.1 General

Prior to installation, carry out all necessary inspections and preparatory work required, and ensure that all preliminary works by other trades has been completed to specification and as shown on the approved drawings.

Do not commence installation until all necessary preliminary works by others is complete and to the required standard. The commencement of work shall be deemed to indicate full acceptance by the installer that all preliminary works by other trades is complete.

Supporting timber framing shall comply with NZS 3604, or with NZS 3603 and AS/NZS 1170 for specific design, and have a maximum moisture content of 20% at the time of cladding installation. Allow LOSP treated timber to sufficiently flash-off before installing Thermakraft building underlays and foils.

Supporting light structural steel framing shall comply with the requirements of AS/NZS 4600 or the NASH Standard for Residential and Low-rise Steel Framing, Part 1: Design Criteria. Comply with the light structural steel framing fabricator's specifications and requirements for fixing cladding and roofing components.

Supporting heavy steel structures shall comply with NZS 3404.

3.4.15.2 Under-Slab Basecourse

Under-Slab Basecourse - prior to laying under-slab DPM, check all aspects of preparatory works, including but not limited to:
- Check that the under-slab basecourse has been correctly laid and compacted as specified.
- Check that the surface has been properly prepared and compacted to the required standard, and is smooth and flat.
- Ensure any sand blinding is free of aggregate, sharp protrusions.
- Ensure the final surface is free of hollows and ponded water prior to laying the DPM.

3.4.15.3 Under-Slab Tidy Slab

Under-Slab Tidy Slab - prior to laying under-slab DPM, check all aspects of preparatory works, including but not limited to:
- Check that the tidy slab blinding has been laid and finished to the required standard.
- Ensure the finished tidy slab is dry and free of all loose aggregate and sharp protrusions.
- Ensure the final surface is free of hollows and ponded water prior to laying the DPM.

3.4.15.4 Wall Framing

Wall Framing - prior to wall underlay installation check all aspects of preparatory works, including but not limited to:
- Check that wall framing has been completed as shown on the drawings, complies with the relevant design and construction standards.
- Check that framing is securely fixed, true to line and plane, is plumb and level where required, and is trimmed at edges, openings and penetrations as required.
- Check that there are no projections due to structural bracing and bracketry etc.
- Check that the required clearances from ground, deck, balcony or lower roof to the bottom edge of the underlay/cladding are in accordance with NZBC E2/AS1.

3.4.15.5 Roof Structure

Roof Structure - prior to roof underlay installation check all aspects of preparatory works, including but not limited to:
- Check that the supporting purlins or battens are set-out to the required set-out and spacings, are straight and true to line and plane, and are securely fixed.
- Check that all barge and fascia boards have been installed to the correct line and plane with all edge blocking complete and secure.
- Check that valley gutter and hidden gutter framing is to the required dimensions with solid backing supports securely fixed, true to line and plane.
- Check that internal gutter membrane linings are complete, and dressed back and adhered to a solid substrate along the roof edge as shown on the approved drawings.
- Check that all trimming for roof penetrations, all roof/wall junction blocking, and all necessary work by other trades is complete.
- Check that solid sarking required for fully-supported roofing is complete and securely fixed in accordance with the approved drawings.
- Check that any required anti-ponding boards for tiled roofs have been correctly installed to a minimum 5° (1:12) fall to the eaves gutter.

3.4.16 Installation - Wall Underlay

3.4.16.1 Aluband Window Flashing Tape

Install Aluband Window Flashing Tape in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Window Sills:
- Fit Thermakraft Corner Moulded Piece to the bottom corners of the opening.
- Cut Aluband Window Flashing Tape to the length of the sill trimmer plus an additional 400mm.
- Apply the tape over the underlay along the sill trimmer, with the back edge flush with the inside edge of the framing, and returned minimum 200mm up both trimming studs.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press the tape firmly in place over the underlay to ensure a continuous weathertight seal is maintained.

Window & Door Lintels:
- Install Aluband Window Flashing Tape to the top corners of framed window and door openings, over the underlay and 200mm along the lintel and 200mm down the trimming stud, with the back edge flush with the inside edge of the framing.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press firmly in place over the underlay to ensure a weathertight seal.
- Apply a 100mm strip of Aluband Window Flashing Tape at 45° over the taped outside face of each corner.

Avoid joining Aluband Window Flashing Tape. Where necessary, form joins with minimum 100mm overlap, keep any required joining to an absolute minimum.

Do not over-stretch tape during installation, and ensure adequate adhesion and weathertightness is maintained against the underlay.

Do not leave Aluband Window Flashing Tape exposed to weather and UV light for more than 42 days after installation - replace with new window flashing tape if 42 day's exposure is exceeded.

3.4.16.2 Thermaflash Window Flashing Tape

Thermaflash Window Flashing Tape in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Window Sills:
- Fit Thermakraft Corner Moulded Piece to the bottom corners of the opening.
- Cut Thermaflash Window Flashing Tape to the length of the sill trimmer plus an additional 400mm.
- Apply the tape over the underlay along the sill trimmer, with the back edge flush with the inside edge of the framing, and returned minimum 200mm up both trimming studs.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press the tape firmly in place over the underlay to ensure a continuous weathertight seal is maintained.

Window & Door Lintels:
- Install Thermaflash Window Flashing Tape to the top corners of framed window and door openings, over the underlay and 200mm along the lintel and 200mm down the trimming stud, with the back edge flush with the inside edge of the framing.
- Fold the tape minimum 50mm over the face of the underlay on the outside of the opening.
- Press firmly in place over the underlay to ensure a weathertight seal.
- Apply a 100mm strip of Thermaflash Window Flashing Tape at 45° over the taped outside face of each corner.

Avoid joining Thermaflash Window Flashing Tape. Where necessary, form joins with minimum 100mm overlap, keep any required joining to an absolute minimum.

Do not over-stretch tape during installation, and ensure adequate adhesion and weathertightness is maintained against the underlay.

Do not leave Thermaflash Window Flashing Tape exposed to weather and UV light for more than 180 days after installation - replace with new window flashing tape if 180 day's exposure is exceeded.

3.4.16.3 Thermakraft Premium Joining Tape

Thermakraft Premium Joining Tape, in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Thermakraft Premium Joining Tape must be handled with care to prevent damage such as tearing, excessive puncture and roll deformation. The product must be stored under cover well away from direct moisture, rainfall contact and sunlight (UV). Care should be taken not stack other materials on top of the product

Apply the Thermakraft Premium Joining Tape just before the installation of the external cladding. This will reduce the chance of overexposing the tape to UV and strong wind undoing the tape as the underlay flexes heavily. Note, the maximum UV or weather exposure for Thermakraft Premium Joining Tape is 180 days.

Ensure the underlay has a minimum lap space of 150mm
Always ensure Thermakraft Premium Joining Tape is applied to surfaces that are clean and free of dust, contaminates, solvents, oil or waxes
Peel off the release liner from the Thermakraft Premium Joining Tape.
Firmly press Thermakraft Premium Joining Tape down and peel off more release liner from the tape as needed. Do not stretch or pull the tape at any point during the installation.
Lap join distance between Thermakraft Premium Joining Tape must be minimum 50mm.

For rigid sheathing or rigid underlay application, always check the compatibility of Thermakraft Premium Joining Tape with the substrate manufacturer before mass installation.
Note: Tape damages due to installation or site activities must be repaired by applying a second layer over the damaged area. Lap join distance is minimum 50mm.

Thermakraft Premium Joining Tape must be handled with care to prevent damage such as tearing, excessive puncture and roll deformation. The product must be stored under cover well away from

3.4.17 Installation - Roof Underlay

3.4.17.1 Covertek 215 - synthetic roof underlay

Covertek 215 Roof Underlay shall be installed without additional support on roofs with slopes 10° or greater, provided the span between supports does not exceed 1200mm. Lay the underlay horizontally across the roof slope, over rafters or purlins, starting at the gutter or lowest point and progressing upwards to the ridge. Extend no more than 20mm into gutters. Provide a minimum 150mm shiplap at side and end laps, ensuring all laps are formed to shed water to the exterior. The underlay must be installed tight and without creases or sagging, with fasteners “capturing” the underlay at each purlin to prevent downward slippage.

Fix Covertek 215 at maximum 300mm centres to timber framing using 8–12mm stainless steel staples, 20mm large-head galvanised clouts, proprietary galvanised underlay fixings, or self-drilling wafer-head screws. For steel-framed buildings, refer to the NZ Metal Roof and Wall Cladding Code of Practice for appropriate fixing methods.

Where the span exceeds 1200mm or where roof pitch is between 3° and 10°, additional underlay support must be provided using AUSMESH Roof Safety Mesh, AUSNET hexagonal netting, or Thermastrap, as recommended by Kingspan Thermakraft. Horizontal installation must not be used where purlin spacing exceeds 1200mm.

For concrete or pressed metal tile roofs, install Covertek 215 over rafters and over anti-ponding boards in accordance with NZBC E2/AS1. Fix at maximum 300mm centres before tile battens are installed. Allow the underlay to drape no more than 20mm into the gutter.

Complete all roof edge, ridge, valley, and penetration detailing in accordance with the Thermakraft Covertek 215 Installation Guide and the NZ Metal Roof and Wall Cladding Code of Practice. For penetrations, cut the underlay at 45° from each corner and lap-tape around upstands and ducts using Thermakraft Premium Joining Tape, White General Purpose Tape, or Aluband (note: Aluband must not be used near polybutene piping). Maintain a minimum clearance of 50mm to the outer liner of flue penetrations.

Can only be used in lined applications

Covertek 215 can only be used in lined applications. It provides temporary weather protection for a maximum of 7 days and should be covered with roofing as soon as practicable.

3.4.18 Completion

Check that all underlays have been installed correctly and are properly supported, and that all underlay edges, joins and ends are correctly finished prior to closing off with claddings - all in accordance with Thermakraft installation requirements.

Check installed membranes and underlays for defective work and damage - replace and/or repair as necessary to the required standard.

Leave all of this work complete, and free of defects, and to the required standard in accordance with the manufacturer's warranty requirements.

Issue to the Owner a copy of the Thermakraft maintenance requirements and the Thermakraft product warranties for the installed products.

4 INSULATION

4.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

4.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

4218:2009(NZS)	Thermal insulation - Housing and small buildings
4220:1982(NZS)	Code of practice for energy conservation in non-residential buildings
4243.1:2007(NZS)	Energy efficiency - Large buildings - Building thermal envelope
4246:2016(NZS)	Energy efficiency - Installing bulk thermal insulation in residential buildings
4859.1:2018(AS|NZS)	Thermal insulation materials for buildings - Part 1: General criteria and technical provisions

4.3 Pink Batts Insulation

4.3.1 Scope

Supply and install Pink® Batts® Insulation, as specified herein, to the locations identified on the drawings, complete with all accessories required for proper installation and performance. All aspects of this work shall be in complete accordance with Tasman Insulation technical information and installation requirements (check pinkbatts.co.nz, call 0800 746 522, or email customer@pinkbatts.co.nz for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for Pink® Batts® Insulation.

Pink® Batts® insulation is certified under the GREENGUARD Certification Program (UL 2818). Being certified for indoor air quality gives an assurance that products meet strict chemical emissions limits (including minimal levels of VOCs and formaldehyde), to help create healthier indoor environments.

The following is a list and/or general description of the extent of the Pink® Batts® Insulation works, which are more specifically defined in the contract documents, required for the completion of the contract works:

4.3.2 Requirements

4.3.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

4.3.2.2 Warranty - applies to BRANZ Appraised Pink® Batts® Ceiling & Wall products

Pink® Batts® Lifetime Product Warranty:

- 50 Years Warranty for BRANZ Appraised Pink® Batts® ceiling and wall products installed according

to the warranty conditions.
- Provide the Pink® Batts® Lifetime Product Warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of permanent installation.

4.3.2.3 Inspections

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and manufacturer guidelines.

Complete a Pre-Installation Checklist prior to installation, and a Pre-Line Checklist before handing over for subsequent work.

Note: Pink® Batts® checklist applies only to Pinkfit.

4.3.3 Underfloor Thermal Insulation

4.3.3.1 Pink® Batts® SnugFloor® R3.2 Narrow

Pink® Batts® SnugFloor® R3.2 Narrow - product code 7134832. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. Suitable for use in timber-framed floors. R-value R-3.2 - 140mm thick x 480mm wide x 1220mm long segments.

BRANZ Appraised for use as a thermal insulating material for timber framed floors in new and existing domestic buildings according to the conditions and limitations of BRANZ Appraisal No.632.

Pink® Batts® SnugFloor® R3.2 - Narrow is licenced with Environmental Choice New Zealand: Thermal Building Insulant Licence No.2504017. Refer to product data - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/PBatts_Floor-Product-Sheet_APRIL2022_1077-RevD.pdf

Installed as underfloor thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.4 Wall Thermal Insulation

4.3.4.1 Pink® Batts® Ultra® R2.8 Wall

Pink® Batts® Ultra® R2.8 Wall - product code 7127128. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.8. 90mm thick x 560mm wide x 1140mm long segments.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Wall-Product-Sheet_April22_1075-RevF.pdf

Pink® Batts® Ultra® R2.8 Wall is licenced with Environmental Choice New Zealand: Thermal Building Insulants Licence No.2504017.

Installed as wall cavity thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.4.2 Pink® Batts® Ultra® R4.0 140mm Wall

Pink® Batts® Ultra® R4.0 140mm Wall - product code 7127140. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-4.0. 140mm thick x 560mm wide x 1140mm long segments.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Wall-Product-Sheet_April22_1075-RevF.pdf

Pink® Batts® Ultra® R4.0 140mm Wall is licenced with Environmental Choice New Zealand: Thermal Building Insulants Licence No.2504017.

Installed as wall cavity thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.5 Ceiling Thermal Insulation

4.3.5.1 Pink® Superbatts® Skillion Roof R5.0

Pink® Superbatts® Skillion Roof R5.0 - product code 7113250. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-5.0. 180mm Max. thickness x 560mm wide x 1220mm long segments.

Pink® Superbatts® Skillion Roof insulation products are specifically designed for skillion roofs, and provide high levels of thermal performance while ensuring the maximum thickness the segments can achieve.

Pink® Superbatts® Skillion Roof insulation has been BRANZ Appraised for use as a thermal insulating material for timber framed skillion roofs of domestic and commercial buildings - refer to BRANZ Appraisal No.767.

Installed as ceiling thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6 Building Insulation Blanket (BIB)

4.3.6.1 Pink® Batts® BIB R1.2 Blanket

Pink® Batts® BIB R1.2 Blanket - product code 7250001. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-1.2. 50mm thick x 1.2m wide x 12m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data -https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6.2 Pink® Batts® BIB R1.8 Blanket

Pink® Batts® BIB R1.8 Blanket - product code 7270001. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-1.8. 75mm thick x 1.2m wide x 8m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6.3 Pink® Batts® BIB R2.4 Blanket

Pink® Batts® BIB R2.4 Blanket - product code 7210052. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.4. 100mm thick x 1.2m wide x 8m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6.4 Pink® Batts® BIB R2.6 Blanket

Pink® Batts® BIB R2.6 Blanket - product code 7200076. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.6. 110mm thick x 1.2m wide x 6m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6.5 Pink® Batts® BIB R2.8 Blanket

Pink® Batts® BIB R2.8 Blanket - product code 720082. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-2.8. 130mm thick x 1.2m wide x 8m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6.6 Pink® Batts® BIB R3.2 Blanket

Pink® Batts® BIB R3.2 Blanket - product code 7200450. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-3.2. 125mm thick x 1.2m wide x 8m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.6.7 Pink® Batts® BIB R3.6 Blanket

Pink® Batts® BIB R3.6 Blanket - product code 720081. A non-combustible, resin bonded fibrous glasswool insulation manufactured from recycled and virgin glass and cured urea extended phenolic resin. R-value R-3.6. 140mm thick x 1.2m wide x 8m long rolls.

Pink® Batts® Building Insulation Blanket (BIB) is specifically designed for commercial roof and commercial wall applications. When used in residential applications, installation must be completed in line with NZS 4246.

BRANZ Appraised for use as a thermal insulating material for framed or part-framed walls, ceilings and roofs of domestic and commercial buildings according to the conditions and limitations of BRANZ Appraisal No.238. Refer to product data - https://www.pinkbatts.co.nz/assets/BIB/PB_BIB-ProductSheet_MARCH22_1080-RevD.pdf

Installed as thermal insulation to the locations shown on the drawings in accordance with the manufacturer's requirements.

Installed Location:

4.3.7 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with trades to install Pink® Batts® Insulation as required.

4.3.8 Workmanship

Where required by the NZ Building Act 2004 it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

The building envelope must be fully enclosed and weatherproof, with construction materials framing at or below the required moisture content, before insulation installation commences.

All installation work shall be carried out by registered PinkFit® Installers, or by experienced and competent installers, familiar with the specified products and installation techniques, in accordance with the manufacturer's requirements, and to fully comply with all warranty requirements.

Carry out all necessary pre-installation and pre-line inspections of Pink® Batts® Insulation for each area of work in accordance with the requirements of industry best practice recommendations and the manufacturer's guidelines. Inspect all Pink® Batts® insulation work before it is closed off with linings or made inaccessible.

Insulation shoud be installed without leaving gaps or compresing the material. Always maintain full insulation thickness to ensure that the stated thermal and acoustic values are achieved. Do not install insulation into closed cavities with a cavity depth less than the insulation's stated thickness.

4.3.9 Delivery & Handling

Store the Pink® Batts® Insulation materials undercover, in a weatherproof environment, off the floor, on a flat, even surface in accordance with the manufacturer's requirements. Keep materials dry and protected from damage, moisture and contamination at all times.

Do not use damaged or defective materials.

Should a problem be encountered with any Pink® Batts® Insulation product, immediately contact Pink® Batts® on 0800 746 522. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the bale package documentation with batch number and/or date of manufacture.

Handle Pink® Batts® Insulation products in accordance with the manufacturer's requirements and in a manner that prevents damage to and contamination of the product. Ensure installed Pink® Batts® Insulation remains dry at all times.

Installers shall be familiar with and comply with the manufacturer's https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Pink-Batts-Insulation-SDS-v-1.6.pdfprecautions for use, and use recommended safety gear when handling materials.

Conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

4.3.10 Installation

4.3.10.1 General

Install Pink® Batts® Insulation in accordance with NZS 4246 and the manufacturer's requirements.

Each installation is unique, so prior to installation:
- check for all hazards that may cause injury; and
- carry out any required repair work before starting installation; and
- ensure there’s adequate lighting to identify any hazards; and
- treat all electrical cables as live, being careful not to cut or expose cables and wires; and
- beware of other sharp objects (protruding nails, splinters etc.), pests (bees and wasps), loose boards and pipe work.

4.3.10.2 Pink® Batts® SnugFloor®

Pink® Batts® SnugFloor® Narrow insulation segments shall be oversized by at least 30mm wider than the floor joist spacing.
Pink® Batts® SnugFloor® Wide insulation segments shall be oversized by at least 50mm wider than the floor joist spacing.

Friction fit Pink® Batts® SnugFloor® segments between the floor joists, square to joist and up against the underside of the flooring, with the trailing edge folded down against the floor joist - trailing edges must not extend below floor joists.

Secure insulation segments using Danband or similar 12mm wide polythene banding support straps, with no less than three straps across each segment at the recommended set-out (midway and 200mm from each end), fixed to floor joists with 10mm galvanised or stainless steel staples. Avoid strapping close to electrical cables.

Firmly butt all insulation segment joins together, ensuring there are no gaps, tucks or compression of the segments.

Refer to installation instructions - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Floor-Installation-instructions_April2022RevE.pdf

Ensure that the appropriate clearances are maintained for all pipes, electrical cables and fittings in accordance with NZS 4246. Take extreme care when working around exposed electrical cables - treat all cables as live.

4.3.10.3 Pink® Batts® Wall

Pink® Batts® wall insulation segments shall be oversized by no more than 10mm than the wall framing spacings. If cutting is required, cut oversize by 5mm to ensure a good friction fit.

Friction fit the insulation segments between wall framing members ensuring there is no undue compression, gaps, creases, tucks or folds, and the insulation is finished flush with the framing edges.

Firmly butt all insulation segment joints together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Refer to installation instructions - https://www.pinkbatts.co.nz/assets/Products/April-2022-changes-/Wall-Installation-instructions_April22_1076RevH.pdf

Fit Pink® Batts® insulation tight and close around electrical cables and pipes. As necessary, partially cut and fit insulation around cables and pipes. Take extreme care when working around exposed electrical cables - treat all cables as live.

4.3.10.4 Pink® Batts® Skillion Roof

Pink® Batts® Skillion Roof insulation segments shall be oversized by no more than 10mm wider than the rafter spacings.

Friction fit insulation segments between rafters/top chords, behind ceiling battens where provided, ensuring there is no undue compression, gaps, creases, tucks or folds in the insulation.

Maintain a minimum 25mm clearance between the top of the insulation and any roofing material, including underlay.

Firmly butt all insulation segment joints together, ensuring there are no gaps, and maintain full thickness of the insulation to ensure maximum thermal performance.

Cover the entire area, including the outer edge of the top plate of external walls - the insulation must cover at least 50% of external top plates.

Refer to installation instructions - https://www.pinkbatts.co.nz/assets/Uploads/Downloads/Skillion-Roof-Installation-Instructions-February-2023.pdf

Ensure that the appropriate clearances are maintained for electrical equipment, heating and ventilation equipment, heated flues and pipes, etc. Where possible, place insulation beneath electrical wiring and plumbing. Take extreme care when working around exposed electrical cables - treat all cables as live.

4.3.11 Completion

Check that all specified Pink® Batts® Insulation products have been installed correctly in accordance with the manufacturer's requirements.

Check for damage and defects - replace damaged and defective insulation as necessary to the required standard.

Ensure the installed insulation will be adequately protected for durability and performance in accordance with the manufacturer's warranty requirements.

Leave all of this work complete, and in the condition required for proper performance, including for the installation of subsequent linings, in accordance with the manufacturer's warranty requirements.

Leave adjacent surfaces and finished work clean and free of damage. Remove all associated rubbish and waste material from site.

Issue to the Owner a copy of the Pink® Batts® Lifetime Product Warranty for all Pink® Batts® Insulation products installed.

5 TILING

5.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

5.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1884:2013(NZS AS)	Floor coverings - Resilient sheet and tiles - Installation practices
2358:1990(AS)	Adhesives - For fixing ceramic tiles
3661.2:1994(AS/NZS)	Slip resistance of pedestrian surfaces - Part 2: Guide to the reduction of slip hazards
3740:2010(AS)	Waterproofing of domestic wet areas
4586:2004(AS/NZS)	Slip resistance classification of new pedestrian surface materials
4858:2004(AS/NZS)	Wet area membranes
BRANZ Good Practice Guide	Tiling
NZBC B2/AS1	Durability
NZBC D1/AS1	Access Routes
NZBC E3/AS1	Internal Moisture

5.3 ARDEX Tiling Solutions

5.3.1 Scope

Supply and install ARDEX Tiling Solutions products and systems as components and accessories of the Tiling works identified on the drawings. All aspects of this work shall be in complete accordance with the manufacturer's requirements and technical literature (check www.ardex.co.nz, or call 0800 227 339 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for any specified ARDEX Tiling Solutions products, systems, components or accessories.

As necessary, this specification should be read in conjunction with other relevant ARDEX specifications, as referenced herein, as they may be interrelated.

The following is a list and/or general description of the extent of Tiling work, which are more specifically defined in the contract documents, required for the completion of the contract works:

5.3.2 Requirements

5.3.2.1 Safety

Comply with the Health and Safety at Work Act 2015 (HSWA), and with all relevant Health and Safety at Work Regulations 2016, and with all relevant WorkSafe New Zealand (WorkSafe) Approved Codes of Practice and WorkSafe Information and Guidance, particularly those for construction and building maintenance.

5.3.2.2 Warranty

ARDEX NZ Ltd Warranty. Warrant this work under normal use and environmental conditions, against failure of materials and application, according to the warranty conditions.
- 10 Years' Warranty Materials and Workmanship - for all tiling applications other than interior wet-area tiling.
- 15 Years' Warranty Materials and Workmanship - for all interior wet-area tiling applications.
- Provide the warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion.

5.3.2.3 Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of ARDEX Tiling Solutions work are carried out to the highest standard.

5.3.2.4 Evidence of Slip Resistance

If requested, provide certified evidence of the slip resistance classification for each floor tile specified.

5.3.2.5 Inspections & Reporting

BCA inspections shall take place at each of the stages as scheduled in the Building Consent. Confirm a written programme to facilitate these inspections, including notification when each stage of the work is ready for inspection.

Carry out all necessary pre-installation, installation and finishing inspections of Tiling for each area of work in accordance with the requirements of industry best practice recommendations and code of practice guidelines.

Complete all necessary Pre-Installation Checklists prior to installing proprietary under-tile waterproofing systems and heating systems and floor levelling compound systems, and all relevant Installation Checklists.

Complete all necessary Installation Sign-Off Certificates before undertaking subsequent work or before handing over completed work.

5.3.2.6 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected Tiling materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional cost to the Principal.

Should a problem be encountered with any ARDEX product during use or delivery, immediately contact the ARDEX Technical Hotline on 0800 227 339. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the document batch numbers and/or manufacturing dates.

5.3.2.7 Tile Samples

Submit a clearly identified full-size sample of each tile specified, including colour/pattern, for signed approval by the Contract Administrator - do not proceed until the samples have been approved.

5.3.2.8 Tiled Sample Section

Allow to install a finished tiled sample section for inspection by the Contract Administrator. Do not commence installation until the sample section has been approved. Subject to confirmation in writing, the insitu sample section may form part of the completed installation.

Sample Size:
Installed Location:

5.3.2.9 Spare Tiles

Upon completion of the Tiling works, supply and deliver to the Principal the specified quantity of unopened packs of each tile specified.

Quantity:

5.3.3 Performance

5.3.3.1 Interior Wet Area Performance

Interior Wet Area Performance. The performance of tiled interior wet areas shall comply with the requirements of NZBC E3/AS1.

5.3.3.2 Slip-Resistance Performance of Access Routes

Slip-Resistance Performance of Access Routes. The slip-resistance performance of tiled access routes, ramps and stairs shall comply with the requirements of NZBC D1/VM1 and NZBC D1/AS1.

5.3.4 Undertile Levelling Underlayment

5.3.4.1 ARDEX Undertile Levelling Compounds

ARDEX Undertile Levelling Compounds. Refer to separate specification ARDEX Floor Levelling & Repair Solutions.

5.3.5 Undertile Sheet Underlayment

5.3.5.1 Fibre Cement Sheet Underlay

Interior Floor Tile Underlayment - Fibre Cement Sheet Underlay. 6mm thick fibre cement underlay sheet with pre-marked nailing pattern on the face. Suitable for tiling applications. Installed as an underlay over new or existing solid timber strip flooring or wood-based sheet flooring, for subsequent interior floor tiles, in accordance with the manufacturer's requirements to the locations and details shown on the drawings.

Installed Location:

5.3.6 Substrate Primer

5.3.6.1 ARDEX P 9

Substrate Primer - ARDEX P 9. A single-part, water-based primer used for improving the adhesion of ARDEX products - including tile adhesives, floor levelling compounds and undertile waterproofing membranes (non fully immersed) - to smooth, dense or non-porous substrates. Suitable for interior and exterior applications; on new and existing substrates.

Suitable Substrates:
- Concrete, renders, screeds;
- Blockwork;
- Fibre cement sheet, compressed fibre cement sheet;
- Plasterboard jointing compound;
- Autoclaved aerated concrete (AAC);
- Interior plywood, particleboard, OSB;
- For use with other substrates, contact the ARDEX Technical Hot Line on 0800 227 339.

Use ARDEX P9 in strict accordance with the manufacturer's requirements.

5.3.6.2 ARDEX Multiprime

Substrate Primer - ARDEX Multiprime. A water-based primer used for improving the adhesion of ARDEX products - including tile adhesives, floor levelling compounds and undertile waterproofing membranes - to various substrates. Suitable for interior and exterior applications; on new and existing substrates.

Suitable Substrates:
- Concrete, renders, screeds;
- Blockwork;
- Fibre cement sheet, compressed fibre cement sheet;
- Plasterboard jointing compound;
- Autoclaved aerated concrete (AAC).
- For use with other substrates, contact the ARDEX Technical Hot Line on 0800 227 339.

Use ARDEX Multiprime in strict accordance with the manufacturer's requirements.

5.3.7 Undertile Waterproofing

5.3.7.1 Interior Wet-Area Tiling - ARDEX WPM 001

Interior Wet-Area Tiling - ARDEX WPM 001. Refer to separate specification section Waterproofing: ARDEX Liquid-Applied Waterproofing Membranes.

5.3.8 Undertile Heating

Undertile Heating System - Interior Floor Tiling - as specified below. A low temperature radiant, electric floor surface warming and space heating system, incorporating an electric element heating cable embedded into tile adhesive or levelling screed, complete with all necessary system controls, components and accessories required for proper installation and performance.

When installed in interior wet areas, an undertile waterproof membrane must be used.

Installed in accordance with the manufacturer's requirements, complete with all necessary components and accessories, to the locations and details shown on the approved drawings.

Brand & Product:
Installed Location:

5.3.9 Interior Dry-Area Floor Tile Adhesive

5.3.9.1 ARDEX Optima

Interior Dry-Area Floor Tile Adhesive - ARDEX Optima. A premium grade, flexible, 2-part cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C2 T S2.

Features:
- Exceptional bonding.
- Highly water resistant.
- Highly flexible.
- Suitable with translucent tiles.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stone (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Brick and blockwork;
- Concrete, renders, screeds;
- Autoclave aerated concrete (AAC);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- ARDEX liquid-applied undertile waterproofing membranes, Butynol®;
- Medium density fibre cement sheet, and compressed fibre cement sheet;
- Plasterboard;
- Existing ceramic tiles;
- Timber or wood-based substrates (primed with ARDEX Optima).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Adhesive - 1 part liquid/3 parts ARDEX Optima powder. Timber primer - 1 part liquid/2 parts ARDEX Optima powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 25 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 8 hours.
- Colour: White.
- Suitable for use with underfloor heating.

Apply tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.2 ARDEX Quickbond

Interior Dry-Area Floor Tile Adhesive - ARDEX Quickbond. A fast setting, polymer modified tile adhesive with extended pot life and workability. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 FT.

Features:
- Fast setting properties.
- Minimal shrinkage.
- Good workability, extended pot life.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-5.5L water/20kg ARDEX Quickbond powder.

- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 45 minutes.
- Adjustment Time: 10 minutes.
- Ready for Grouting: 2-2.5 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX Quickbond tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.3 ARDEX STS 8

Interior Dry-Area Floor Tile Adhesive - ARDEX STS 8. A high tensile strength, cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C1 T.
- C1 T S1 with ARDEX E 90 admix.

Features:
- Improved adhesion.
- Suitable for large format wall tiles and heavy floor tiles.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing ceramic tiles, natural stone (excluding moisture sensitive), highly vitrified tiles, mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls (with ARDEX E 90 admix);
- Plasterboard (with ARDEX E 90 admix);
- Compressed fibre cement sheet on floors (with ARDEX E 90 admix);
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5-8L water/20kg ARDEX STS 8 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2 hours.
- Open Time: 30 minutes.
- Ready for Grouting: 8 hours.
- Colour: Off-white.

Apply ARDEX STS 8 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.4 ARDEX WA 100

Interior Dry-Area Floor Tile Adhesive - ARDEX WA 100. A high strength, 2-part epoxy tile adhesive. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- R2 T.

Features:
- Non slump capability.
- Ideal for natural stones.
- Strong permanent bond
- Good chemical resistance.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing natural stone, and fully vitrified, ceramic and porcelain tiles.

Suitable Substrates:
- Concrete, renders, screeds;
- Medium density fibre cement sheet;
- Plasterboard;
- Existing ceramic and stone tiles;
- Autoclaved aerated concrete (AAC);
- Brick and blockwork;
- Interior wood-based sheet (plywood, particle board, OSB)

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 1:1 Part A:Part B by volume.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 45 minutes.
- Adjustment Time: 45 minutes.
- Ready for Grouting: 8 hours.
- Colour: White.

Apply ARDEX WA 100 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.5 ARDEX X 10

Interior Dry-Area Floor Tile Adhesive - ARDEX X 10. A flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6-6.5L water/20kg ARDEX X 10 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 24 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX X 10 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.6 ARDEX X 18

Interior Dry-Area Floor Tile Adhesive - ARDEX X 18. A fibre reinforced, flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format and heavy tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);
- CTU (ceramic tile underlay) over timber.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-6L water/20kg ARDEX X 18 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.

- Adjustment Time: 30 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.
- Suitable for use with underfloor heating.

Apply ARDEX X 18 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.7 ARDEX X 52

Interior Dry-Area Floor Tile Adhesive - ARDEX X 52. A flexible, rubber modified, cement-based tile adhesive for situations where minimal movement is anticipated. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 S1.

Features:
- Fast drying.
- Suitable for use over green screed.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramioc tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet;
- Plasterboard;
- Compressed fibre cement sheet.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5L water/20kg ARDEX X 52 powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 15-20 minutes.
- Adjustment Time: 15-20 minutes.
- Ready for Grouting: 6-8 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX X 52 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.8 ARDEX X 56

Interior Dry-Area Floor Tile Adhesive - ARDEX X 56. A flexible, polymer modified, cement-based tile adhesive. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 E S2.

Features:
- Highly flexible.
- Fast setting.
- Suitable for early age concrete (after 7 days), and screeds/renders (after 16 hours).
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, natural stone (excluding moisture sensitive), glass mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Autoclaved aerated concrete (AAC);
- Fibre cement sheet, compressed fibre cement sheet;
- Plasterboard;
- Interior wood-based sheet (plywood, particle board, OSB);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6.75L water/15kg ARDEX X 56 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 30 minutes.
- Adjustment Time: 30-45 minutes.
- Ready for Grouting: 4 hours.
- Colour: Light grey.
- Suitable for use with underfloor heating.

Apply ARDEX X 56 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.9.9 ARDEX X 77

Interior Dry-Area Floor Tile Adhesive - ARDEX X 77. A high performance, flexible, fibre reinforced, polymer modified, cement-based tile adhesive. Suitable for interior, exterior and continuously-immersed tiling applications; on new and existing substrates.

Classification (EN 12004):
- C2 T(T)E(E) S1 (S2 with ARDEX E 90).

Features:
- Microtec Technology for improved adhesion strength.
- Water and frost resistant.
- Efflorescence free.
- Can be used over early age concrete/screeds and render.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Autoclave aerated concrete (AAC);
- Compressed fibre cement sheet on floors;
- ARDEX DS 40 Acoustic Mat;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Floors - 6.5-6.75L water/15kg ARDEX X 77 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 60 minutes.
- Adjustment Time: 15-30 minutes.
- Ready for Grouting: 8 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX X 77 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.10 Interior Dry-Area Floor Tile Grout

5.3.10.1 ARDEX EG 15

Interior Dry-Area Floor Tile Grout - ARDEX EG 15. A high performance, 3-part (Part A; Part B; Colour Pack) epoxy tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1.5mm to 15mm wide.

Classification (AS 4992.3):
- RG.

Features:
- Suitable for use where strict hygiene standards, high chemical and physical resistance are required.
- Solvent free.
- Used with ARDEX Colour Packs.
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, porcelain, natural stones (excluding moisture sensitive and thermal sensitive).
- Note: porous, moisture sensitive and textured tiles may require special application procedures, contact the ARDEX Technical Hotline 0800 227 339.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Part A:Part B:(Colour Pack) by volume = 2:1:(6-8).
- Application Temperature Range: from +10°C to +35°C.
- Application Humidity Range: 30-70% RH.
- Pot Life: 60 minutes.
- Set Time: 24 hours.
- Full Cure Time: 7 days.
- Colours: ARDEX Colour Pack - 8 colours available.

Use ARDEX EG 15 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.10.2 ARDEX FG 8

Interior Dry-Area Floor Tile Grout - ARDEX FG 8. A smooth, flexible, cement-based tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1mm to 8mm wide. For continuously immersed tiling applications, use ARDEX FG 8 'White' (200) with diluted ARDEX Grout Booster. ARDEX FG 8 tile grout is NOT recommended for use on public swimming pools.

Classification (AS 4992.3):
- C G1.

Features:
- Mould resistant, and water repellent.
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and thermal sensitive), mosaics.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 4.2L water/20kg ARDEX FG 8 powder. Use ARDEX FG 8 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +10°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 19 colours available.
- Suitable for use with underfloor heating.

Use ARDEX FG 8 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.10.3 ARDEX FS-DD

Interior Dry-Area Floor Tile Grout - ARDEX FS-DD. A flexible, non-sanded, cement-based tile grout - to the colour specified herein. Suitable for interior and exterior tiling applications; for tile joints from 1mm to 5mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Water repellent and dirt resistant
- Contains ARDEX Grout Shield to combat mould growth
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, glass, natural stones (excluding moisture sensitive).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6L water/20kg ARDEX FS-DD powder. Use ARDEX FS-DD with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2.5 hours.
- Set Time: 5 hours.
- Full Cure Time: 7 days.
- Colours: 10 colours available.
- Suitable for use with underfloor heating.

Use ARDEX FS-DD tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.10.4 ARDEX WJ 50

Interior Dry-Area Floor Tile Grout - ARDEX WJ 50. A sanded, cement-based, wide-joint tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 2mm to 50mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Non-shrink
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and dimensionally unstable).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 3.6L water/20kg ARDEX WJ50 powder. Use ARDEX WJ50 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 6 colours available.
- Suitable for use with underfloor heating.

Use ARDEX WJ 50 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.11 Interior Dry-Area Wall Tile Adhesive

5.3.11.1 ARDEX D1

Interior Dry-Area Wall Tile Adhesive - ARDEX D1. A high performance, ready mixed, flexible, non-slump, wall tile adhesive. Suitable for interior wall tiling applications only; on new and existing substrates.

Classification:
- D1 TE.

Features:
- Superior flexibility and tenacity.
- Accommodates limited building movement.
- Suitable for use with translucent tiles.
- Low odour.

For Fixing (tile types):
- Suitable for fixing ceramic wall tiles (including monocottura), natural stones (excluding moisture sensitive), and glass mosaics.

Suitable Substrates:
- Concrete, render;
- Medium density fibre cement sheet on walls;
- Plasterboard.

Application Data (at +23°C and 50% RH):
- Application Temperature Range: from +5°C to +35°C.
- Open Time: 60 minutes.
- Adjustment Time: 45 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.

Apply ARDEX D1 wall tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.2 ARDEX D2

Interior Dry-Area Wall Tile Adhesive - ARDEX D2. A premium grade, ready mixed, flexible, non-slump, wall tile adhesive. Suitable for interior wall tiling applications only; on new and existing substrates.

Classification:
- D2 TE.

Features:
- Superior non-slump and and shear adhesion characteristics.
- Suitable for use with translucent tiles.

For Fixing (tile types):
- Suitable for fixing ceramic wall tiles, natural stone (excluding moisture sensitive), fully vitrified tiles, glass mosaics, porcelain.

Suitable Substrates:
- Concrete, render;
- Ardex liquid-applied undertile waterproofing membranes (excludes dense tiles);
- Fibre cement sheet;
- Plasterboard.

Application Data (at +23°C and 50% RH):
- Application Temperature Range: from +5°C to +35°C.
- Open Time: 45 minutes.
- Adjustment Time: 80 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.

Apply ARDEX D2 wall tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.3 ARDEX D11

Interior Dry-Area Wall Tile Adhesive - ARDEX D11. A ready mixed, flexible, thin-bed, wall tile adhesive. Suitable for interior wall tiling applications only; on new and existing substrates.

Classification:
- D1 E.

Features:
- Extended open time.
- Accommodates limited building movement.

For Fixing (tile types):
- Suitable for fixing ceramic wall tiles (including monocottura), natural stones (excluding moisture sensitive), and glass mosaics.

Suitable Substrates:
- Concrete, cement render;
- Fibre cement sheet;
- Plasterboard.

Application Data (at +23°C and 50% RH):
- Application Temperature Range: from +5°C to +35°C.
- Open Time: 45 minutes.
- Adjustment Time: 80 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.

Apply ARDEX D11 wall tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.4 ARDEX Optima

Interior Dry-Area Wall Tile Adhesive - ARDEX Optima. A premium grade, flexible, 2-part cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C2 T S2.

Features:
- Exceptional bonding.
- Highly water resistant.
- Highly flexible.
- Suitable with translucent tiles.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stone (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Brick and blockwork;

- Concrete, renders, screeds;
- Autoclave aerated concrete (AAC);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- ARDEX liquid-applied undertile waterproofing membranes, Butynol;
- Medium density fibre cement sheet, and compressed fibre cement sheet;
- Plasterboard;
- Existing ceramic tiles;
- Timber or wood-based substrates (primed with Ardex Optima).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Adhesive - 1 part liquid/3 parts ARDEX Optima powder. Timber primer - 1 part liquid/2 parts ARDEX Optima powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 25 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 8 hours.
- Colour: White.

Apply ARDEX Optima tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.5 ARDEX Quickbond

Interior Dry-Area Wall Tile Adhesive - ARDEX Quickbond. A fast setting, polymer modified tile adhesive with extended pot life and workability. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 FT.

Features:
- Fast setting properties.
- Minimal shrinkage.
- Good workability, extended pot life.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-5.5L water/20kg ARDEX Quickbond powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 45 minutes.
- Adjustment Time: 10 minutes.
- Ready for Grouting: 2-2.5 hours.
- Colour: Off-white.

Apply ARDEX Quickbond tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.6 ARDEX STS 8

Interior Dry-Area Wall Tile Adhesive - ARDEX STS 8. A high tensile strength, cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C1 T.
- C1 T S1 with ARDEX E 90 admix.

Features:
- Improved adhesion.
- Suitable for large format wall tiles and heavy floor tiles.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing ceramic tiles, natural stone (excluding moisture sensitive), highly vitrified tiles, mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls (with ARDEX E 90 admix);
- Plasterboard (with ARDEX E 90 admix);
- Compressed fibre cement sheet on floors (with ARDEX E 90 admix);
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5-8L water/20kg ARDEX STS 8 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2 hours.
- Open Time: 30 minutes.
- Ready for Grouting: 8 hours.
- Colour: Off-white.

Apply ARDEX STS 8 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.7 ARDEX WA 100

Interior Dry-Area Wall Tile Adhesive - ARDEX WA 100. A high strength, 2-part epoxy tile adhesive. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- R2 T.

Features:
- Non slump capability.
- Ideal for natural stones.
- Strong permanent bond
- Good chemical resistance.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing natural stone, and fully vitrified, ceramic and porcelain tiles.

Suitable Substrates:
- Concrete, renders, screeds;
- Medium density fibre cement sheet;
- Plasterboard;
- Existing ceramic and stone tiles;
- Autoclaved aerated concrete (AAC);
- Brick and blockwork;
- Interior wood-based sheet (plywood, particle board, OSB)

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 1:1 Part A:Part B by volume.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 45 minutes.
- Adjustment Time: 45 minutes.
- Ready for Grouting: 8 hours.
- Colour: White.

Apply ARDEX WA 100 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.8 ARDEX X 10

Interior Dry-Area Wall Tile Adhesive - ARDEX X 10. A flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6-6.5L water/20kg ARDEX X 10 powder.
- Application Temperature Range: from +5°C to +35°C.

- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 24 hours.
- Colour: Off-white.

Apply ARDEX X 10 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.9 ARDEX X 18

Interior Dry-Area Wall Tile Adhesive - ARDEX X 18. A fibre reinforced, flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format and heavy tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);
- CTU (ceramic tile underlay) over timber.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-6L water/20kg ARDEX X 18 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 30 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.

Apply tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.10 ARDEX X 52

Interior Dry-Area Wall Tile Adhesive - ARDEX X 52. A flexible, rubber modified, cement-based tile adhesive for situations where minimal movement is anticipated. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 S1.

Features:
- Fast drying.
- Suitable for use over green screed.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet;
- Plasterboard;
- Compressed fibre cement sheet.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5L water/20kg ARDEX X 52 powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 15-20 minutes.
- Adjustment Time: 15-20 minutes.
- Ready for Grouting: 6-8 hours.
- Colour: Off-white.

Apply ARDEX X 52 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.11 ARDEX X 56

Interior Dry-Area Wall Tile Adhesive - ARDEX X 56. A flexible, polymer modified, cement-based tile adhesive. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 E S2.

Features:
- Highly flexible.
- Fast setting.
- Suitable for early age concrete (after 7 days), and screeds/renders (after 16 hours).
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing ceramic tiles, natural stone (excluding moisture sensitive), fully vitrified tiles, glass mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Autoclaved aerated concrete (AAC);
- Fibre cement sheet, compressed fibre cement sheet;

- Plasterboard;
- Interior wood-based sheet (plywood, particle board, OSB);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6.75L water/15kg ARDEX X 56 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 30 minutes.
- Adjustment Time: 30-45 minutes.
- Ready for Grouting: 4 hours.
- Colour: Light grey.

Apply ARDEX X 56 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.11.12 ARDEX X 77

Interior Dry-Area Wall Tile Adhesive - ARDEX X 77. A high performance, flexible, fibre reinforced, polymer modified, cement-based tile adhesive. Suitable for interior, exterior and continuously-immersed tiling applications; on new and existing substrates.

Classification (EN 12004):
- C2 T(T)E(E) S1 (S2 with ARDEX E 90).

Features:
- Microtec Technology for improved adhesion strength.
- Water and frost resistant.
- Efflorescence free.
- Can be used over early age concrete/screeds and render.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Autoclave aerated concrete (AAC);
- Compressed fibre cement sheet on floors;
- ARDEX DS 40 Acoustic Mat;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Floors - 6.5-6.75L water/15kg ARDEX X 77 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 60 minutes.
- Adjustment Time: 15-30 minutes.

- Ready for Grouting: 8 hours.
- Colour: Off-white.

Apply ARDEX X 77 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.12 Interior Dry-Area Wall Tile Grout

5.3.12.1 ARDEX EG 15

Interior Dry-Area Wall Tile Grout - ARDEX EG 15. A high performance, 3-part (Part A; Part B; Colour Pack) epoxy tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1.5mm to 15mm wide.

Classification (AS 4992.3):
- RG.

Features:
- Suitable for use where strict hygiene standards, high chemical and physical resistance are required.
- Solvent free.
- Use with range of ARDEX Colour Packs.
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, porcelain, natural stones (excluding moisture sensitive and thermal sensitive).
- Note: porous, moisture sensitive and textured tiles may require special application procedures, contact the ARDEX Technical Hotline 0800 227 339.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Part A:Part B:(Colour Pack) by volume = 2:1:(6-8).
- Application Temperature Range: from +10°C to +35°C.
- Application Humidity Range: 30-70% RH.
- Pot Life: 60 minutes.
- Set Time: 24 hours.
- Full Cure Time: 7 days.
- Colours: ARDEX Colour Pack - 8 colours available.

Use ARDEX EG 15 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.12.2 ARDEX FG 8

Interior Dry-Area Floor Tile Grout - ARDEX FG 8. A smooth, flexible, cement-based tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1mm to 8mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Mould resistant, and water repellent.
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and thermal sensitive), mosaics.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 4.2L water/20kg ARDEX FG 8 powder. Use ARDEX FG 8 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +10°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 19 colours available.

Use ARDEX FG 8 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.12.3 ARDEX FS-DD

Interior Dry-Area Floor Tile Grout - ARDEX FS-DD. A flexible, non-sanded, cement-based tile grout - to the colour specified herein. Suitable for interior and exterior tiling applications; for tile joints from 1mm to 5mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Water repellent and dirt resistant
- Contains ARDEX Grout Shield to combat mould growth
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, glass, natural stones (excluding moisture sensitive).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6L water/20kg ARDEX FS-DD powder. Use ARDEX FS-DD with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2.5 hours.
- Set Time: 5 hours.
- Full Cure Time: 7 days.
- Colours: 10 colours available.
- Suitable for use with underfloor heating.

Use ARDEX FS-DD tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.12.4 ARDEX WJ 50

Interior Dry-Area Wall Tile Grout - ARDEX WJ 50. A sanded, cement-based, wide-joint tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 2mm to 50mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Non-shrink
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and dimensionally unstable).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 3.6L water/20kg ARDEX WJ 50 powder. Use ARDEX WJ 50 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 6 colours available.
- Suitable for use with underfloor heating.

Use ARDEX WJ 50 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.13 Interior Wet-Area Floor Tile Adhesive

5.3.13.1 ARDEX Optima

Interior Wet-Area Floor Tile Adhesive - ARDEX Optima. A premium grade, flexible, 2-part cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C2 T S2.

Features:
- Exceptional bonding.
- Highly water resistant.
- Highly flexible.
- Suitable with translucent tiles.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stone (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Brick and blockwork;
- Concrete, renders, screeds;
- Autoclave aerated concrete (AAC);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- ARDEX liquid-applied undertile waterproofing membranes, Butynol;
- Medium density fibre cement sheet, and compressed fibre cement sheet;
- Plasterboard;

- Existing ceramic tiles;
- Timber or wood-based substrates (primed with Ardex Optima).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Adhesive - 1 part liquid/3 parts ARDEX Optima powder. Timber primer - 1 part liquid/2 parts ARDEX Optima powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 25 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 8 hours.
- Colour: White.
- Suitable for use with underfloor heating.

Apply ARDEX Optima tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.2 ARDEX Quickbond

Interior Wet-Area Floor Tile Adhesive - ARDEX Quickbond. A fast setting, polymer modified tile adhesive with extended pot life and workability. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 FT.

Features:
- Fast setting properties.
- Minimal shrinkage.
- Good workability, extended pot life.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-5.5L water/20kg ARDEX Quickbond powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 45 minutes.
- Adjustment Time: 10 minutes.
- Ready for Grouting: 2-2.5 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX Quickbond tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.3 ARDEX STS 8

Interior Wet-Area Floor Tile Adhesive - ARDEX STS 8. A high tensile strength, cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C1 T.
- C1 T S1 with ARDEX E 90 admix.

Features:
- Improved adhesion.
- Suitable for large format wall tiles and heavy floor tiles.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing ceramic tiles, natural stone (excluding moisture sensitive), highly vitrified tiles, mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls (with ARDEX E 90 admix);
- Plasterboard (with ARDEX E 90 admix);
- Compressed fibre cement sheet on floors (with ARDEX E 90 admix);
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5-8L water/20kg ARDEX STS 8 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2 hours.
- Open Time: 30 minutes.
- Ready for Grouting: 8 hours.
- Colour: Off-white.

Apply ARDEX STS 8 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.4 ARDEX X 10

Interior Wet-Area Floor Tile Adhesive - ARDEX X 10. A flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6-6.5L water/20kg ARDEX X 10 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 24 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX X 10 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.5 ARDEX X 18

Interior Wet-Area Floor Tile Adhesive - ARDEX X 18. A fibre reinforced, flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format and heavy tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);
- CTU (ceramic tile underlay) over timber.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-6L water/20kg ARDEX X 18 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 30 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.
- Suitable for use with underfloor heating.

Apply ARDEX X 18 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.6 ARDEX X 52

Interior Wet-Area Floor Tile Adhesive - ARDEX X 52. A flexible, rubber modified, cement-based tile adhesive for situations where minimal movement is anticipated. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 S1.

Features:
- Fast drying.
- Suitable for use over green screed.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet;
- Plasterboard;
- Compressed fibre cement sheet.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5L water/20kg ARDEX X 52 powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 15-20 minutes.
- Adjustment Time: 15-20 minutes.
- Ready for Grouting: 6-8 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX X 52 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.7 ARDEX X 56

Interior Wet-Area Floor Tile Adhesive - ARDEX X 56. A flexible, polymer modified, cement-based tile adhesive. Suitable for interior tiling applications only; on new and existing substrates.

Classification:
- C1 E S2.

Features:
- Highly flexible.
- Fast setting.
- Suitable for early age concrete (after 7 days), and screeds/renders (after 16 hours).
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, natural stone (excluding moisture sensitive), glass mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Autoclaved aerated concrete (AAC);
- Fibre cement sheet, compressed fibre cement sheet;
- Plasterboard;
- Interior wood-based sheet (plywood, particle board, OSB);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6.75L water/15kg ARDEX X 56 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 30 minutes.
- Adjustment Time: 30-45 minutes.
- Ready for Grouting: 4 hours.
- Colour: Light grey.
- Suitable for use with underfloor heating.

Apply ARDEX X 56 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.13.8 ARDEX X 77

Interior Wet-Area Floor Tile Adhesive - ARDEX X 77. A high performance, flexible, fibre reinforced, polymer modified, cement-based tile adhesive. Suitable for interior, exterior and continuously-immersed tiling applications; on new and existing substrates.

Classification (EN 12004):
- C2 T(T)E(E) S1 (S2 with ARDEX E 90).

Features:
- Microtec Technology for improved adhesion strength.
- Water and frost resistant.
- Efflorescence free.
- Can be used over early age concrete/screeds and render.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excludiing moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Autoclave aerated concrete (AAC);
- Compressed fibre cement sheet on floors;
- ARDEX DS 40 Acoustic Mat;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Floors - 6.5-6.75L water/15kg ARDEX X 77 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 60 minutes.
- Adjustment Time: 15-30 minutes.
- Ready for Grouting: 8 hours.
- Colour: Off-white.
- Suitable for use with underfloor heating.

Apply ARDEX X 77 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.14 Interior Wet-Area Floor Tile Grout

5.3.14.1 ARDEX EG 15

Interior Wet-Area Floor Tile Grout - ARDEX EG 15. A high performance, 3-part (Part A; Part B; Colour Pack) epoxy tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1.5mm to 15mm wide.

Classification (AS 4992.3):
- RG.

Features:
- Suitable for use where strict hygiene standards, high chemical and physical resistance are required.
- Solvent free.
- Use with range of ARDEX Colour Packs.
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, porcelain, natural stones (excluding moisture sensitive and thermal sensitive).
- Note: porous, moisture sensitive and textured tiles may require special application procedures, contact the ArRDEX Technical Hotline 0800 227 339.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Part A:Part B:(Colour Pack) by volume = 2:1:(6-8).
- Application Temperature Range: from +10°C to +35°C.
- Application Humidity Range: 30-70% RH.

- Pot Life: 60 minutes.
- Set Time: 24 hours.
- Full Cure Time: 7 days.
- Colours: Ardex Colour Pack - 8 colours available.

Use ARDEX EG 15 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.14.2 ARDEX FG 8

Interior Dry-Area Floor Tile Grout - ARDEX FG 8. A smooth, flexible, cement-based tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1mm to 8mm wide. For continuously immersed tiling applications, use ARDEX FG 8 'White' (200) with diluted ARDEX Grout Booster. ARDEX FG 8 tile grout is NOT recommended for use on public swimming pools.

Classification (AS 4992.3):
- C G1.

Features:
- Mould resistant, and water repellent.
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and thermal sensitive), mosaics.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 4.2L water/20kg ARDEX FG 8 powder. Use ARDEX FG 8 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +10°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 19 colours available.
- Suitable for use with underfloor heating.

Use ARDEX FG 8 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.14.3 ARDEX FS-DD

Interior Dry-Area Floor Tile Grout - ARDEX FS-DD. A flexible, non-sanded, cement-based tile grout - to the colour specified herein. Suitable for interior and exterior tiling applications; for tile joints from 1mm to 5mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Water repellent and dirt resistant
- Contains ARDEX Grout Shield to combat mould growth

- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, glass, natural stones (excluding moisture sensitive).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6L water/20kg ARDEX FS-DD powder. Use ARDEX FS-DD with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2.5 hours.
- Set Time: 5 hours.
- Full Cure Time: 7 days.
- Colours: 10 colours available.
- Suitable for use with underfloor heating.

Use ARDEX FS-DD tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.14.4 ARDEX WJ 50

Interior Wet-Area Floor Tile Grout - ARDEX WJ 50. A sanded, cement-based, wide-joint tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 2mm to 50mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Non-shrink
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and dimensionally unstable).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 3.6L water/20kg ARDEX WJ 50 powder. Use ARDEX WJ 50 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 6 colours available.
- Suitable for use with underfloor heating.

Use ARDEX WJ 50 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.15 Interior Wet-Area Wall Tile Adhesive

5.3.15.1 ARDEX D2

Interior Wet-Area Wall Tile Adhesive - ARDEX D2. A premium grade, ready mixed, flexible, non-slump, wall tile adhesive. Suitable for interior wall tiling applications only; on new and existing substrates.

Classification:
- D2 TE.

Features:
- Superior non-slump and and shear adhesion characteristics.
- Suitable for use with translucent tiles.

For Fixing (tile types):
- Suitable for fixing ceramic wall tiles, natural stone (excluding moisture sensitive), fully vitrified tiles, glass mosaics, porcelain.

Suitable Substrates:
- Concrete, render;
- ARDEX liquid-applied undertile waterproofing membranes (excludes dense tiles);
- Fibre cement sheet;
- Plasterboard.

Application Data (at +23°C and 50% RH):
- Application Temperature Range: from +5°C to +35°C.
- Open Time: 45 minutes.
- Adjustment Time: 80 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.

Apply ARDEX D2 wall tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.2 ARDEX Optima

Interior Wet-Area Wall Tile Adhesive - ARDEX Optima. A premium grade, flexible, 2-part cement-based tile adhesive. Suitable for interior, exterior and continuously immersed tiling applications; on new and existing substrates.

Classification:
- C2 T S2.

Features:
- Exceptional bonding.
- Highly water resistant.
- Highly flexible.
- Suitable with translucent tiles.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stone (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Brick and blockwork;

- Concrete, renders, screeds;
- Autoclave aerated concrete (AAC);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- ARDEX liquid-applied undertile waterproofing membranes, Butynol;
- Medium density fibre cement sheet, and compressed fibre cement sheet;
- Plasterboard;
- Existing ceramic tiles;
- Timber or wood-based substrates (primed with ARDEX Optima).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Adhesive - 1 part liquid/3 parts ARDEX Optima powder. Timber primer - 1 part liquid/2 parts ARDEX Optima powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 25 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 8 hours.
- Colour: White.

Apply ARDEX Optima tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.3 ARDEX Quickbond

Interior Wet-Area Wall Tile Adhesive - ARDEX Quickbond. A fast setting, polymer modified tile adhesive with extended pot life and workability. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 FT.

Features:
- Fast setting properties.
- Minimal shrinkage.
- Good workability, extended pot life.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-5.5L water/20kg ARDEX Quickbond powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 45 minutes.
- Adjustment Time: 10 minutes.
- Ready for Grouting: 2-2.5 hours.
- Colour: Off-white.

Apply ARDEX Quickbond tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.4 ARDEX X 10

Interior Wet-Area Wall Tile Adhesive - ARDEX X 10. A flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 TE S1.

Features:
- Ideal for large format tiles.
- Extended open time.
- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6-6.5L water/20kg ARDEX X 10 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 20 minutes.
- Ready for Grouting: 24 hours.
- Colour: Off-white.

Apply ARDEX X 10 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.5 ARDEX X 18

Interior Wet-Area Wall Tile Adhesive - ARDEX X 18. A fibre reinforced, flexible, non slump, polymer fortified, cement-based tile adhesive with mastic type properties. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 TE S1.

Features:
- Ideal for large format and heavy tiles.
- Extended open time.

- Good workability, low sand content.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Fibre cement sheet on walls;
- Plasterboard;
- Compressed fibre cement sheet on floors.
- Existing ceramic tiles (interior dry areas only);
- CTU (ceramic tile underlay) over timber.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 5-6L water/20kg ARDEX X 18 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 30 minutes.
- Adjustment Time: 30 minutes.
- Ready for Grouting: 24 hours.
- Colour: White.

Apply ARDEX X 18 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.6 ARDEX X 52

Interior Wet-Area Wall Tile Adhesive - ARDEX X 52. A flexible, rubber modified, cement-based tile adhesive for situations where minimal movement is anticipated. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C2 S1.

Features:
- Fast drying.
- Suitable for use over green screed.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stones (excluding moisture sensitive), and mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet;
- Plasterboard;
- Compressed fibre cement sheet.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 7.5L water/20kg ARDEX X 52 powder.
- Application Temperature Range: from +10°C to +35°C.
- Pot Life: 1.5 hours.
- Open Time: 15-20 minutes.
- Adjustment Time: 15-20 minutes.
- Ready for Grouting: 6-8 hours.
- Colour: Off-white.

Apply ARDEX X 52 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.7 ARDEX X 56

Interior Wet-Area Wall Tile Adhesive - ARDEX X 56. A flexible, polymer modified, cement-based tile adhesive. Suitable for interior and exterior tiling applications; on new and existing substrates.

Classification:
- C1 E S2.

Features:
- Highly flexible.
- Fast setting.
- Suitable for early age concrete (after 7 days), and screeds/renders (after 16 hours).
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, natural stone (excluding moisture sensitive), glass mosaics, porcelain.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Autoclaved aerated concrete (AAC);
- Fibre cement sheet, compressed fibre cement sheet;
- Plasterboard;
- Interior wood-based sheet (plywood, particle board, OSB);
- Metal surfaces, including powder coated steel, galvanised steel, stainless steel;
- Existing ceramic and vinyl tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6.75L water/15kg ARDEX X 56 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 45 minutes.
- Open Time: 30 minutes.
- Adjustment Time: 30-45 minutes.
- Ready for Grouting: 4 hours.
- Colour: Light grey.

Apply ARDEX X 56 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.15.8 ARDEX X 77

Interior Wet-Area Wall Tile Adhesive - ARDEX X 77. A high performance, flexible, fibre reinforced, polymer modified, cement-based tile adhesive. Suitable for interior, exterior and continuously-immersed tiling applications; on new and existing substrates.

Classification (EN 12004):
- C2 T(T)E(E) S1 (S2 with ARDEX E 90).

Features:
- Microtec Technology for improved adhesion strength.
- Water and frost resistant.
- Efflorescence free.
- Can be used over early age concrete/screeds and render.
- Low VOC content.

For Fixing (tile types):
- Suitable for fixing fully vitrified and ceramic tiles, porcelain, natural stone (excluding moisture sensitive), glass and porcelain mosaics.

Suitable Substrates:
- Concrete, renders, screeds;
- ARDEX liquid-applied undertile waterproofing membranes;
- Medium density fibre cement sheet on walls;
- Plasterboard;
- Autoclave aerated concrete (AAC);
- Compressed fibre cement sheet on floors;
- ARDEX DS 40 Acoustic Mat;
- Existing ceramic tiles.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Floors - 6.5-6.75L water/15kg ARDEX X 77 powder.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 3 hours.
- Open Time: 60 minutes.
- Adjustment Time: 15-30 minutes.
- Ready for Grouting: 8 hours.
- Colour: Off-white.

Apply ARDEX X 77 tile adhesive to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.3.16 Interior Wet-Area Wall Tile Grout

5.3.16.1 ARDEX EG 15

Interior Wet-Area Wall Tile Grout - ARDEX EG 15. A high performance, 3-part (Part A; Part B; Colour Pack) epoxy tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1.5mm to 15mm wide.

Classification (AS 4992.3):
- RG.

Features:
- Suitable for use where strict hygiene standards, high chemical and physical resistance are required.

- Solvent free.
- Use with range of ARDEX Colour Packs.
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, porcelain, natural stones (excluding moisture sensitive and thermal sensitive).
- Note: porous, moisture sensitive and textured tiles may require special application procedures, contact the ARDEX Technical Hotline 0800 227 339.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: Part A:Part B:(Colour Pack) by volume = 2:1:(6-8).
- Application Temperature Range: from +10°C to +35°C.
- Application Humidity Range: 30-70% RH.
- Pot Life: 60 minutes.
- Set Time: 24 hours.
- Full Cure Time: 7 days.
- Colours: ARDEX Colour Pack - 8 colours available.

Use ARDEX EG 15 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.16.2 ARDEX FG 8

Interior Dry-Area Floor Tile Grout - ARDEX FG 8. A smooth, flexible, cement-based tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 1mm to 8mm wide. For continuously immersed tiling applications, use ARDEX FG 8 'White' (200) with diluted ARDEX Grout Booster. ARDEX FG 8 tile grout is NOT recommended for use on public swimming pools.

Classification (AS 4992.3):
- C G1.

Features:
- Mould resistant, and water repellent.
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and thermal sensitive), mosaics.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 4.2L water/20kg ARDEX FG 8 powder. Use ARDEX FG 8 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +10°C to +35°C.
- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 19 colours available.

Use ARDEX FG 8 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.16.3 ARDEX FS-DD

Interior Dry-Area Floor Tile Grout - ARDEX FS-DD. A flexible, non-sanded, cement-based tile grout - to the colour specified herein. Suitable for interior and exterior tiling applications; for tile joints from 1mm to 5mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Water repellent and dirt resistant
- Contains ARDEX Grout Shield to combat mould growth
- Water wash up.
- Extremely low VOC.

For Grouting (tile types):
- All ceramic and porcelain tiles, terrazzo, slate, quarry tiles, glass, natural stones (excluding moisture sensitive).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 6L water/20kg ARDEX FS-DD powder. Use ARDEX FS-DD with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.
- Pot Life: 2.5 hours.
- Set Time: 5 hours.
- Full Cure Time: 7 days.
- Colours: 10 colours available.
- Suitable for use with underfloor heating.

Use ARDEX FS-DD tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.16.4 ARDEX WJ 50

Interior Wet-Area Wall Tile Grout - ARDEX WJ 50. A sanded, cement-based, wide-joint tile grout - to the colour specified herein. Suitable for interior, exterior and continuously immersed tiling applications; for tile joints from 2mm to 50mm wide.

Classification (AS 4992.3):
- C G1.

Features:
- Non-shrink
- Water wash up.
- Low VOC.

For Grouting (tile types):
- All ceramic tiles, terrazzo, slate, quarry tiles, natural stones (excluding moisture sensitive and dimensionally unstable).

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 3.6L water/20kg powder. Use ARDEX WJ 50 with ARDEX Grout Booster in accordance with the manufacturer's requirements.
- Application Temperature Range: from +5°C to +35°C.

- Working Time: 60 minutes.
- Drying Time: 24 hours.
- Colours: 6 colours available.
- Suitable for use with underfloor heating.

Use ARDEX WJ 50 tile grout in strict accordance with the manufacturer's requirements.

Colour:

5.3.17 Flexible Sealant

5.3.17.1 ARDEX SE

Flexible Sealant - ARDEX SE. A coloured, acetic cure silicone sealant - to the colour specified herein. Suitable for interior and exterior floor and wall tiling applications. Not suitable for continuously immersed tiling applications.

Features:
- Waterproof and UV resistant.
- Contains fungicides to combat mould growth.
- Withstands up to 25% total movement of original joint width.
- Low VOC.

Application Data (at +23°C and 50% RH):
- Application Temperature Range: from +5°C to +40°C.
- Joint Width: Up to 30mm. Sealant joints shall be in accordance with the manufacturer's joint design width-to-depth ratio.
- Skin Forming Time: 10-12 minutes.
- Curing Time (approx.): 2mm per day; 7mm per week.
- Colours: 12 colours available from the ARDEX colour range.
- Suitable for use with underfloor heating.

Use ARDEX SE silicone sealant to seal tiling work in strict accordance with the manufacturer's requirements.

Colour:

5.3.17.2 ARDEX ST

Flexible Sealant - ARDEX ST. A neutral cure, non-staining, silicone sealant - to the colour specified herein. Suitable for interior, exterior floor and wall tiling applications, and continuously immersed tiling applications.

Features:
- Water and UV resistant.
- Contains fungicides to combat mould growth.
- Suitable for use with moisture-sensitive natural stone, including marble and granite.
- Low VOC.

Application Data (at +23°C and 50% RH):
- Primer: ARDEX SP 1.
- Application Temperature Range: from +5°C to +40°C.
- Joint Width: Walls - up to 30mm; Floors; up to 15mm. Sealant joints shall be in accordance with the manufacturer's joint design width-to-depth ratio.
- Skin Forming Time: 10-12 minutes.

- Curing Time (approx.): 1mm per day; 6mm per week.
- Colours: 8 colours available from the ARDEX colour range, including Clear.
- Suitable for use with underfloor heating.

Use ARDEX ST silicone sealant to seal tiling work in strict accordance with the manufacturer's requirements.

Colour:

5.3.18 Tiling Trim

5.3.18.1 Aluminium Square-Edge Tile Trim

Aluminium Square-Edge Tile Trim - as specified herein. Square profiled extruded aluminium edge trim for tiling. Sized to suit the thickness of the tiling installation. Installed to the locations and details shown on the drawings.

Brand & Profile Code:
Finish & Colour:

5.3.18.2 Aluminium Round-Edge Tile Trim

Aluminium Round-Edge Tile Trim - as specified herein. Quarter round profiled extruded aluminium edge trim for tiling. Sized to suit the thickness of the tiling installation. Installed to the locations and details shown on the drawings.

Brand & Profile Code:
Finish & Colour:

5.3.18.3 Decorative Metal Strip

Decorative Metal Strip - as specified herein. Aluminium, brass or stainless steel proprietary separating profiles for tiling applications on floors and/or walls. Used to create continuous, decorative lines between tiles. Installed to the locations, layout and details shown on the approved drawings.

Brand & Profile Code:
Size:
Metal:
Finish & Colour:
Installed Location:

5.3.18.4 Metal Expansion Joint

Metal Expansion Joint - as specified herein. A trafficable, aluminium or brass expansion joint for tiling applications, incorporating an interchangeable PVC/rubber insert or a jointing compound fill. Sized to suit the thickness of the tiling installation. Installed in accordance with the manufacturer's requirements, to the locations and details shown on the approved drawings.

Brand & Product Code:
Size:
Metal (Al. or brass):
Insert/Infill Material & Colour:
Installed Location:

5.3.18.5 Stainless Steel Profiled Corner Guard

Stainless Steel Profiled Corner Guard - as specified herein. Grade 304 stainless steel, rounded corner guard profiles for tiling applications, to protect and cover of external corners and edges of tiled walls.

Sized to suit the thickness of the tiling installation. Installed the the locations and details shown on the approved drawings.

Brand & Product Code:
Size:
Finish (polished/satin):
Installed Location:

5.3.19 Tiles

5.3.19.1 Floor Tile - Selection 1

Floor Tile, Selection 1 - as specified below. Tiles shall be true to shape; free of warp; accurate in dimensions to facilitate laying with minimum joint width; free of imperfections; and true to samples. Tiles shall be from the same batch where possible, and delivered with the original packaging and labeling intact.

Installed in accordance with AS 3958.1, as a floor tile, to the locations, layout and details shown on the drawings.

Tile Brand & Style:
Material:
Finish:
Dimensions:
Colour:
PEI Rating:
Slip Resistance:
Installed Location:

5.3.20 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install tiling as required, and to ensure that:
- appropriate tolerances and clearances allow for adjacent finishes, fixtures and fittings, etc; and
- penetrations for piped and cabled services are correctly located to maintain tile integrity and tiling performance.

5.3.21 Workmanship

Where required by the NZ Building Act 2004, it is the building contractor's responsibility to ensure that all restricted building work is carried out by a Licensed Building Practitioner.

All Tiling work shall be carried out to best trade practice by qualified and experienced tradespersons, familiar with the specified materials and installation and finishing techniques, in accordance with AS 3958.1 and relevant product manufacturers' technical literature, to the layout and details shown on the approved drawings, and to fully comply with all warranty requirements.

Submit evidence of experience on request, e.g. National Certificate in Floor and Wall Tiling, or certified member of Master Plasterers and Tilers Association.

All substrate preparation, tile laying and tiling accessories application and finishing techniques shall be exactly as recommended by the specified product manufacturer. All work shall be such as to leave a neat, efficient and robust installation.

Interior wet-area tiling shall be waterproof and installed over a waterproof membrane as shown on the drawings.
Exterior floor tiling shall be waterproof and weathertight, and where necessary installed over a waterproof membrane as shown on the drawings.

As recommended by the tile manufacturer, use only an approved adhesive that is compatible with the specified tile, its substrate and its application/use.

Where necessary, delay tiling to allow maximum curing and settling and initial creep of the substrates, particularly to load bearing structural elements.

Do not cover or bridge movement control joints with tiles and tile underlay.

Tiling shall not be undertaken when the ambient and surface temperatures are outside the specified product manufacturer's permissible temperature range.

Where necessary, mask off and protect from contamination adjacent surfaces, joinery, fixtures and finished work before commencing.

Exterior tiling shall not be undertaken during inclement weather. As necessary and in accordance with the manufacturer's requirements, protect exterior tiling from rain, hot dry winds and direct sunlight to aid proper drying and curing.

Leave all tiled surfaces clean, sound, and free from blemishes of any kind.

5.3.22 Delivery & Handling

Upon delivery to site, inspect the tile packs and reject those items that are found to be damaged, defective or contaminated. Contact the tile supplier for replacement of rejected items at time of delivery to site.

Do not use damaged, defective or contaminated materials, or products that are beyond their designated shelf life.

Should a problem be encountered with any ARDEX tiling product at time of delivery or during use, immediately contact the ARDEX Technical Hot Line on 0800 227 339. Do not continue to use the product if it is not performing to specification or expectation. Keep the product in question, and where possible, the product batch numbers and/or manufacturing dates.

Store all tiling materials undercover, in a weatherproof environment, off the floor, on a flat, even and level surface in accordance with the manufacturer's requirements. Keep products and materials dry, out of direct sunlight and protected from damage, moisture and contamination at all times.

Handle all tiling materials in accordance with the manufacturer's requirements.

Installers shall be familiar with and comply with all associated product Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Installers shall conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

5.3.23 Preparation

5.3.23.1 General

Before commencing tiling, prepare and prime substrates according to the requirements of the ARDEX tile adhesive technical literature. If there is any uncertainty, contact the ARDEX Technical Hot Line on 0800 227 339 to confirm preparatory requirements.

All substrates to be tiled shall be structurally sound, even and smooth, clean, dry, and free from dirt, dust, grease, oil, wax, paint residue, loose plaster and laitance, curing compounds and other materials and contaminants likely to affect the bonding and performance of the specified tile adhesive and grout.

Carry out all necessary moisture readings of substrates. Do not commence installation until the moisture readings for the whole area are below the required level.

Carry out all necessary substrate inspections and preparatory work in accordance with ARDEX recommendations prior to application.

Check that the substrate is free of voids and depressions, and is in correct alignment - true to line, level and/or plumb, and to the falls indicated on the drawings.

Check that all fixtures, fittings and embedded items are correctly installed, and that all substrate edges are completed as detailed.

Confirm the location of any movement control or crack control joints prior to commencement of the works, and ensure that they are appropriately trimmed. Do not cover or bridge movement control joints with tiles, adhesive and grout.

Allow self-levelling underlayments and mortar screeds to properly cure in accordance with the manufacturer's recommendations before commencing tiling.

Allow new concrete substrates to cure for at least four weeks prior to tiling.

Prime porous substrates using ARDEX primers in accordance with the requirements of the respective ARDEX tile adhesive.

Ensure that the back of each tile is clean and free from dust or other contaminants prior to laying.

The commencement of work on each section/area shall be deemed to indicate full acceptance by the Tiler that all preparatory works by other trades are appropriate to achieve the required finished results.

5.3.23.2 Underfloor Heating Systems

Turn off working in-slab under-floor heating systems at least 48 hours prior to installation. Underfloor heating must remain off during installation and for at least 48 hours, or in accordance with ARDEX requirements, after tiling installation.

5.3.23.3 New Compressed Fibre Cement Sheet Floor

New Compressed Fibre Cement Sheet Floor - check all aspects of preparatory works, including but not limited to:
- Check that the sheets have been installed, jointed and fixed in accordance with the manufacturer's requirements and indicated on the drawings, and that all sheet edges are fully supported.
- Check that the sheet joints are flush and even, and that all fixings are countersunk and filled with a compatible filler.

- Using a proprietary levelling compound, repair flush with smooth, feathered edges any damaged areas in the floor surface.
- Mechanically sand to remove all surface irregularities and contaminants likely to affect adhesion.
- Leave the surface completely clean and free of dust and contaminants before commencing tiling.

5.3.23.4 New Particleboard Floor

New Particle Board Floor - check all aspects of preparatory works, including but not limited to:
- Check that the sheets have been installed, jointed and fixed in accordance with the manufacturer's requirements and indicated on the drawings, and that all sheet edges are fully supported.
- Check that the sheet joints are flush and even, and that all fixings are countersunk and filled with a compatible filler.
- Using a proprietary levelling compound, repair flush with smooth, feathered edges any damaged areas in the floor surface.
- Mechanically sand to remove all surface irregularities and contaminants likely to affect adhesion.
- Leave the surface completely clean and free of dust and contaminants.
- Prime the entire surface with the recommended ARDEX primer before commencing tiling.

5.3.23.5 Existing Concrete Floor

Existing Concrete Floor - check all aspects of preparatory works, including but not limited to:
- Remove any existing floor covering and adhesive and surface contaminants.
- Grind off any high spots, and using a proprietary levelling compound repair flush with feathered edges any low spots or damaged areas, then grind smooth.
- Mechanically grind or acid etch very dense concrete surfaces and any surface that is glazed to the extent that may compromise adhesion.
- Leave the surface clean, free of dust and surface contaminants.
- Check that any protruding or exposed bare metal has been treated with a suitable corrosion-inhibiting primer.

5.3.23.6 Existing Particleboard Floor

Existing Particle Board Floor - check all aspects of preparatory works, including but not limited to:
- Strip off any remaining existing floor coverings, adhesive and surface contaminants.
- Using a proprietary levelling compound, repair flush with smooth, feathered edges any damaged areas in the floor surface.
- Mechanically sand to remove all surface irregularities.
- Leave the surface clean, free of dust and surface contaminants in preparation for installing fibre cement underlay sheets.

5.3.23.7 Precast & Tilt-up Concrete Walls

Precast & Tilt-Up Concrete Walls - check all aspects of preparatory works, including but not limited to:
- Check that the concrete panels have been formed and finished as indicated on the drawings, including any tanking or waterproofing requirements.
- Check that the surface for damage - have any surface damage, cracks and blowholes appropriately remedied.
- Check that the concrete is fully cured and dry.
- Check that the panel joints have been sealed and finished as detailed.
- Check junctions with all other substrates and elements, ensuring that all necessary works have been completed as detailed.
- Check that any protruding or exposed bare metal has been treated with a suitable corrosion-inhibiting primer.

5.3.23.8 Insitu Concrete Walls

Insitu Concrete Walls - check all aspects of preparatory works, including but not limited to:
- Check that insitu concrete has been formed and finished as shown on the drawings, including any

tanking or waterproofing requirements.
- New concrete must be allowed to cure for at least 28 days prior to tiling.
- Old concrete must be thoroughly cleaned and washed and allowed to dry.
- Check that the surface for damage - have any surface damage, cracks and blowholes appropriately remedied.
- Check that the concrete is fully cured and dry.
- Check junctions with all other substrates and elements, ensuring that all necessary works have been completed as detailed.
- Check that any protruding or exposed bare metal has been treated with a suitable corrosion-inhibiting primer.

5.3.23.9 Fibre Cement Sheet Wall Lining

Fibre Cement Sheet Wall Lining - check all aspects of preparatory works, including but not limited to:
- Check that the fibre cement sheets have been installed, jointed and fixed in accordance with the manufacturer's requirements and as indicated on the drawings, and that all sheet edges are fully supported.
- Check junctions with all other substrates and elements, ensuring that all necessary works have been completed as detailed.
- Check that all apertures, openings, edges and expansion and movement control joints are completed as detailed.

5.3.23.10 Plasterboard Wall Lining

Plasterboard Lining - check all aspects of preparatory works, including but not limited to:
- Check that the plasterboard sheets have been installed in accordance with the manufacturer's requirements, are supported on all edges on framing, are securely fastened, and that all joints and junctions have been stopped flush with reinforcing tape embedded in the jointing compound.
- Check junctions with all other substrates and elements, ensuring that all necessary works have been completed as detailed.
- Check that all apertures, openings, edges and expansion and movement control joints are completed as detailed.

5.3.24 Installation

5.3.24.1 Fibre Cement Sheet Underlay

Fibre Cement Sheet Underlay: Allow the underlay sheets to condition before installation in accordance with the manufacturer's requirements.
Ensure that timber/wood-based subfloor substrates have been pre-primed with the appropriate primer as outlined in the manufacturer's specification requirements.

Install underlay sheets closely, in a staggered (brick) pattern, at right angles to the direction of the subfloor. Joins in the underlayment sheets shall not coincide with joints in the timber or sheet subfloor. Sheet edges shall be accurately cut to the shape of adjacent walls with a 5mm gap between and sealed with flexible sealant.

Fix sheet with nails or staples in accordance with the manufacturer's requirements. Underlay sheets installed over an existing plywood or particle board subfloor shall be fixed with a compatible adhesive in conjunction with staples. Set nail or staple heads below the sheet surface, sand all sheet joints flush and even, and vacuum clean to remove all dust.

As necessary, protect installed underlay from foot traffic and damage and contamination until the tiling installation is complete.

5.3.24.2 Undertile Liquid-Applied Waterproofing Membranes

Undertile Liquid-Applied Waterproofing Membranes. Install ARDEX liquid-applied waterproofing membranes in strict accordance with the manufacturer's requirements. Refer to separate specification section Waterproofing: ARDEX Liquid-Applied Waterproofing Membranes.

5.3.24.3 Undertile Heating System

Undertile Heating System. Install the specified undertile heating system in strict accordance with the manufacturer's installation requirements.

Lay the heating element cable to the required design configuration in accordance with the manufacturer's installation requirements. Temporarily tack the cable in place with tape as it is laid. Do not cut the heating element cable.

Terminate cable tail ends at the required position according to the design requirements, and make all necessary connections to the system controls.

Apply protective self-levelling compound over the entire heated floor area to the required thickness. Allow to cure before tiling over.

5.3.24.4 Aluminium Trims

Aluminium Trims. As required and indicated on the drawings, install all necessary aluminium tiling trims - including edge cappings, corner mouldings, transition strips, etc., - all neatly finished, accurately aligned and true, according to the tile layout and as detailed on the drawings.

5.3.24.5 Movement Control Joints

Movement Control Joints. Form movement control joints in tiling to the locations and details shown on the drawings and in accordance with AS 3958.1.

Movement control joints in tiling shall coincide with control joints in the substrate and structure, and at junctions between dissimilar substrates and other surface finish materials in the same plane.

Ensure to carry movement control joints through tiling from the substrate. Do not bridge movement control joints with underlayment, membranes, adhesive or tiles.

Seal movement control joints after grouting with the specified flexible sealant in accordance with the sealant manufacturer's instructions and as detailed.

Proprietary movement control joints shall be installed in strict accordance with the manufacturer's instructions and to the layout and details shown on the drawings. Finish tiling against proprietary movement control joints as detailed.

5.3.24.6 Floor Tiles

Floor Tiles. Install floor tiles by direct-stick method to clean, dry and properly prepared substrates in accordance with AS 3958.1 and the respective ARDEX tile adhesive instructions. Accurately set-out and lay tiles to the layout and details shown on the drawings. Confirm the floor tile layout and pattern requirements prior to installation.

Seal or prime porous substrates or substrates where dusting or powdering exists, in accordance with the requirements of the ARDEX tile adhesive.

The use and application of ARDEX tile adhesive shall be exactly to the manufacturer's technical literature.

All tile cutting, boring and shaping shall be carried out using appropriate tools and equipment and methods suitable for the tile type and in accordance with the tile manufacturer's recommendations. Only install cut tiles that have smooth, uniform cut edges - do not use tiles with jagged or flaked edges.

Mechanically mix powdered adhesive at the recommended ratio with clean potable water to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the specified open time.

Apply ARDEX tile adhesive evenly using a suitably notched trowel to properly prepared substrates in accordance with the manufacturer's instruction.
- Do not apply more adhesive than can be covered within the specified open time.
- Do not over spread the adhesive, and avoid surface skinning - particularly when used in unfavourable conditions such as direct sunlight, wind and/or high temperatures.
- Ensue to follow the adhesive manufacturer's recommended setting and curing periods.

Lay floor tiles into adhesive to achieve maximum contact and bonding before skinning occurs. Re-trowel any adhesive that has skinned - do not apply water to skinned adhesive. Where necessary, back-butter tiles with adhesive to ensure maximum contact and bonding - do not spot-fix floor tiles.

Floor tiles shall be laid so that the finished surface and edges are true and even, level and/or to the falls shown on the drawings, and finished flush with adjoining finished work as appropriate or as detailed.

Tile joints shall be to the required layout, uniform, accurately aligned, straight and true to line, and set even and parallel to the specified joint width.

Where indicated on the drawings, return floor tiles along walls, upstands, toe spaces, etc., to the height and details shown on the drawings.

Remove excess adhesive from tile joints as each tile is laid to ensure full depth grouting can be achieved, and leave the tile surface completely clean.

5.3.24.7 Wall Tiles

Wall Tiles: Install wall tiles by direct-stick method to clean, dry and properly prepared substrates in accordance with AS 3958.1 and the respective ARDEX tile adhesive instructions. Accurately set-out and lay tiles to the layout and details shown on the drawings. Confirm the wall tile layout and pattern requirements prior to installation.

Seal or prime porous substrates or substrates where dusting or powdering exists, in accordance with the requirements of the ARDEX tile adhesive.

The use and application of ARDEX tile adhesive shall be exactly to the manufacturer's technical literature.

All tile cutting, boring and shaping shall be carried out using appropriate tools and equipment and methods suitable for the tile type and in accordance with the tile manufacturer's recommendations. Only install cut tiles that have smooth, uniform cut edges - do not use tiles with jagged or flaked edges.

Mechanically mix powdered adhesive at the recommended ratio with clean potable water to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the specified open time.

Apply ARDEX tile adhesive evenly using a suitably notched trowel to properly prepared substrates in accordance with the manufacturer's instruction.

- Do not apply more adhesive than can be covered within the specified open time.
- Do not over spread the adhesive, and avoid surface skinning - particularly when used in unfavourable conditions such as direct sunlight, wind and/or high temperatures.
- Ensue to follow the adhesive manufacturer's recommended setting and curing periods.

Press wall tiles into adhesive to achieve maximum contact and bonding before skinning occurs. Re-trowel any adhesive that has skinned - do not apply water to skinned adhesive. Where necessary, back-butter tiles with adhesive to ensure maximum contact and bonding - do not spot-fix wall tiles.

Wall tiles shall be installed so that the finished surface and edges are true and even, level, and finished flush with adjoining work as appropriate or as detailed.

Tile joints shall be to the required layout, uniform, accurately aligned, straight and true to line, level and plumb, and set even and parallel to the specified joint width. Use proprietary tile spacers, sized for the specified joint width, to ensure accurate jointing.

Form internal and external wall corner junctions true and plumb and with tile joints continued around corners level and true.

Remove excess adhesive from tile joints as each tile is laid to ensure full depth grouting can be achieved, and leave the tile surface completely clean.

5.3.24.8 Grouting

Grouting. Tile grouting shall be in accordance with AS 3958.1 and the respective ARDEX tile grout instructions. Coloured grout shall be to the colour specified.

Prior to grouting, ensure that the tile adhesive has set firmly, and that the tile joints are clean, dry and free from excess adhesive and any foreign material. Rake out any excess adhesive from joints to ensure a maximum, uniform grout joint is achieved. Tile spacers must be removed prior to grouting.

Mechanically mix powdered tile grout with clean water at the required ratio to a smooth, lump-free paste in accordance with the manufacturer's requirements. Do not mix more than can be used within the manufacturer's specified open time. Ensue to follow the manufacturer's recommended drying and curing periods.

Apply ARDEX tile grout evenly with a rubber squeegee or grouting float, ensuring that the tile joints are completely filled and smoothed to a dense, uniform surface. Do not spread more grout than can be cleaned within the specified open time. Remove excess grout immediately.

Clean the tiles with a damp sponge when the grout joints have firmed, making sure not to wash-out the joints. Finish grout joints to a smooth, uniform effect and leave grout free of pin holes and blemishes.

Allow grout joints to dry before cleaning with a clean, dry, soft cloth, to completely remove any grout haze and residue from the surface of the tiles.

5.3.24.9 Protection

Protection. Take all necessary measures to protect exterior tiling from the extremes of weather and climate during the fixing and grouting operation and for as long as possible thereafter.

Keep the working area cordoned off during the whole tiling installation. Protect completed tiling from excessive loads, damage and contamination until hand-over or as directed.

Restrict foot traffic from completed floor tiling in accordance with ARDEX time frames for 'set-to-light-foot-traffic' and 'ready-for-service-use'.

Where necessary, cover completed floor tiling with a heavy-duty temporary floor protection such as Ovaboard, Ram Board, Buffalo Board; laid in accordance with the manufacturer's requirements.

Protect exterior tiling, immediately after laying and grouting, from rain and moisture for at least 24 hours, and from frost and strong sunlight after laying in accordance with ARDEX tile adhesive and grout technical specifications.

5.3.25 Completion

Check that the Tiling work has been correctly installed to the required layout, and that all tile joints, edge-trimming and other detailing is correctly finished, grouted and sealed.

Check all tiling work for damage, marks and defects - repair or replace as necessary. Carry out any repairs to the required standard.

Thoroughly clean tiled surfaces in accordance with the manufacturer's recommended procedures and techniques. Lightly buff where appropriate.

Leave all of this work complete and to the required standard, completely clean and without blemish.

Clean up thoroughly, and leave adjacent surfaces and finished work clean and free of damage and contamination. Remove all associated rubbish and excess materials from site.

Protect the completed installation from damage and contamination as necessary until hand-over as scheduled or directed.

Issue to the Owner a copy of all relevant product manufacturers' maintenance requirements, and a copy of the ARDEX NZ Ltd Warranty.

5.4 ARDEX Floor Levelling & Repair Solutions

5.4.1 Scope

Supply and install ARDEX Floor Levelling & Repair Solutions products and systems as components and accessories of the Tiling works and/or Floor Coverings works identified on the drawings. All aspects of this work shall be in complete accordance with the manufacturer's requirements and technical literature (check www.ardex.co.nz, or call 0800 227 339 for the latest editions), other relevant product manufacturers' recommendations, and as shown on the drawings.

No substitutions are permitted for any specified ARDEX Floor Levelling & Repair Solutions products, systems, components or accessories.

This specification should be read in conjunction with other relevant specification sections as they may be interrelated.

The following is a list and/or general description of the extent of the associated works and trades, which are more specifically defined in the contract documents, required for the completion of the contract works:

5.4.2 Requirements

5.4.2.1 Warranty

ARDEX NZ Ltd Warranty. Warrant this work under normal use and environmental conditions, against failure of materials and application, according to the warranty conditions.
- 10 Years' Warranty Materials and Workmanship - for all ARDEX systems and products.
- Provide the warranty on the manufacturer's standard warranty form.
- Commence the warranty from the date of practical completion.

5.4.2.2 Substitutions

ARDEX Floor Levelling & Repair products shall be as specified herein and as indicated on the approved drawings. The substitution of ARDEX branded products for alternative brands is not permitted under any circumstances.

The substitution of a specified ARDEX product for an alternative ARDEX branded product by the Applicator shall only be permitted with the Contract Administrator's authorisation, and shall be at no additional cost to the Principal. Should any resultant extra work and/or redesign work be required to accommodate alternative ARDEX branded products to satisfy design, performance and compliance requirements, then the cost of these shall be borne by the Applicator.

5.4.2.3 Quality Assurance

Maintain and comply with industry-recognised quality control and assurance procedures to ensure that all stages of the works are carried out to the highest standard.

5.4.2.4 Defective Materials & Work

Should defective materials and/or work be found at any time before the final acceptance of the work, it shall be rejected. Rejected ARDEX Floor Levelling & Repair Solutions materials and work shall be repaired and/or replaced to the satisfaction of the Contract Administrator, without delay and at no additional cost to the Principal.

Should a problem be encountered with any ARDEX product during use or delivery, immediately contact the ARDEX Technical Hotline on 0800 227 339. Do not continue to use the product that is not performing to specification or expectation. Keep the product in question and where possible, the document batch numbers and/or manufacturing dates.

5.4.3 Interior Patch & Repair Compound

5.4.3.1 ARDEX A 30

Interior Repair Mortar - ARDEX A 30. A slump free, feather-edge patching compound for filling of holes, cavities, unevenness and patching work on interior surfaces prior to the application of ARDEX floor levelling compounds, ARDEX waterproofing membranes, and floor and wall floor finishes.

Where to Use:
- On interior, dry concrete floors, walls, stairs, etc; on new and existing concrete.
- On interior, dry concrete masonry.
- On interior, dry impervious surfaces primed with ARDEX P 82 Ultra Prime.

Substrate Preparation:
- Substrates must be dry, firm, sound, free from dust and release agents. ARDEX A 30 adheres to nearly all substrates and is not sensitive to moisture.
- Prime very dense, smooth impervious surfaces using ARDEX P 82 Ultra Prime in accordance with ARDEX requirements.

Control Joints:
- Do not fill or bridge movement control joints in the substrate with ARDEX A 30. Confirm the location of all movement control joints prior to application.

Application Data:
- Mixing Ratio: 5.5-6.5L water/20kg ARDEX A 30 powder.
- Application Thickness: from featheredge to 20mm per application.
- Working Time: 15 minutes.
- Set to Light Foot Traffic: 60 minutes after application - depending on ambient temperature.
- Ready for Floor Coverings: 60 minutes after application - depending on ambient temperature.

Apply ARDEX A 30 patching compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.3.2 ARDEX A 45

Interior Repair Mortar - ARDEX A 45. A rapid setting and drying, slump-free mortar for repairing and refacing interior surfaces prior to the application of ARDEX floor levelling compounds, ARDEX waterproofing membranes, and floor and wall floor finishes.

Where to Use:
- On interior, above/below grade, concrete floors, walls, stairs, etc; on new and existing concrete.
- On interior concrete masonry.
- On interior, impervious surfaces primed with ARDEX P 82 Ultra Prime.

Substrate Preparation:
- ARDEX A 45 can be applied to dry or moist screeds providing they are set and hardened and the surface is sound and free of dust, grease, oil and other surface contamination.
- Worn or trafficked surfaces should be abraded (diamond grinder or scarified) to remove contamination and roughen concrete to expose a clean porous surface to ensure good adhesion.
- Prime very dense, smooth impervious surfaces using ARDEX P 82 Ultra Prime in accordance with ARDEX requirements.
- Prime extremely porous surfaces using ARDEX P 82 Ultra Prime in accordance with ARDEX requirements.

Control Joints:
- Do not fill or bridge movement control joints in the substrate with ARDEX A 45. Confirm the location of all movement control joints prior to application.

Application Data:
- Mixing Ratio: 4.5L water/20kg ARDEX A 45 powder.
- Application Thickness: from 2mm to 30mm per application; bulk fill - up to 40mm per application.
- Application Temperature: Apply at temperatures above +10°C.
- Working Time: 10-15 minutes.
- Set to Light Foot Traffic: 15 minutes after application - depending on ambient temperature.
- Ready for Floor Coverings: 90 minutes after application - depending on ambient temperature.

Apply ARDEX A 45 mortar to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.3.3 ARDEX A 46

Interior Repair Mortar - ARDEX A 46. A rapid hardening and drying, slump-free mortar for repairing and resurfacing concrete prior to the application of ARDEX floor levelling compounds, ARDEX waterproofing membranes, and floor and wall floor finishes.

Where to Use:
- On concrete floors, walls, stairs, etc; on new and existing concrete.
- On concrete masonry.
- On impervious surfaces primed with ARDEX P 82 Ultra Prime.

Substrate Preparation:
- ARDEX A 46 can be applied to dry or moist screeds providing they are set and hardened and the surface is sound and free of dust, grease, oil and other surface contamination.
- Worn or trafficked surfaces should be abraded (diamond grinder or scarified) to remove contamination and roughen concrete to expose a clean porous surface to ensure good adhesion.
- Prime extremely porous surfaces using ARDEX P 51 in accordance with ARDEX requirements.

Control Joints:
- Do not fill or bridge movement control joints in the substrate with ARDEX A 46. Confirm the location of all movement control joints prior to application.

Application Data:
- Mixing Ratio: 6-7L water/25kg ARDEX A 46 powder.
- Application Thickness: from 2mm to 30mm per application.
- Application Thickness: from +10°C to + 35°C.
- Working Time: 10-15 minutes.
- Set to Light Foot Traffic: 2-3 hours after application - depending on ambient temperature.
- Ready for Floor Coverings: 24 hours after application - depending on ambient temperature.
- Ready for Applied Coatings: after 2 days when ≤5mm thick; after 5 days when ≤10mm thick; after 7 days when ≤20mm thick; after 10 days when ≤30mm thick - depending on ambient temperature.

Apply ARDEX A 46 mortar to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.3.4 ARDEX Feather Finish

Interior Repair Mortar - ARDEX Feather Finish. A rapid-drying, cement-based smoothing compound for finishing interior floor surfaces prior to the installation of floor coverings.

Where to Use:
- On interior, above grade, dry concrete floors; on new and existing concrete.
- On timber or wood-based flooring.
- On terrazzo, and ceramic and quarry tiles, and vinyl flooring.
- Can be covered with resilient and textile floor coverings; ceramic and quarry tiles; floating timber flooring.

Substrate Preparation:
- Concrete floors must be structurally sound, clean and free of dirt, dust, oil, curing and sealing compounds and any other surface contaminant which may act as a bond breaker.
- Where required, mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other acceptable methods to a suitable surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents, or sweeping compounds.

Control Joints:
- Do not fill or bridge movement control joints in the substrate with ARDEX A 30. Confirm the location of all movement control joints prior to application.

Application Data:
- Mixing Ratio: 4.8L water/10kg ARDEX Feather Finish powder.
- Application Thickness: from featheredge to 3mm per application.
- Application Temperature: from +10°C.
- Working Time: 15 minutes.
- Set to Light Foot Traffic: 15 minutes after application - depending on ambient temperature.
- Ready for Floor Coverings: 15 minutes after application - depending on ambient temperature.

Apply ARDEX Feather Finish smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.3.5 ARDEX Fine Finish

Interior Repair Mortar - ARDEX Fine Finish. A fine-finish, rapid-drying, cement-based smoothing compound for finishing interior floor surfaces prior to the installation of floor coverings.

Where to Use:
- On interior, above grade, dry concrete floors; on new and existing concrete.
- On timber or wood-based flooring.
- On terrazzo, and ceramic and quarry tiles, and vinyl flooring.
- Can be covered with resilient and textile floor coverings; ceramic and quarry tiles; floating timber flooring.

Substrate Preparation:
- Concrete floors must be structurally sound, clean and free of dirt, dust, oil, curing and sealing compounds and any other surface contaminant which may act as a bond breaker.
- Where required, mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other acceptable methods to a suitable surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents, or sweeping compounds.

Control Joints:
- Do not fill or bridge movement control joints in the substrate with ARDEX A 30. Confirm the location of all movement control joints prior to application.

Application Data:
- Mixing Ratio: 4.5-5.0L water/10kg ARDEX Fine Finish powder.
- Application Thickness: from featheredge to 3mm per application.
- Application Temperature: from +10°C.
- Working Time: 15 minutes.
- Set to Light Foot Traffic: 15 minutes after application - depending on ambient temperature.
- Ready for Floor Coverings: 20 minutes after application - depending on ambient temperature.

Apply ARDEX Fine Finish smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.4 Interior Floor Screed

5.4.4.1 ARDEX A 38

Interior Floor Screed - ARDEX A 38. A rapid set screed cement designed for all types of floor coverings, including tiles, natural stone, terrazzo, resilient and textile floor coverings, parquet. Ardex A 38 can be used as a bonded screed, an unbonded screed, a heated screed.

Where to Use:
- On interior/exterior, above/below grade, dry concrete floors; over new and existing concrete.

Application Data:
- Mixing Ratio: 11L water/20kg ARDEX A 38 powder/100kg ARDEX Gravel Mix aggregate.
- Application Thickness: bonded screed - from 15mm; un-bonded screed - from 35mm; heated screed - from 40mm.
- Application Temperature: from +5°C.
- Working Time: 60 minutes.
- Set to Light Foot traffic: after 8 hours - depending on thickness and ambient temperature.
- Ready for Tiling: after 8 hours - depending on thickness and ambient temperature.
- Ready for Resilient Flooring: after 2 days - depending on thickness and ambient temperature.
- Ready for Textile Flooring: after 2 days - depending on thickness and ambient temperature.

Use ARDEX A 38 screed cement in strict accordance with the manufacturer's requirements.

5.4.4.2 ARDEX A 48

Interior Floor Screed - ARDEX A 48. A rapid set cement screed preparation designed for all types of floor coverings, including moisture sensitive coverings. ARDEX A 48 can be used as a bonded screed, unbonded screed (no a slipsheet), floating screed (insulating layer), heated screed.

Where to Use:
- On interior/exterior, dry concrete floors; over new and existing concrete.

Substrate Preparation:
- Surfaces must be free from dust, oil, grease and all loose contaminating materials.

Application Data (at +23°C and 50% RH):
- Mixing Ratio: 1.8L water/20kg ARDEX A 48 powder.
- Application Thickness: Bonded Screed - from 15mm up to 50mm. Unbonded Screed - from 35mm up to 70mm. Heated Floor - at least 45mm over the heating element.
- Application Temperature: do not apply at temperatures below +5°C.
- Set to Light Foot Traffic: 4 hours after application.
- Ready for Smoothing Cements 24 hours after application - depending on thickness and ambient temperature.
- Ready for Tiling: 4 hours after application - depending on thickness and ambient temperature.
- Ready for Undertile Waterproofing Membranes: 24 hours after application - depending on thickness and ambient temperature.
- Ready for Resilient, Textile, Parquet Floor Coverings: 48 hours after application - depending on thickness and ambient temperature.

Use ARDEX A 48 rapid cement set cement screed in strict accordance with the manufacturer's requirements.

5.4.5 Interior Floor Levelling - Undertile

5.4.5.1 ARDEX LQ 92

Interior Undertile Floor Levelling - ARDEX LQ 92. A self-smoothing, cement-based underlayment for levelling uneven concrete floors prior to tiling.

Where to Use:
- On dry concrete floors; over new and existing concrete.
- Can be covered with ceramic and quarry tiles.

- ARDEX LQ 92 can be used over heated subfloors when used with ARDEX Abalastic additive.
- Do not use ARDEX LQ 92 use under vinyl floor coverings.

Surface Preparation:
- Concrete should be clean, sound and free from all contaminating materials, e.g. paint, wax, curing compounds and oil.
- New concrete should be at least 4 weeks old.
- Remove laitance by mechanical means, followed by vacuuming to ensure removal of all loose particles.

Primer:
- Prime substrates using ARDEX Multiprime in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio - standard application: 4L water/20kg ARDEX LQ 92 powder.
- Mixing Ratio - bulk-out application: 3.7L water/20kg ARDEX LQ 92 powder/20kg 2-5mm dry aggregate.
- Mixing Ratio - ramping application: 3.5L water/20kg ARDEX LQ 92 powder/10kg 300µm sand.
- Mixing Ratio - heated subfloor application: 2.5L ARDEX Abalastic mixed with 2.5L water/20kg ARDEX LQ 92 powder.
- Application Thickness: from a feather edge to 10mm per application; when mixed with 2-5mm aggregate, from 10mm to 25mm per application.
- Application Temperature: from +10°C to + 35°C.
- Working Time: 10 minutes.
- Ready for Tiling: 4 hours after application - depending on thickness and ambient temperature.

Apply ARDEX LQ 92 undertile levelling compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6 Interior Floor Levelling - General Use

5.4.6.1 ARDEX K 005

Interior Floor Levelling - ARDEX K 005. A cement-based bulk fill underlayment for levelling subfloors prior to the application of a floor finish. ARDEX K 005 is designed with a coarse sand aggregate and minimal flow for the easy and efficient installation of thick layers - up to 120mm per application.

Where to Use:
- On interior, above-grade, dry concrete floors; over new and existing concrete.
- Can be covered with ceramic and quarry tiles; resilient and textile floor coverings.
- ARDEX K 005 is compatible with and can be overlaid with other ARDEX levelling products.

Surface Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.

- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX underlayment to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio: 2.7L water/20kg ARDEX K 005 powder.
- Application Thickness: from 10mm to 120mm per application.
- Application Temperature: subfloors must be at least 10°C.
- Working Time: 10 minutes.
- Set to Light Foot Traffic: 4 hours after application (at 23°C).
- Ready for ARDEX Smoothing Compound: 16 hours after application - depending on thickness and ambient temperature.
- Ready for Floor Coverings: 24 hours after application - depending on thickness and ambient temperature.

Apply ARDEX K 005 bulk fill levelling compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.2 ARDEX K 009

Interior Floor Levelling - ARDEX K 009. A levelling and smoothing compound designed to level and smooth interior subfloors prior to applying floor finishes.

Where to Use:
- On interior, above/below grade, dry concrete floors; over new and existing concrete.
- Can be covered with resilient and textile floor coverings; ceramic and quarry tiles; floating timber flooring.
- ARDEX K 009 can be used over heated subfloors when used with ARDEX E 25 synthetic resin dispersion.
- Do not use ARDEX K 009 over timber or wood-based flooring, steel decking, or floors subject to vibration.

Surface Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio - standard application: 4.5L water/20kg ARDEX K 009 powder.
- Mixing Ratio - heated subfloor application: 1.6L ARDEX E 25/3.5L water/20kg ARDEX K 009 powder.
- Application Thickness: from 2.5mm to 12mm.
- Application Temperature: subfloor temperature must be at least +10°C.
- Working Time: 10 minutes.
- Set to Light Foot Traffic: 2-3 hours after application - depending on thickness and ambient temperature.
- Ready for Floor Coverings: 24 hours after application - depending on thickness and ambient temperature.

Apply ARDEX K 009 levelling and smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.3 ARDEX K 12 New

Interior Floor Levelling - ARDEX K 12 New. A cement- and polymer-based levelling and smoothing compound designed to level and smooth interior subfloors prior to applying floor finishes.

Where to Use:
- On interior, above grade, dry concrete floors; on new and existing concrete.
- Covered with resilient and textile floor coverings; ceramic and quarry tiles; floating timber flooring.

Substrate Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Porous Substrates: Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.
- Non-porous Substrates: Prime substrates using ARDEX P 9 in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio - applied over ARDEX P 51 primer: 4.8L water/20kg ARDEX K 12 New powder.
- Mixing Ratio - applied over ARDEX P 9 primer: 1.0L ARDEX E 25/4.8L water/20kg ARDEX K 12 New powder.

- Application Thickness: from 1.5mm to 35mm.
- Application Temperature: subfloor temperature must be at least +10°C.
- Working Time: 5 minutes.
- Set to Light Foot Traffic: 2-4 hours after application - depending on thickness and ambient temperature.
- Ready for Floor Coverings: 18 hours after application - depending on thickness and ambient temperature.

Apply ARDEX K 12 New levelling and smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.4 ARDEX K 15 Microtec

Interior Floor Levelling - ARDEX K 15 Microtec. A fibre-reinforced, cement-based levelling and smoothing compound incorporating Ardurapid technology, designed to level and smooth interior subfloors prior to applying floor finishes.

Where to Use:
- On interior, above/below grade, dry concrete floors; over new and existing concrete.
- On existing quarry and ceramic tiles.
- On steel decking and timber floors according to ARDEX Technical Services specifications.
- Covered with resilient and textile floor coverings; ceramic tiles; wooden parquet; athletic floors; floating timber flooring.

Surface Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Porous Substrates: Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.
- Non-porous Substrates: Prime substrates using ARDEX P 82 Ultra Prime in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio - over Ardex P 51 primer: 4.5-5.0L water/20kg ARDEX K 15 Microtec powder.
- Mixing Ratio - over Ardex P 82 primer: 1L ARDEX E 25/4.5L water/20kg ARDEX K 15 Microtec powder.
- Mixing Ratio - high stress applications: 1.6L ARDEX E 25/4.0L water/20kg ARDEX K 15 Microtec powder.
- Application Thickness: from featheredge to any thickness.
- Application Temperature: subfloor temperature must be at least +10°C.
- Working Time: 5 minutes.

- Set to Light Foot Traffic: 3-4 hours after application - depending on thickness and ambient temperature.
- Ready for Floor Coverings: 16-18 hours after application - depending on thickness and ambient temperature.

Apply ARDEX K 15 Microtec levelling and smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.5 ARDEX K 55

Interior Floor Levelling - ARDEX K 55. A rapid-drying levelling and smoothing compound designed to level and smooth interior subfloors prior to applying floor finishes.

Where to Use:
- On interior, above/below grade, dry concrete floors; on new and existing concrete.
- On existing ceramic and quarry tiles.
- Covered with resilient and textile floor coverings; ceramic and quarry tiles; floating timber flooring.

Substrate Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Porous Substrates: Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.
- Non-porous Substrates: Prime substrates using ARDEX P 82 Ultra Prime in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio: 5.25L water/20kg ARDEX K 55 powder.
- Application Thickness: from 1.5mm to 35mm.
- Application Temperature: subfloor temperature must be at least +10°C.
- Working Time: 15 minutes.
- Set to Light Foot Traffic: 60 minutes after application - depending on thickness and ambient temperature.
- Ready for Floor Coverings: 60 minutes after application - depending on thickness and ambient temperature.

Apply ARDEX K 55 levelling and smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.6 ARDEX K 80

Interior Floor Levelling - ARDEX K 80. A rapid hardening and drying self levelling compound for resurfacing of interior concrete floors.

Where to Use:
- On interior, above/below grade, dry concrete floors; on new and existing concrete.
- Can be coated with polyurethane coatings; epoxy coatings; specialty coatings.
- ARDEX K 80 can be used as an interior wear surface on commercial and industrial floors, warehouses, parking garages and utility areas.

Substrate Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio: 4.0L water/20kg ARDEX K 80 powder.
- Application Thickness: from 5mm to 50mm per application.
- Application Temperature: subfloor temperature must be at least +10°C.
- Working Time: 10 minutes.
- Set to Light Foot Traffic: 2 hours after application - depending on thickness and ambient temperature.
- Ready for Floor Coatings: 24 hours after application - depending on thickness and ambient temperature.
- Subject to Heavy Traffic: 48 hours after application - depending on thickness and ambient temperature.

Apply ARDEX K 80 levelling compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.7 ARDEX K 301

Interior Floor Levelling - ARDEX K 301. A quick-setting, levelling and smoothing compound for repairing and resurfacing interior and exterior concrete floors and ARDEX A 38 screeds only; and for levelling and smoothing subfloors prior to applying floor finishes.

Where to Use:
- On interior and exterior, above/below grade, moist or dry concrete floors; on new and existing concrete.
- Can be covered with ceramic and quarry tiles; polyurethane coatings; epoxy coatings; resilient and textile floor coverings; floating timber flooring.

- ARDEX K 301 can be used as a wear surface in workshops, storage areas, light commercial areas, courtyards and footpaths.

Surface Preparation:
- Concrete floors must be clean dry and free of dust, wax, grease, asphalt, latex compounds, curing and sealing compounds and any other surface contaminant that can affect adhesion.
- Mechanically clean the floor using recommended preparation methods such as shotblasting, scarifying, diamond grinding, shaving or other suitable method to provide a roughened, clean, sound, solid and open porous surface.
- Acid etching is not an acceptable method of cleaning the subfloor.
- Do not use solvents or sweeping compounds.
- Subfloors must be dry and properly primed for successful installation.

Primer:
- Interior Applications: Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.
- Exterior Applications: Prime substrates using ARDEX WPM 300 broadcast with sand in accordance with ARDEX requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio: 4L water/20kg ARDEX K 301 powder.
- Application Thickness: from 2mm to 20mm per application.
- Area Size: maximum 100m² panel size, with no single dimension exceeding 8m in length.
- Application Temperature: subfloors must be at least 10°C.
- Working Time: 10 minutes.
- Set to Light Foot Traffic: 2-3 hours after application - depending on thickness and ambient temperature.
- Ready for Tiling: 24 hours after application - depending on thickness and ambient temperature.
- Ready for Carpet (conventionally laid): 24 hours after application - depending on thickness and ambient temperature.
- Ready for Direct-stick Floor Coverings: 48 hours after application - depending on thickness and ambient temperature..
- Ready for Applied Coatings: 2 days after application when ≤5mm thick; after 5 days when ≤10mm thick; after 7 days when ≤20mm thick.

Apply ARDEX K 301 levelling and smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.6.8 ARDITEX NA

Interior Floor Levelling - ARDITEX NA. A 2-part, self levelling and smoothing compound with high resistance to water, for levelling and smoothing subfloors prior to applying floor finishes.

Where to Use:
- On interior, above/below grade, moist or dry concrete floors; on new and existing concrete.
- On existing ceramic and quarry tiles.
- On existing steel decks and timber floors according to ARDEX Technical Services specifications.
- Under ARDEX flexible waterproofing membranes.
- Can be covered with ceramic and quarry tiles; resilient and textile floor coverings; floating timber

flooring.
- Do not use ARDITEX NA for high-load or heavy-traffic applications.

Surface Preparation:
- Refer to the ARDITEX NA technical data sheet.

Primer:
- Dry Cementitious Substrates: Prime substrates using ARDEX P 51 in accordance with ARDEX requirements.
- Moist Cementitious Substrates: Prime substrates using ARDEX WPM 300 in accordance with ARDEX requirements.
- Wooden Substrates: Prime substrates using ARDEX P 82 Ultra Prime in accordance with ARDEX requirements.
- Non-porous Substrates: Contact ARDEX Technical Services for specific requirements.

Control Joints:
- All subfloor joints subject to movement such as expansion and control joints shall be continued from the subfloor through the ARDEX levelling compound to the surface and be expressed. The expressed joint shall be filled with either a flexible sealing material or be of a proprietary type suitable for the final floor covering system. Confirm the location of all movement control joints before commencing.

Application Data:
- Mixing Ratio: 4.8L ARDITEX NA Latex Liquid/20kg ARDITEX NA powder.
- Application Thickness: from featheredge to 12mm per application.
- Application Temperature: subfloors must be at least 10°C.
- Working Time: 10 minutes.
- Set to Light Foot Traffic: 2-3 hours after application - depending on thickness and ambient temperature.
- Ready for Tiling: 4-5 hours after application - depending on thickness and ambient temperature.
- Ready for Carpeting: breathable synthetic - after 4-5 hours; wool - after 24 hours - depending on thickness and ambient temperature.
- Ready for Resilient Floor Coverings: 24-48 hours after application - depending on thickness and ambient temperature.

Apply ARDITEX NA self levelling and smoothing compound to properly prepared substrates in strict accordance with the manufacturer's requirements.

5.4.7 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.

Coordinate with other trades to install ARDEX floor levelling and repair systems and products as required.

5.4.8 Workmanship

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings prior to installation.

Coordinate with other trades as required to install/apply the specified product(s) to the required levels and falls and surface finish.

Application/installation work, including preparation and finishing, of the specified ARDEX products shall be carried out by ARDEX Approved Applicators, familiar with the specified products and installation techniques, to fully comply with all ARDEX NZ Ltd warranty requirements, in accordance with the manufacturer's requirements and as shown on the drawings.

All work shall be such as to leave a neat, efficient and robust installation.

Application of the specified products shall not be undertaken when temperatures (ambient and/or surface) are outside the manufacturer's permissible temperature range.

Exterior applications shall not be undertaken during inclement weather. As necessary, protect completed exterior work from rain and from hot dry winds and direct sunlight to aid proper curing.

Protect adjacent finished work and surfaces from damage and contamination during installation. Leave completed surfaces clean, sound, and free of damage and defects.

5.4.9 Delivery & Handling

Store Ardex floor levelling and repair products inside, in a weatherproof environment, clear of the floor, on a flat, even and level surface. Keep stored products dry, out of direct sunlight and protected from damage, moisture and contamination.

Do not use damaged, defective or contaminated products, or products that are beyond their designated shelf life.

Should a problem be encountered with any ARDEX product, immediately contact the ARDEX Technical Hotline on 0800 227 339. Do not continue to use the product that is not performing to specification or expectation. Keep samples of the product in question and where possible, document batch numbers and/or manufacturing dates.

Handle ARDEX floor levelling and repair products in accordance with the manufacturer's requirements as set out in the relevant Technical Data Sheet(s), and in a manner that prevents contamination or deterioration of the material and does not reduce its performance.

Installers shall be familiar with and comply with the manufacturer's Safety Data Sheet precautions for use, and use appropriate safety gear when handling materials.

Conform with all relevant WorkSafe NZ Guidelines and Codes of Practice - including the OSH Guidelines For the Provision of Facilities and General Safety in the Construction Industry.

5.4.10 Completion

Check that ARDEX Floor Levelling & Repair products have been installed/applied correctly, and that all associated work to edges, penetrations, movement control joints and other detailing is correctly finished.

Check surfaces for defects and damage - carry out any repairs in accordance with the manufacturer's instructions to the required standard.

Leave this work complete and to the required standard in accordance with ARDEX requirements.

Clean up thoroughly, and leave adjacent surfaces and finished work clean and free of damage and contamination. Remove all associated rubbish and excess materials from site.

Issue to the Owner a copy of the manufacturer's maintenance requirements (if applicable), and a copy of the ARDEX NZ Ltd Warranty.

6 PAINTING & DECORATING

6.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

6.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2310:2002(AS/NZS)	Glossary of paint and painting terms
2311:2017(AS/NZS)	Guide to the painting of buildings
3750.0:2008(AS/NZS)	Paints for steel structures - Introduction and list of Standards

6.3 General

6.3.1 Alternatives

The materials specified in this section or on the drawings indicate the required standards for these works. Alternatives which are considered equal to or superior to these may be tendered for approval (in writing, and they must NOT be used unless they are approved in writing).

6.3.2 Co-operation

Co-operate with all trades and attend upon Concretor, Joiner, Carpenter, etc. to ensure that the surfaces provided by these trades are completely suitable for the Painter works that are required.

6.3.3 Preparation

No painting or varnishing or other surface coating work shall be undertaken unless the surfaces to be coated are in a correct and proper condition to ensure first class results.

Inspect the works of other trades on which Painter work is scheduled and report to the Main Contractor and the Architect/Designer any defects or irregularities that would affect the permanency or finish of the painting work, and do not proceed until the defects or irregularities have been completely rectified. Failure to examine and report will be construed as an acceptance that all preparatory works are completely satisfactory.

This clause does not relieve the Painter of any of the usual preparatory work to surfaces customarily performed by this trade.

Clean down all surfaces with sugar soap, strippers, mould killers, etching agents, etc. as required. Sand or rub all sharp edges off exterior timbers and other materials as appropriate before painting. Finish rub down ALL surfaces. Ensure that the moisture content of all substrates is appropriate. Remove locks, fastenings, and similar hardware before painting and refix on completion. Remove all electrical switch and power plates before painting and refix them on completion. Mask adjacent surfaces as required to a true line and remove the masking on completion. Dust and wipe down all surfaces for Painter work and completely remove all dust, rubbish, dirt etc. from areas involved immediately prior to commencement. To each area of the works complete all surface preparation before applying paint to any surface.

6.3.4 Protection

Take adequate precautions to prevent paint spots falling on prefinished or similar surfaces, and extreme care to keep absorbent materials (e.g. cedar, sawn framing, decking, paving) completely clean during all adjacent painting work. Correction of any such disfigurement shall be to the Architect/Designer's approval.

6.3.5 Qualifications

All work by the Painting Subcontractor shall be of the highest reasonable standard, and executed by experienced and competent tradesmen to the Architect/Designer's approval.

6.3.6 Workmanship

Strictly adhere to all Manufacturers' instructions.

Strictly observe Manufacturers' requirements with regard to surface and air temperatures for painting. No work shall be carried out on surfaces that are not completely dry, and no external work shall be carried out during damp or wet conditions.

In all finishes any irregularities or brushmarks or dust etc. in each preceding coat shall be rubbed down to provide a smooth clean surface for the following coat. Each coat shall be finished over all surfaces before a further coat is applied, and each coat shall be completely dry before subsequent coats. Finish broad areas before painting trim, paint ceilings before walls and walls before joinery, trim and other items.

Each coat and the full completed system shall be of uniform finish, colour, texture and sheen, shall have proper covering of thin edges, corners, end grain etc. and shall be free of blemishes such as runs, sags, fat edges, entrained hairs, brush marks, starved patches etc.

6.3.7 Wallpapers & Lining Papers

Wallpapers and lining papers, where scheduled, shall be hung plumb, true and square, and with precise butts. Patterns shall be accurately matched at each join. All rolls used in any one area shall be from the same batch. Use a fungicide incorporated adhesive that is recommended by the supplier. Edges neatly and precisely cut to the adjacent element. Finish free of air bubbles, wrinkles, gaps or stains.

6.3.8 General

The schedules indicate the general extent of the works to be carried out but are in no way exhaustive in their description of the actual items for painter work. Complete all work necessary for the proper and entire completion of the works. All items and portions of items reasonably inferable but not specifically mentioned are deemed included, i.e. cupboard interiors, the top and bottom of doors, unseen cabinetry tops, etc. All doors shall have equal painter work on ALL surfaces.

Where timber work is specified for priming before fixing the priming shall be thoroughly brushed in to all surfaces, and all exterior timber work for paint finishing shall be fully primed within one week of fixing. Should more than one month elapse between priming and undercoating the timber shall be fully reprimed.

Stopping up work shall be carried out immediately the priming or sealing coat is dry, and shall be solidly placed to finish clean and dry. Stopping tinted to match the timber for clear finished work.

Paint putties within one month of glazing timber frames; paint to impinge on glass to assist sealing.

6.3.9 Materials

All Painter materials shall be ready mixed and delivered in unopened containers. Materials shall be used only for the purpose and in the manner intended by the manufacturer; any apparent scheduled discrepancy in this respect shall be referred to the Architect/Designer immediately for clarification.

Where surfaces are specified to be finished in a particular manner or material, all preparatory work, priming, or undercoating, that is necessary to ensure a proper finish shall be provided, irrespective of any apparent omission herein.

Thinning shall only be to manufacturer's specification. Thoroughly stir as required to lift any settled pigment and ensure the paint is homogeneous. Paints shall be factory or shop tinted to the colour required. Undercoats shall be fully tinted to match the final colour scheduled. All paints shall have the finished film thickness that is specified by the manufacturer (checked by monitoring the coverage per litre).

6.3.10 Completion

Allow to touch up to approval any Painter work which is damaged during the finishing works of other trades. Replace all hardware, remove all masking, covers, containers etc., thoroughly clean all affected surfaces, and leave all spaces ready for immediate occupation. Avoid scratching or abrading glass or hardware during any cleaning.

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7 PLUMBING

7.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

7.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

1221:1997(AS/NZS)	Fire hose reels
1254:2010(AS/NZS)	PVC-U pipes and fittings for stormwater and surface water applications
1260:2017(AS|NZS)	PVC-U pipes and fittings for drain, waste and vent applications
1477:2017(AS|NZS)	PVC pipes and fittings for pressure applications
1546.1:2008(AS/NZS)	On-site domestic wastewater treatment units - Septic tanks
1596:2014(AS/NZS)	The storage and handling of LP Gas
2032:2006(AS/NZS)	Installation of PVC pipe systems
2033:2008(AS/NZS)	Installation of polyethylene pipe systems
2492:2007(AS/NZS)	Cross-linked polyethylene (PE-X) pipes for pressure applications
2537.1:2011(AS/NZS)	Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications - Part 1: Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X) - General
2642.2:2008(AS/NZS)	Polybutylene pipe systems - Polybutylene (PB) pipe for hot and cold water applications
2712:2007(AS/NZS)	Solar and heat pump water heaters - Design and construction
3500.1:2015(AS|NZS)	Plumbing and drainage - Part 1: Water services
3500.1:2018(AS|NZS)	Plumbing and drainage Part 1: Water services
3500.1:2021(AS/NZS)	Plumbing and drainage, Part 1: Water services
3500.2:2015(AS|NZS)	Plumbing and drainage - Part 2: Sanitary plumbing and drainage
3500.2:2018(AS|NZS)	Plumbing and drainage Part 2: Sanitary plumbing and drainage
3500.2:2021 (AS|NZS)	Plumbing and drainage Part 2: Sanitary plumbing and drainage
3500.2:2021(AS|NZS)	Plumbing and drainage, Part 2: Sanitary plumbing and drainage
3500.3:2018(AS|NZS)	Plumbing and drainage Part 3: Stormwater drainage
3500.3:2021(AS|NZS)	Plumbing and drainage, Part 3: Stormwater drainage
3500.4:2015(AS|NZS)	Plumbing and drainage - Part 4: Heated water services
3500.4:2018(AS|NZS)	Plumbing and drainage Part 4: Heated water services
3500.4:2021(AS|NZS)	Plumbing and drainage, Part 4: Heated water services
3500.5:2012(AS/NZS)	Plumbing and drainage - Part 5: Housing Installations
3501:1976(NZS)	Specification for copper tubes for water, gas, and sanitation
4020:2018(AS|NZS)	Testing of products for use in contact with drinking water
4121:2001(NZS)	Design for access and mobility: Buildings and associated facilities
4517:2010(NZS)	Fire sprinkler systems for houses
4602:1988(NZS)	Low pressure copper thermal storage electric water heaters

4603:1985(NZS)	Installation of low pressure thermal storage electric water heaters with copper cylinders (open-vented systems)
4606.1:1989(NZS)	Storage water heaters - General requirements
4607:1989(NZS)	Installation of thermal storage electric water heaters: valve-vented systems
4613:1986(NZS)	Domestic solar water heaters
4614:1986(NZS)	Installation of domestic solar water heating systems
4617:1989(NZS)	Tempering (3-port mixing) valves
4692.1:2005(AS/NZS)	Electric water heaters - Energy consumption, performance and general requirements
5601.1:2013(AS|NZS)	Gas installations - Part 1: General installations
7602:1977(NZS)	Specification for polyethylene pipe (Type 5) for cold water services
7643:1979(NZS)	Code of practice for the installation of unplasticized PVC pipe systems
7646:1978(NZS)	Specification for polyethylene pipes and fittings for gas reticulation
AS/NZS 3500.5:2012	Plumbing and drainage - Part 5: Housing installations
NZBC B2/AS1	Durability
NZBC G11	Gas as an Energy Source
NZBC G12	Water Supplies
NZBC G13/AS1	Sanitary Plumbing

7.3 General

Carry out all works necessary to leave the water, waste, vent and soil systems serving the sanitary fittings and the plumbing hardware shown on the drawings or specified below in correct working order complete with all ancillary systems (safetrays, floor drains, overflows, relief valves, etc.) required, and with all normal incidentals customarily installed by this trade.

Comply with the Building Code, Territorial Authority By-laws and statutory authority Regulations as appropriate. Obtain all necessary permits and consents, serve all necessary notices, arrange for all tests and pay all fees and customary charges in connection with the required works.

7.4 Elements

7.4.1 Sanitary Fittings

Supply and fix all of the sanitary fittings as scheduled on the drawings. All fittings checked on delivery for 'perfect' condition, and all fittings plain white. Supply and fix all normal accessories that are not usually supplied with the fitting.
The Plumber is responsible for fittings from delivery until Practical Completion of the contract.

7.4.2 Plumbing Hardware

There is no prime cost sum allowance. All plumbing finishing hardware is specified on the drawings.

7.4.3 Flashings

Ridges, hips, barges, valleys, aprons etc. flashings all supplied and installed by the Roofer. Metal windows flashings (those installed during windows installation ONLY) will be supplied by the windows subcontractor and installed by the Carpenter. All other flashings including wall penetration flashings, soakers, etc. that are required to leave the building completely water and weathertight are the Plumber's responsibility.

All flashings shall be machine folded to profiles as shown or required, incorporating capillary breaks where appropriate, shall be formed in one piece where possible, and lead or other soft edged where required. Stop ends, external angles, junctions etc. soldered or sealed and blind riveted as appropriate.

All flashings 1mm powder coated aluminium unless otherwise noted. Supply the flashings to appropriate trades for building in as work proceeds, with all flashings neatly dressed to substrates.

All flashings 0.55BMT x G250 x Z400 galvanised steel unless otherwise noted.

All flashings shall be either 0.55mm Colorsteel VP or 1mm powder coated aluminium as and where identified on the drawings, refer to the Architect for direction where unclear.

7.4.4 Appliances

The Plumber will supply the following appliances and install them completely in accordance with their manufacturers instructions, and protect them until Practical Completion:

(add appliances here)

7.5 Materials

7.5.1 Materials

Materials shall be delivered with packaging and labeling intact. Incidentals (jointing compounds, PTFE tape, seals, washers, silfos, solvent cements, etc.) shall be completely appropriate for the application involved. The use of imperfect items or items damaged in any way is always subject to approval.

7.5.2 Alternatives

The materials and elements specified indicate the required standards for these works. Alternatives which are equal to or superior to these materials and elements may be tendered for approval.

7.5.3 Materials Separation

Separate dissimilar metals in any circumstances which could produce contact or electrolytic action by a water film, with thick plastic tape, bituminous felt or other inert material. Pipes in contact with or built into concrete or masonry shall be fully spiral wrapped in Denso tape or equal.

7.6 Systems

7.6.1 Wastes & Vents

All traps sized to AS 3500.2. Wastes and vents all uPVC. Wastes shall be to AS 3500.2 falls as a minimum. Vents shall be generally as indicated, but avoid where permissible in compliance with AS 3500.2, or shall be combined above the flood level of the fittings.

Fit bird proof domes to all vents.

7.6.2 Cold Water System

7.6.2.1 Supply From Existing Toby

All cold water supply pipework shall be medium/high-density polyethylene (MDPE/HDPE), arranged and fixed so that all joints are in a fully ‘relaxed' condition, without any stress or tension.
Lay on a 20mm main from the existing toby along the route shown on the Site Plan to the connection position noted on the Floor Plan (pipe depth, protection, backfilling, signal strip etc. to comply with all Supply Authority requirements). At the connection position take a branch feed off for the hosecocks (and

reticulate to the positions shown and install angle hosecocks) and toilet cisterns and then take the main feed through an accessibly positioned cleanable in-line sediment and dirt filter.
Primary distribution from the water filter shall be in 20mm piping, reducing to 15mm for the final feed to individual items. Install conveniently located isolating valves to turn off each group of fittings, and install a small isolating valve alongside each toilet cistern not integrally fitted with one. (Note that these isolating valves and the hosecocks are not covered by the Plumbing Hardware Prime Cost Sum).

7.7 Workmanship

7.7.1 Co-operation

Co-operate with all other trades. Attend upon Concretor, Drainlayer and Carpenter to set out the exact positions of pipe runs before adjacent work is put in hand, and to ensure that all pipes, sleeves, fixings, flashings etc. are correctly incorporated into the structure as construction proceeds.

7.7.2 Workmanship

All plumbing work shall be carried out by, or under the direct control of, properly qualified tradesmen, and shall be to recognised high standards.

Observe best local trade practice to avoid problems which arise from freezing winter conditions.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials only to approval. Install seismic restraints to storage tanks and HWCs.

Weatherseal wherever pipes, screws, bolts or other fastenings penetrate an external surface, and particularly roofing; seal with gaskets, flashings (and overflashings if necessary) or mastic as appropriate - any damage that results from failure of such seals will be made good at the Plumber's expense.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Plumber's expense.

7.7.3 Pipework

Joints between pipes of different materials shall always be to the approval of the TA Plumbing Inspector.

Pipework set-out neatly with a minimum number of bends, and more or less parallel to and at right angles to structural elements - avoid diagonal piping.

All internal pipework shall be concealed except where otherwise is either shown or approved. Exposed pipework shall be accurately and neatly run. Arrange all pipework (and particularly traps) in a manner which will allow maximum future accessibility for repairs or maintenance. Arrange for access panels to any primary maintenance positions, and install conveniently located isolating valves for each group of fittings. Wingbacks securely and squarely fixed. Crox unions usually acceptable only at the final connection to fittings. Install white plastic flanges where pipes penetrate linings in visible locations.

Where pipes are covered with nail fixed linings and trim ensure that their positions are marked on the linings to minimise the risk of subsequent nailings penetrating the pipe. Any such damage shall be rectified immediately, with all consequential damage made good.

Set pipework out in straight runs to even gradients. Fix all pipes to the structure sufficiently to fully support and to prevent sagging or vibration. Clips and saddles shall be the same material as the pipe. Exterior pipes on stand-off brackets. Fixings to the exterior or damp locations shall all be hot dip galvanized unless otherwise noted. Sleeves for pipes or drains penetrating concrete or masonry shall be uPVC, 20mm minimum larger internal diameter than the external diameter of the pipe, finished flush with concrete or masonry, and packed and mastic sealed.

Close open ends of the systems during construction to prevent the entry of foreign matter.

7.7.4 Temperature Movement

All work shall respect in full all probable thermal movements - layouts, fixings and jointings shall be arranged to allow thermal movement without risk of prejudice to watertight conditions, or risk of damage from straining of the pipes which will generate failures.
In particular, observe best local trade practice to avoid problems arising from freezing conditions.

7.7.5 Excavation

Allow to carry out all excavation that is required to suit the services installed by this trade. Check for other services before excavation. Trenches true to line and level, base of trenches clear of loose material, and shore trenches as required to suit the ground conditions. Backfilling shall be carried out by this trade, and be to the requirements specified in Siteworks.

7.7.6 Testing

All plumbing services shall be completed in stages which will allow for proper testing under normal working pressures prior to the application of insulation, concealment or other enclosure. Testing of piped water services shall be by hydrostatic testing in accordance with AS/NZS 3500.1 and shall not show any leakage when subjected to a hydrostatic pressure of 1500kPa for a period of not less than 30 minutes. All leaks remedied and retested. On completion the whole of the plumbing services to be subjected to full operational tests in the presence of the plumbing inspector, with any defects revealed in these tests properly remedied.

7.7.7 Warranties

Warranty cards and manufacturer's guarantees for all items supplied and installed by this trade shall be correctly filled in and handed over at Practical Completion.

8 ELECTRICAL

8.1 Preliminary

Refer to General Conditions of Contract and the Special Conditions in this Specification as appropriate. Read this section in conjunction with all other trade sections.

8.2 Compliance

Comply with the New Zealand Building Code 1992 including all revisions and amendments, Verification Methods where appropriate, and construction principles that are embodied in the Acceptable Solutions.

Comply with all relevant provisions and recommendations of:

2053.1:2001(AS/NZS)	Conduits and fittings for electrical installations - General requirements
2201.1:2007(AS/NZS)	Intruder alarm systems - Client's premises - Design, installation, commissioning and maintenance
2293.2:2019(AS|NZS)	Emergency lighting and exit signs for buildings - Part 2: Routine service and maintenance
3000:2018(AS|NZS)	Electrical installations - Known as the Australian/New Zealand Wiring Rules
3100:2009(AS/NZS)	Approval and test specification - General requirements for electrical equipment
3112:2011(AS/NZS)	Approval and test specification - Plugs and socket-outlets
4512:2010(NZS)	Fire detection and alarm systems in buildings
4514:2009(NZS)	Interconnected smoke alarms for houses
5000.1:2005(AS/NZS)	Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1 (1.2) kV
60335.2.30:2015(AS|NZS)	Household and similar electrical appliances - Safety - Part 2.30: Particular requirements for room heaters
60335.2.30:2015(AS|NZS)INCIEC	Household and similar electrical appliances - Safety - Part 2.30: Particular requirements for room heaters
60335.2.35:2013(AS/NZS)	Household and similar electrical appliances - Safety - Part 2.35: Particular requirements for instantaneous water heaters
60598.2.2:2016(AS|NZS)	Luminaires - Part 2.2: Particular requirements - Recessed luminaires
6104:1981(NZS)	Specification for emergency electricity supply in buildings

8.3 Elements

8.3.1 Appliances

All appliances are identified in drawing notes. The Electrician shall make all appropriate electrical connections to the following appliances, which will have been supplied and installed by others:

-lift
-gas hob
-dishwasher
-gas hot water cylinder
-water pump

The Electrician will supply the following items and install them completely in accordance with their manufacturers instructions, and protect them until Practical Completion:

-oven
-ironing centre

-kitchen exhaust unit
-bathroom exhaust fans
-bathroom wall heaters
-mirror demister pads
-cupboard heaters
-heated towel rails

8.3.2 Light Fittings

All light fittings are identified as to type on the drawing, and will be supplied by the Principal. Take delivery, install in accordance with any directions supplied and protect until Practical Completion.

8.3.3 Other Wired Services

Co-operate with all other trades to ensure that the following services are installed complete and in accordance with their manufacturer’s recommendations with all normal or necessary incidentals and with all wiring concealed.

-SKY TV.
-Stereo Unit.
-Central Vacuum System.
-Garage door operating mechanisms.
-Gas hot water supply unit installed complete by the Plumber - supply electrical feed and connect.
-Wall mounted fan heaters.
-Front door bell as noted - supply and install.
-Kitchen, laundry and wet areas air exhaust fans and ducting as noted - supply and install.
-Cupboard heaters - supply and install.
-Infrared / movement / daylight sensor switches as noted.
-Under-tile electric heating to the bathroom and shower room complete with thermostat control installed where shown. Supply and install (immediately prior to tiles installation) exactly to the suppliers recommendations.
-Heated towel rails to bathroom and shower room.
-Spa pool equipment will be installed complete by the Plumber. Supply power through weather proof connection, with an isolating switch.
-Hot water cylinders installed complete by the Plumber. Supply and connect.
-The lap pool electrical equipment will be installed complete and wired from the splitter box (by a Registered Electrician) by the Pool Installer. Main contract Electrician shall verify that all aspects of this work comply with all relevant main contract requirements.
-Septic tank pumps feed in conduit from an isolating switch.
-Heat pump
-Supply a Heavy Duty TV Aerial (suitable for TV1, 2, and 3, Sky, and all local and community TV stations) and install on the roof ridges where directed, stayed against wind, and with all connections compatible with the roofing and waterproof. Feed to the outlets shown with the complete system exactly to aerial suppliers recommendations.
-Heating.
-Install ceiling fans with variable speed controllers supplied by owner.

8.4 Interconnected Smoke Alarms

8.4.1 Scope

Supply, install, and commission Interconnected Smoke Alarms to the locations and layout shown on the drawings, complete with accessories. All aspects of this work shall be in accordance with the smoke alarm manufacturer's product specification and installation requirements, other product manufacturers' recommendations, the electrical specification, and as shown on the drawings.

8.4.2 Co-operation

Co-operate with other trades to ensure that all preliminary and preparatory works are completed to specification and as shown on the drawings.
Co-ordinate with other trades to install Interconnected Smoke Alarms as required.

8.4.3 Workmanship

All work shall be carried out by experienced and competent tradesmen in accordance with the manufacturer's requirements, the electrical specification and drawings, and the related standards, electrical regulations and code requirements.
All work shall be such as to leave a neat, efficient and robust installation.

8.4.4 Power Supply

Interconnected smoke alarms shall be powered from a permanently energised 230 v a.c. mains power supplied from the unswitched side of a commonly used circuit, and shall include either a long-life battery backup or long life (10yr minimum) built-in rechargeable energy storage device.

8.4.5 Alarm Type

Install interconnected Ionisation type smoke alarms.

Manufacturer, brand name & type:

8.4.6 Installation

Install the interconnected smoke alarms on ceilings, or as shown otherwise, to the layout shown on the drawings in strict accordance with the manufacturer's instructions. Do not install smoke alarms in dead air spaces or obstructions where dead air spaces may be created.

Install smoke alarms to sloping ceilings at the high end of the ceiling slope.

8.4.7 Completion

Check that the smoke alarms have been correctly installed and wired.
Commission smoke alarms to the required operation in accordance with the manufacturer's instructions.
Test alarms to ensure that the warning signal is heard in all bedrooms when all doors between the alarm and bedrooms are closed.
Check for faults and damage, repair/replace as necessary.

Issue to the Owner a copy of the manufacturer's testing and maintenance requirements and product warranty.

8.5 Materials & Control

8.5.1 Materials

All materials delivered with packaging and labeling intact. All required incidentals (insulating tape, seals, fixings, etc.) shall be completely appropriate for the application involved. The use of items damaged in any way is subject to approval in each instance.

8.5.2 Switchboard

The main switchboard and the subboard(s) shall be appropriate sized standard PDL DBF series boards installed fully recessed where shown and at 2m to the top of the boards. Install appropriate sized MCB's for all circuits, including a minimum of two power and one lighting RCDs as required to cover all outlets to each board. Submain(s) from the main switchboard to the subboard(s) shall be neutral screened 16mm or 2 x 16mm as appropriate, run along the routes indicated / as approved. Pay particular attention

to spreading the distribution of the various probable loadings evenly across the phases to obtain an optimum balance of the system.

8.6 Systems

8.6.1 Earth

Provide a driven main earth suitable for the full installation, close to the meterboard, complying fully with all appropriate regulations and to the complete approval of a certified inspector. Bond all exposed metals, including light fittings and piped services and provide earth conductors for the entire system. Sheathing to any neutral screened cables may be used for earthing.

8.6.2 Mains

Install a neutral screened 16mm main cable underground (depth, cover/protection, backfilling, signal strip etc. to comply with all relevant regulations) from the grid connection position noted on the Site Plan along the route indicated to the meterboard, positioned where shown on the Floor Plan, and make appropriate arrangements for the grid connection. Install pilot as required. The meterboard shall be metalclad with a meter reading window, recessed maximum depth into the wall and at 2m to the top of the board, with the meters and water heater controllers by the supply company nominated by the Principal. Install all switches and fuses that are necessary. From the meterboard run (route to approval) a neutral screened 16mm main plus controllers etc. to the switchboard.

8.7 Workmanship

8.7.1 General

Supply and install all materials, including all necessary minor and incidental items, for proper completion of all of the electrical services specified or shown on the drawings. The contract will not be deemed to be complete until the Electrician has provided an Electrical Certificate of Compliance (made available to the Contractor in time for the Code Compliance Certificate application).

Obtain all necessary permits and consents, serve all notices and pay all fees in and customary charges connection with the works.

Warranty cards and manufacturers guarantees for items supplied and installed by this trade shall be filled in correctly and handed over at Practical Completion. Arrange all circuits to obtain an optimum balance of the system, and check and reconnect where necessary to achieve this on completion. Leave the works clean and tidy and in full operational order.

8.7.2 Co-operation

Co-operate with all other trades and attend upon the Concretor and Carpenter to set out all required penetrations and to ensure that all wiring and fittings are correctly incorporated as work proceeds. The Carpenter will provide and fix all necessary dwangs and timber supports in locations determined by the Electrician.

8.7.3 Workmanship

All electrical work shall be carried out by, or under the direct control of, registered tradesmen, and shall be to recognized high standards. All work shall be such as to leave a neat, efficient and robust installation. Neatly label switchboards to identify each circuit.

The cutting away and checking of timbers shall be limited to such dimensions as will not prejudice the purpose for which the timber is used; observe NZS 3604: 2011 restrictions on the holing and checking of joists and beams. Chasing and checking of other materials shall be only to approval.

Adequately protect all surfaces. Any damage to fittings or surfaces made good by the appropriate trade at the Electrician's expense.

8.7.4 Wiring

Joints within cable runs will not normally be accepted. TPS cable shall be adequately supported, and clipped at regular intervals. At terminations all strands of conductors shall be fully secured in a terminal block or clamped under a screw head washer; do not cut away any strands. Wiring which terminates in enclosed fittings and/or where subject to heat liable to cause deterioration, shall be high temperature type, with the tails made off with heat resisting sleeves, to protect the permanent wiring.

Wire lights in 1.5mm 3 core - 7.5 amps loading max per circuit (allow for 100w to all light fittings unless identified otherwise).
Wire power outlets in 2.5mm 3 core - 7 maximum GPO singles or doubles per circuit. Assess power outlets for specific equipment and allow accordingly.

Conceal all wiring except as noted on drawings or below. All wiring cast into concrete shall be run in conduit pipes. All cables shall be stranded (single core is unacceptable).

Wire more or less parallel to and at right angles to the structural elements - avoid any diagonal wiring. Layout of the principal distribution wiring shall be to approval. Position all wires to minimise the risk of damage from subsequent nailing of linings etc.

Generally, do not run TPS horizontally within timber walls except in the area up to 300mm above floor. Wire in the ceiling framing and drop vertically to outlets and switches.

Do not run TPS horizontally within partitions except in the area up to 300mm above floor. Wire in the ceiling void and drop vertically to outlets and switches. Principal wiring in the ceiling void shall be supported on adequate catenaries.

Wire exterior lighting in screened cable.

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1. BRANZ Appraisal No.1229 - Covertek 215 Roof Underlay
2. Covertek 215 Data Sheet
3. Covertek 215 Install Guide
4. BRANZ Appraisal No.1229 - Covertek 215 Roof Underlay
5. Covertek 215 Data Sheet
6. Covertek 215 Install Guide
7. Thermathene Black Install Guide
8. Thermathene Black Data Sheet
9. Thermakraft White GP Tape Data Sheet
10. Thermathene Orange Install Guide
11. Thermakraft White GP Tape Data Sheet
12. Thermathene Orange Data Sheet
13. Thermakraft Aluband Data Sheet
14. BRANZ Appraisal No. 1104 - Thermathene Orange Concrete Underlay
15. BRANZ Appraisal No.329 - Supercourse 500 Damp-Proof Course & Concealed Flashing
16. Supercourse 500 DPC Data Sheet
17. Supercourse 500 DPC Install Guide
18. Perimeter DPC Data Sheet
19. Perimeter DPC Install Guide
20. Stud Strap and Thermastrap Installation Guide and Data Sheet
21. Stud Strap and Thermastrap Installation Guide and Data Sheet
22. Aluband Data Sheet
23. Aluband Install Guide
24. BRANZ Appraisal No.878 - Thermakraft Aluband Window Flashing Tape
25. BRANZ Appraisal No.962 - Thermakraft One Wrap System
26. Thermaflash Data Sheet
27. Thermaflash Install Guide
28. BRANZ Appraisal No.1122 - Thermaflash Flashing Tape
29. OneSeal Data Sheet
30. OneSeal Install Guide
31. BRANZ Appraisal No.942 - ONESEAL MULTI-FIT PIPE AND CABLE PENETRATION SEALS
32. Thermakraft Vapour Shield Install Guide
33. Thermakraft White GP Tape Data Sheet
34. Thermakraft Vapour Shield Data Sheet
35. Thermakraft Premium Joining Tape Data Sheet
36. Thermakraft Premium Joining Tape Install Guide
37. Thermakraft White General Purpose Tape Data Sheet and Install Guide
38. Thermakraft Product Warranty Statement
39. BRANZ Appraisal No.1229 - Covertek 215 Roof Underlay
40. Covertek 215 Data Sheet
41. Covertek 215 Install Guide
42. BRANZ Appraisal No.1229 - Covertek 215 Roof Underlay
43. Covertek 215 Data Sheet
44. Covertek 215 Install Guide
45. Thermathene Black Install Guide
46. Thermathene Black Data Sheet
47. Thermakraft White GP Tape Data Sheet
48. Thermathene Orange Install Guide
49. Thermakraft White GP Tape Data Sheet
50. Thermathene Orange Data Sheet
51. Thermakraft Aluband Data Sheet
52. BRANZ Appraisal No. 1104 - Thermathene Orange Concrete Underlay
53. BRANZ Appraisal No.329 - Supercourse 500 Damp-Proof Course & Concealed Flashing
54. Supercourse 500 DPC Data Sheet

55. Supercourse 500 DPC Install Guide
56. Perimeter DPC Data Sheet
57. Perimeter DPC Install Guide
58. Stud Strap and Thermastrap Installation Guide and Data Sheet
59. Stud Strap and Thermastrap Installation Guide and Data Sheet
60. Aluband Data Sheet
61. Aluband Install Guide
62. BRANZ Appraisal No.878 - Thermakraft Aluband Window Flashing Tape
63. BRANZ Appraisal No.962 - Thermakraft One Wrap System
64. Thermaflash Data Sheet
65. Thermaflash Install Guide
66. BRANZ Appraisal No.1122 - Thermaflash Flashing Tape
67. OneSeal Data Sheet
68. OneSeal Install Guide
69. BRANZ Appraisal No.942 - ONESEAL MULTI-FIT PIPE AND CABLE PENETRATION SEALS
70. Thermakraft Premium Joining Tape Data Sheet
71. Thermakraft Premium Joining Tape Install Guide
72. Thermakraft White General Purpose Tape Data Sheet and Install Guide
73. Thermakraft Product Warranty Statement
74. BRANZ Appraisal No.632 - Pink Batts Snugfloor Insulation
75. BRANZ Appraisal No.238 - Pink® Batts® Insulation
76. BRANZ Appraisal No.238 - Pink® Batts® Insulation
77. BRANZ Appraisal No.767 - Pink® Batts® Skillion Roof Insulation
78. BRANZ Appraisal No.238 - Pink® Batts® Insulation
79. BRANZ Appraisal No.238 - Pink® Batts® Insulation
80. BRANZ Appraisal No.238 - Pink® Batts® Insulation
81. BRANZ Appraisal No.238 - Pink® Batts® Insulation
82. BRANZ Appraisal No.238 - Pink® Batts® Insulation
83. BRANZ Appraisal No.238 - Pink® Batts® Insulation
84. BRANZ Appraisal No.238 - Pink® Batts® Insulation
85. BRANZ Appraisal No.925 - ARDEX WPM 1000 External Deck Membrane
86. BRANZ Appraisal No.727 - Ardex Undertile Sheet Membrane (WPM 750 and WPM 1000)