TECHNICAL BULLETIN – TB095

HYDRONIC FLOOR HEATING EMBEDDED IN A SCREED

3rd December 2024

INTRODUCTION & SCOPE

The Slots Hydronic floor heating system uses heated water that runs through polyethylene pipes designed to be embedded in a sand-cement screed system suitable for installing resilient floor coverings. The subfloor for this system can be either sound concrete, fibre-cement, or timber.

The use of a self-supporting screed complies with the requirements of the relevant tiling standard. Also, it provides a thermal heat sink for the system, which will assist in conserving the energy required for system operation.

THE PURPOSE OF THIS TECHNICAL BULLETIN IS TO PROVIDE GUIDANCE ON SUITABLE PRODUCT SELECTION AND METHODOLOGY THAT CAN BE EMPLOYED TO ENABLE THE APPLICATION OF THIS SYSTEM ON CONCRETE, COMPRESSED FIBRE CEMENT SHEET AND TIMBER FLOORS BEFORE APPLICATION OF RESILIENT FLOOR COVERINGS.

CONSTRAINTS

The floor heating manufacturer or supplier should test, engineer, and approve any system design to meet any relevant standards, regulatory requirements, or performance requirements.

STRUCTURAL CONSIDERATIONS

All timber and Compressed Fibre Cement sheeted floors must comply with AS3958 for maximum deformation between joists of 1 in 360th of the joists' span.

Timber floors should comply with AS2796 for moisture content and be acclimatized under end-use conditions for at least 60 days before tiling to reduce unpredictable movement. Installation of timber floors must comply with good installation practice and design to provide for effective under-floor ventilation and minimal exposure to localized heating, drying, and moisture.

Concrete surfaces should be sound and free of all contaminating or loose materials. Ensure the concrete is at least 28 days old or the screed is at least 7 days old.

CLIMATIC CONDITIONS

The screed and the tiling should be prepared between 10 and 35 degrees Celsius.

PRIMARY SURFACE PREPARATION

The surface should be prepared by removing any loose material, or surface irregularities that may penetrate the plastic sheet membrane.

NOTE: Where an aluminized heat-reflective sheet is to be used, it should not be placed in direct contact with wet cementitious materials, as the alkalinity may attack the coating.

Such sheeting should be placed below the plastic slip sheets.

INSTALLATION OF SAND-CEMENT SCREED

1. Apply a layer of PVC or polyethylene sheeting to provide a slip sheet for the applied Sand/Cement screed.
2. Sheet joints should be joined with duct tape or similar.
3. The sand/cement screed should be improved with ARDEX Abacrete per the technical data sheet.
4. The Hydronic pipes will be embedded into a sand/cement screed 15mm thick.
5. Install a reinforced self-supporting sand/cement screed in accordance with A.S. 1303-4. This shall be installed when the pipe embedding screed is dry, preferably within 24 hours. The maximum time interval is 7 days.
6. The minimum installation thickness of the Sand /Cement screed should be 40mm.
7. The sand/cement screed should be reinforced with a Galvanised Metal Mesh 25mm x 25mm aperture and a minimum 5-8mm gauge steel wire.
8. Movement and perimeter joints shall comply with the requirements of AS3958 - 2023.
9. The sand/cement screed should be cured in accordance with A.S. 1303-4 and allowed to dry for a minimum of 7 days at 20ºC and 50% R.H. prior to tile work commencing.

Application of Tiles

Tiling is to be installed in accordance with AS3958 -2023.

Adhere ceramic, porcelain, or stone tiles using ARDEX X56, ABA 1-part Isoflex, ABA 2-part Isoflex, or ABA Abaflex, ensuring a minimum dry bed of adhesive of 2.5mm and at least 90 % coverage to the back of the tile.

Large format tiles are best adhered using ARDEX X18 mixed with ARDEX E90 improver.

All products should be used in accordance with the relevant product data sheets.

Grout Applications to Tile Joints

Grouting between the tiles should be done with a flexible grout.

The recommended grout for joints 1-4mm wide is ARDEX FS-DD mixed with Grout Booster at 50%.

For joints 1-8mm wide, the recommended grout is ARDEX FG-8 mixed with Grout Booster at 50%.

Vinyl, Carpet, or Parquetry

Applying a 3mm smoothing finish to the top of a high-strength engineered screed may be necessary to obtain maximum flatness and a surface suitable for floating timber, carpet, vinyl strip, tiles, or sheeting. ARDEX K15 mixed with ARDEX E25 improver provides the best surface and is a standard recommendation for parquetry.

The subfloor must provide a mechanical key for the ARDEX Self-Levelling Cement. A clean, solid, open, porous matrix of the screed is required

1. The primer for porous concrete is ARDEX P51

   Prime with ARDEX P51 mixed 1:2 with water and apply evenly with a soft push broom. Do not leave any bare spots and remove all puddles and excess primer. Allow to dry to a clear, thin film (min 3 hours max. 24 hours), and the underlayment should not be applied until the primer is dry.

2. The cement-based self-smoothing underlayment should be ARDEX K15 Self-Smoothing Underlayment Concrete

The additive to be mixed with ARDEX K15 is ARDEX E25 Resilient Emulsion

MIX RATIO

1.6 litres of ARDEX E25 plus
4 litres of cool, clean water per
20 kg bag of ARDEX K15

3. Minimum thickness of ARDEX K15 2 – 3mm
4. Allow to cure for 48 hours at a minimum of 20°C before installation of floor coverings.

PRECAUTIONS ON OPERATION

1. TURN THE HEATING UNIT ON, INCREASING THE TEMPERATURE BY APPROXIMATELY 2 DEGREES PER DAY UNTIL THE DESIRED TEMPERATURE IS REACHED.
2. DO NOT HEAT ABOVE 45°C.

IMPORTANT
This Technical Bulletin provides guideline information only and is not intended to be interpreted as a general specification for the application/installation of the products described. Since each project potentially differs in exposure/condition, specific recommendations may vary from the information contained herein. For recommendations for specific applications/installations, contact your nearest Ardex Australia Office.

DISCLAIMER
The information presented in this Technical Bulletin is to the best of our knowledge true and accurate. No warranty is implied or given as to its completeness or accuracy in describing the performance or suitability of a product for a particular application. Users are asked to check that the literature in their possession is the latest issue.

REASON FOR REVISION-ISSUER
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DOCUMENT REVIEW REQUIRED
36 months or whenever third-party suppliers change their recommendations.

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