TECHNICAL BULLETIN – TB263

ARDEX SYSTEMS TO ELIMINATE EFFLORESCENCE FROM EXTERNAL TILING

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INTRODUCTION

Efflorescence has been a problem in external tiling for years, particularly when large-format, dark-coloured tiles are used.

Efflorescence can totally ruin the appearance of a tiling job, as shown in Figure 1 below.

Figure 1 – Example of efflorescence on a residential job

ARDEX Australia can present two solutions to prevent efflorescence completely.

1) Use of ARDEX A38 drainage screed
2) Use of the brand new ARDEX UD 150 drainage mat

This job pictured above had been set out well, but unfortunately, adhesive coverage under the tile was poor. AS3958.1-2007 calls for 90% coverage when tiling exterior floors, decks, and roofs. The adhesive notching should be 90 degrees to the falls, which is important to avoid water channels and pooling under the tile surface and maintain a good bond. Materials can leach out of the concrete, adhesive, and/or grout if water is in intimate contact with them. This job had less than 60% adhesive coverage, as estimated by our methods.

Efflorescence is defined as the material left behind when water containing dissolved salts and potentially other compounds moves out of the building materials, comes to the surface and evaporates. This material left behind contains white compounds which can further react with the air (lime for example) and become insoluble and very difficult to remove. It would be better to never allow efflorescence to form on the surface of the tiling job to start with.

USE OF A DRAINAGE SCREED

Tiling on a very dense bed does not allow the water to escape easily in a downward direction. This means that when rain or other water falls on the tiled surface, it can seep through the grout lines and remain or enter via badly detailed edges. Spending a long time under the tiles can leach materials out. With the drainage screed pictured below, this doesn't happen. The water quickly moves away from the tiles, taking any dissolved material downwards, across the waterproof membrane, and out to the drain. Efflorescence does not have a chance to form on the tile surface.

ARDEX A38 is a rapid set cement powder. When used in combination with ARDEX 2-5 mm aggregate it can make a strong yet permeable screed that can be tiled upon.

It is possible to create a system like the one in Figure 2 below and have a safe, efflorescence-free tiling job. Sealant is not necessary in the grout joints, but it can add an extra layer of protection. ARDEX ST Silicone would be suitable in this case.

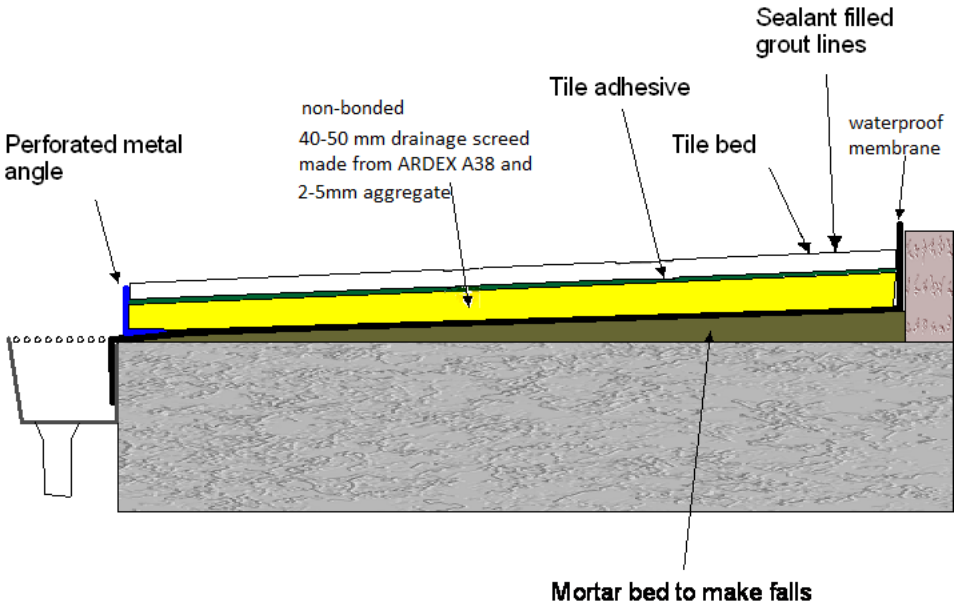

Figure 2 – Drainage screed schematic

ARDEX A38 is mixed with the 5/2 Aggregate according to the following ratio;

- 1-part ARDEX A38 cement powder
- 4 parts 5/2 Aggregate
- 0.5-0.7 parts water

A consistent mixture must be made, and it needs to be homogenous. It should have a wetness like a normal sand cement screed. An adequate strength may not be reached if it is too dry or too wet. It will have a working time of 60 minutes after mixing and can be walked on 8 hours after installation. A minimum thickness of 40 mm exists in this application (unbonded). Please see the ARDEX A38 Product Datasheet for more information. Back-buttering of the tiles is recommended to achieve 100% coverage. As discussed above, AS3958.1-2007 calls for at least 90% coverage, but ARDEX recommends 100%.

USE OF ARDEX UD 150 DRAINAGE MAT

This new product from ARDEX Australia creates a similar situation to the drainage screed above, yet it can do so at a fraction of the height and weight. The tiles can easily be removed sometime in the future if desired. The limitation is that it can only withstand foot traffic. It is aimed at being used in balconies and terraces in residential applications, but it is not limited to this.

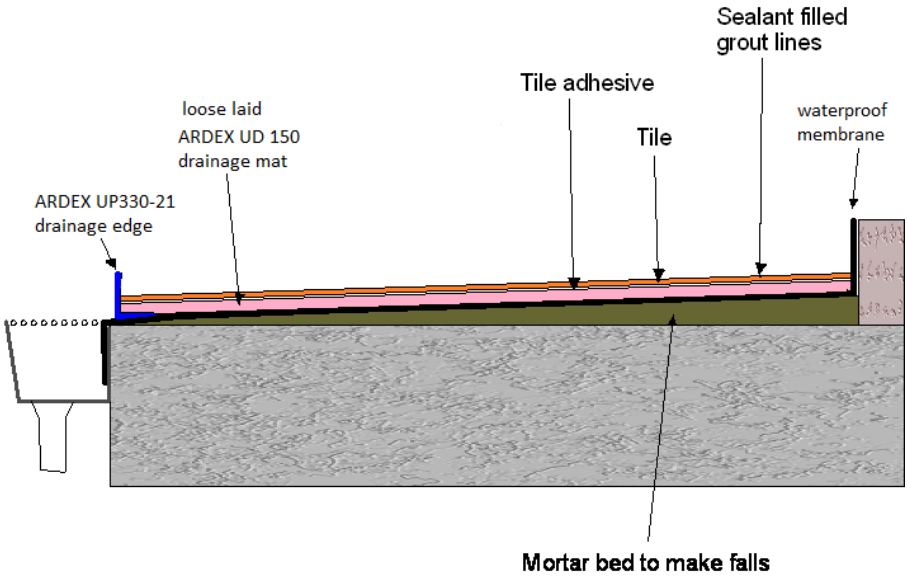

Figure 3 – ARDEX UD 150 schematic

The ARDEX UD 150 is loose laid, which means it is laid on the waterproof membrane without being adhered to. The sheets of ARDEX UD 150 are cut to size and taped together with a seam reinforcement mesh strip. The edges of the job need footing pieces and often edges such as the UP330-21 depicted above. ARDEX supplies all the associated “bits and pieces” to make the complete system.

It should be noted that back buttering the tiles is again recommended to ensure 100% coverage. A separate datasheet with more details is available on the ARDEX website for ARDEX UD 150.

CONCLUSION

Careful installation and use of drainage systems can eliminate or at least minimize the problem of efflorescence.

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.

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