TECHNICAL BULLETIN – TB240

Smoothing Tongue & Groove Fibre-Cement Internal Flooring Sheets for Resilient, Textile and Timber Floor Coverings

January 2025

INTRODUCTION & SCOPE

The tongue and groove construction, 19-24mm thick fibre-cement floor sheets are unlike the traditional compressed fibre-cement flooring sheets in several ways. These differences in properties and installation have consequences when floor coverings are to be installed, particularly with a smoothing cement system.

This technical bulletin provides several systems that can be used for these sheets which are sold under the trade names James Hardie Scyon Secura, CSR Cemintel Construct floor and BGC Durafloora. *The thicker 22mm or greater sheets are preferred*.

WHAT ARE THE DIFFERENCES?

Traditional compressed fibre-cement sheets when installed for an internal floor have butt joints which are filled with a water borne epoxy (such as Ardex WPM501). These floors then become effectively monolithic, which means that smoothing cements can be directly applied, followed by the floor covering, without the problem of edge show through.

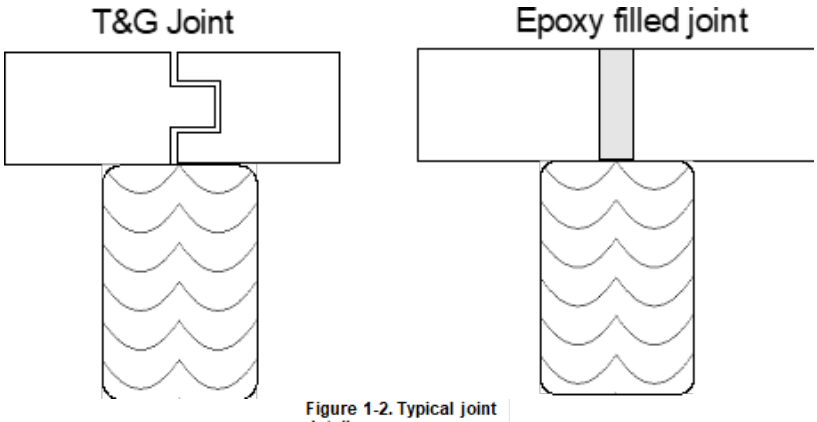
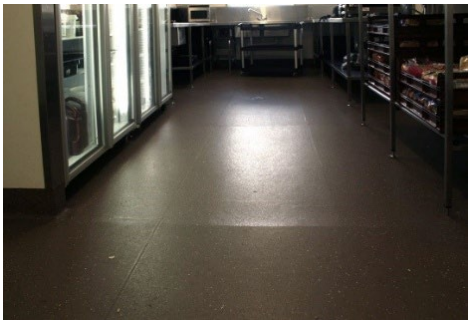
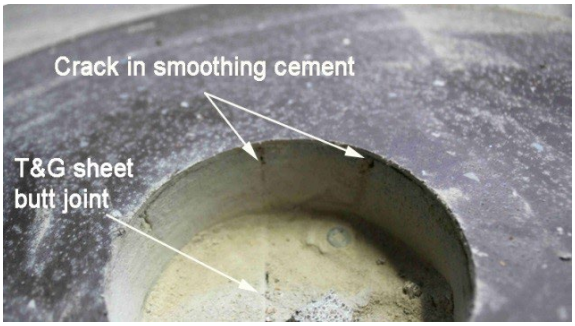


Figure 1-2. Typical joint details

The T&G edged sheets however are not used with an epoxy, and in some cases, installers mistakenly use a sealant in the joints. This non-monolithic joint can then produce show through problems when the sheets flexes or the structure moves.





This schematic shows the difference between the two styles of sheet joint detailing and these photos (Figs 3-4) show a practical example of where show through has occurred because of applying a smoothing cement directly onto a T&G type jointed fibre-cement sheet floor.

WHAT IS THE SOLUTION?

There are two ways this problem can be addressed. The first is to use a mesh reinforced system with the smoothing cement, and the second is to use a floating base screed which can then take a smoothing cement (this system has the downside of increasing both the thickness of the floor and also the dead load).

Method 1

The use of mesh for stabilising a floor to prevent cracking has been in use on strip timber floors for many years. There are two approaches to this problem.

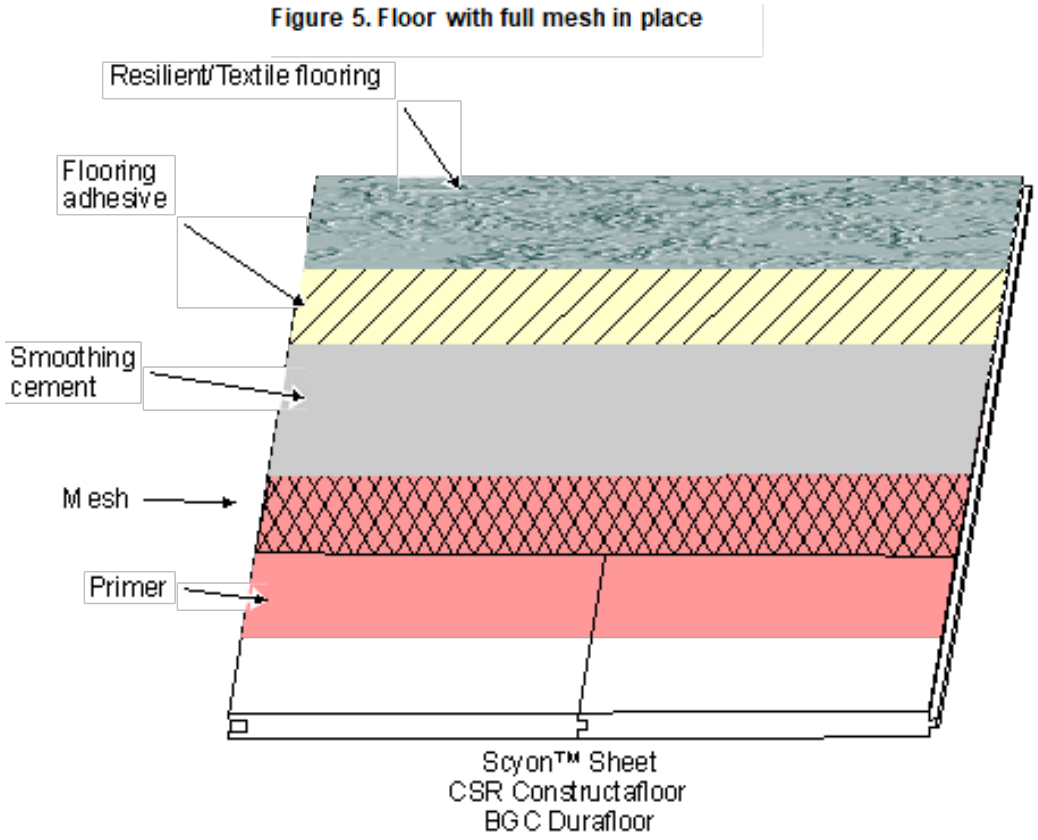


Figure 5. Floor with full mesh in place

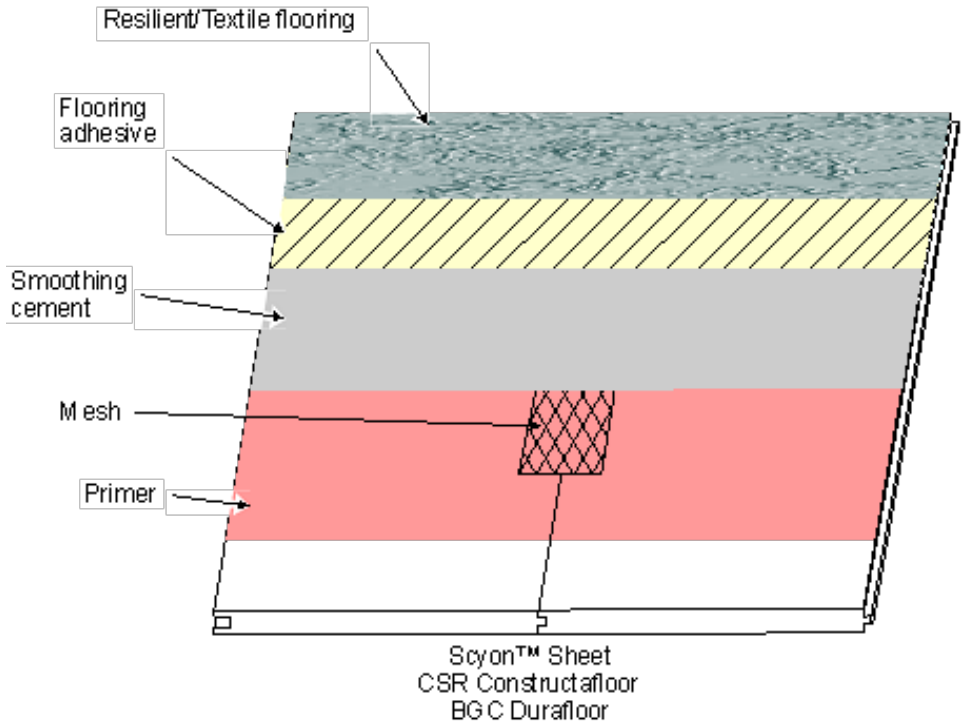
The first is to use a full mesh coverage over the entire floor area. This is the same as the methodology described in Ardex Technical Bulletin TB016

The mesh applied over the primer, is mechanically secured (~300mm centres) and then the smoothing cement is poured on top. The minimum thickness is around 4-6mm depending on the mesh used. This type of floor becomes effectively un-removable and where it has been done, Ardex has not received any negative feedback about cracking or show through.

1. The sheet is vacuumed and all loose dusty and material are removed, included out of the joint. The sheets must be fastened in accordance with the sheet manufacturer's recommendations and all sheet joints shall be correctly supported by joists.
2. The surface is primed with one of the following products:
    a. Ardex P82 primer rolled on at 6-10m^2/litre (maximum open time is 24 hours)
    b. Ardex P9 primer rolled on at 6-8m^2/litre
    c. Ardex WPM300 rolled on at 2.5m2/litre and whilst wet, blinded with clean dry sand 0.3-0.5mm particle size (Ardex Primer Sand).
3. The mesh is placed onto the surface and secured in place. Suitable types of renderers mesh are:
   Truss Forte Rendalok (15mm polygonal steel) http://trussforte.com.au/?page_id=25

   Colan Products 10mm fibreglass renders mesh (see AF616WS at http://www.colan.com.au).

   The steel mesh can be screwed down with panheads screws, and the fibreglass held in place with Liquid Nails type adhesive or Ardex CA20P.
4. The liquid smoothing cement is applied over the surface and must have a thickness which exceeds the height of the mesh by 3mm minimum (i.e.4-6mm deep). The recommended smoothing cements are:
    a. Ardex Arditex NA (not suitable for bonded timber flooring)
    b. Ardex K15M + 1 litre of Ardex E25 additive
    c. Ardex K12N + 1 litre of Ardex E25 additive
    d. Ardex A55



The second approach is to apply a strip of mesh 200 wide over each sheet joint. This acts to reinforce the joints and minimises the risk of cracking. This is a simpler process but does not provide the same degree of flexural resistance to damage as full mesh coverage. The installation process is the same as for a).

Method 2

A self-supporting A38 screed is placed over the floor, which can then be given a skim coat, followed by the floor coverings.

i. The sheet is vacuumed and all loose dusty and material are removed, included out of the joint. The sheets must be fastened in accordance with the sheet manufacturer's recommendations and all sheet joints shall be correctly supported by joists.

ii. A plastic sheet 0.2mm thick of the type used for damp proof barriers is place onto the sheet surface. The sheet edges overlap by 50mm and are taped in place with PVC tape. Alternative sheets are Ardex Butynol, including DS60 or WPM750. The sheets must be flat and have no creases.

iii. A foam strip 5mm wide and full height of the A38 screed is placed against the walls around the perimeter of the screed placement area.

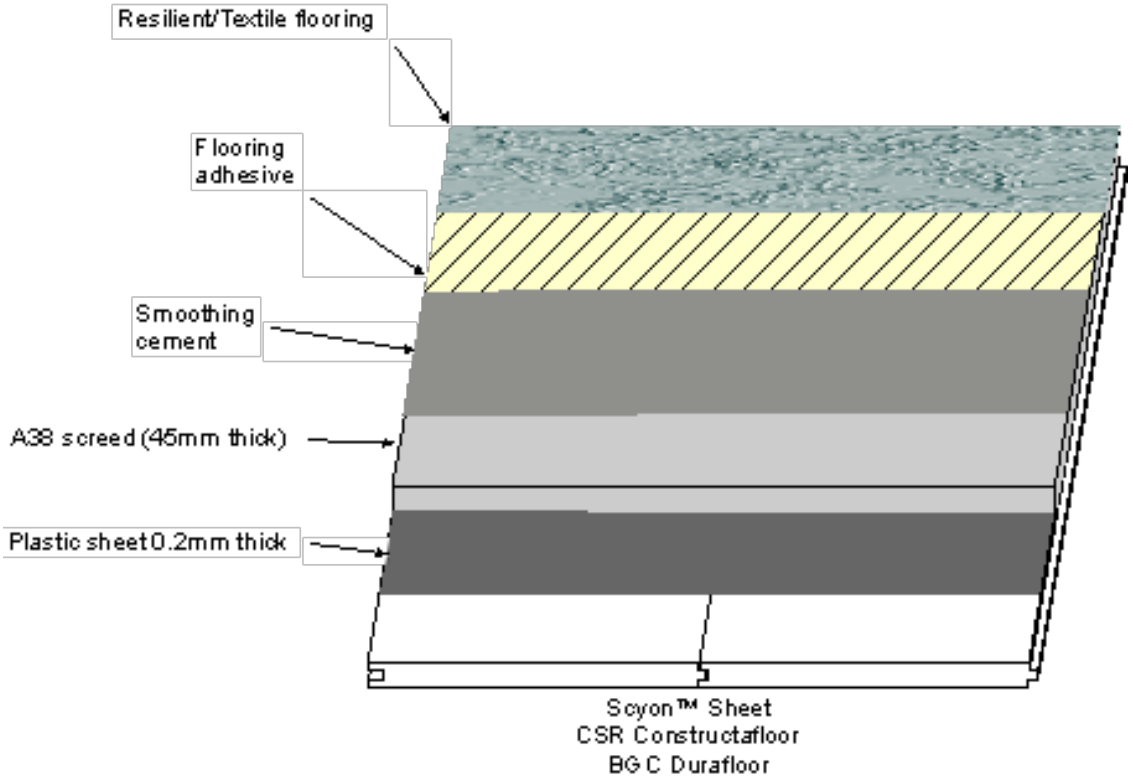
iv. The Ardex A38 screed is mixed and applied to a thickness of *not less than 45mm* over the sheet. Maximum individual panel size is 40m^2. Cure time is around 16 hours till the next step.

v. The surface of the A38 is primed with Ardex P51 primer diluted 1:2 with water, before the surface is smoothed with an Ardex liquid smoothing cement.

Note: The A38 surface can be smoothed with Ardex Feather Finish, Fine Finish, A30 or A45 without priming.

vi. The liquid smoothing cements that can be applied include the following:

a. Ardex A55
b. Ardex K15M
c. Ardex K12N
d. Ardex K009
e. Ardex Arditex NA



Note: Where the floor covering is to be directly bonded timber, the smoothing cements shall be Ardex K15M + E25, Ardex K12N + E25 or Ardex A55 as per the mesh system describe previously.

FLOORING ADHESIVE

The floor coverings can be adhered with the Ardex flooring adhesives used in accordance with the product datasheets.

- Resilient – AF171 and AF180 MS
- Carpet Tile – AF171, AF271
- Linoleum – AF171 and AF180 MS

QUALIFICATIONS

This system is not intended to be used for covered or fully exposed external installations with any of these sheets.

This system is not intended for use with the waterproof membrane and tiling applications described in Ardex Technical Bulletin TB215 for Scyon Secura.

Testing has shown that cracking can occur along the joints due to movement, even with mesh in place. With the mesh in place cracking is quite fine, and unlikely to be a problem with commercial type floor coverings. However, poorly supported and incorrectly constructed floors in terms of joist spacing and deflection can develop more severe cracking, particularly at butt joints and without mesh in place.

The use of this system with wear floor surfaces including Ardex K80 or Ardex K301 is not recommended, due to the risk of show through and other cosmetic issues, and it shall not be used for any Ardex system.

Images from a test floor of smoothing cement over a T&G fibre-cement floor sheeting. No floor coverings used. Exposure to foot traffic 3 months

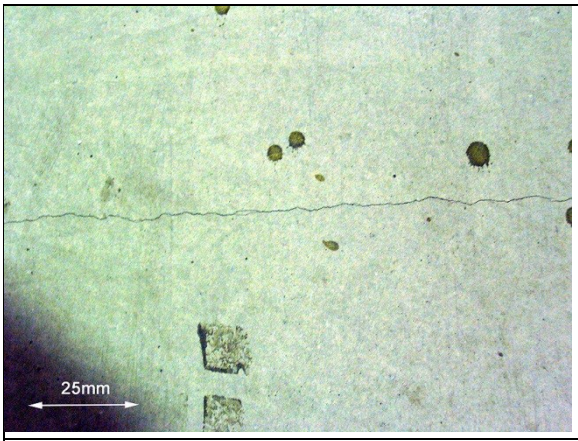


Figure 8. Cracked butt joint without mesh. Arditex NA.

Figure 9. Fine cracked T&G joint. The appearance of the cracks without and with mesh were similar, but the with mesh cracks were much finer. (Note scale is smaller than Fig 8.) Arditex NA.

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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