

## TECHNICAL BULLETIN – TB104

### APPLICATION OF ARDEX FLOOR SMOOTHING CEMENTS – TYPICAL SITE WITH CONCRETE FLOORS

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#### INTRODUCTION & SCOPE

This bulletin discusses the mixing and general applications principles for laying Ardex Flooring Smoothing Cements including Ardex K15, K80, A55, K250, K11, K12, K301 and K250. The application discussed is smoothing over concrete substrates using hand methods, but other surfaces can be topped, or the material pumped and advice on these specialist procedures is available from Ardex Technical Services.

The specific details for each product are explained in the relevant Product Technical Datasheet, and other special instructions are explained in the Technical Bulletins

#### PRIMING

After the surface has been mechanically prepared and vacuumed clean of any dust or residues, priming is required. This both provides a mechanical and chemical key for the levelling cement and eliminates the risk of air holing of the surface.

The primer for porous concrete is Ardex P51 which is diluted with water, the ratio depending on the concrete porosity.

The preferred application method is by bristle broom as this helps the primer to penetrate into all the holes and cavities in the surface.

Puddles are brushed out and the surface allowed to dry before application of the levelling cement.



#### MIXING & APPLICATION

These products must be laid by working to a wet edge of the floor smoothing cement, so a production line approach needs to be adopted with the mixing. A mixing station is set up which then feeds a constant supply of mixed product to the applicators. The following is a list of equipment and materials required.

- ☐ Ardex mixing paddle



- ☐ Hand trowels for flooring (~400mm wide straight edged steel trowels)



- ☐ Ardex thickness rake (this tool is height adjustable)



- ☐ Ardex smoothing spreader



- ☐ Heavy duty electric drill for mixing (minimum speed ~650rpm)
- ☐ Ardex water gauging bucket



- ☐ 20 litre mixing buckets
- ☐ 60 – 100 litre water vessel
- ☐ Plastic ground sheeting
- ☐ Rubber studded boots (football boots)

- ❑ Electrical safety cut out device for use with mixer (recommended where the site has no RCD fitted to circuits).

*The area to be used for mixing should be arranged and tools prepared as follows-*

- ❑ Work area needs to be set up with bags lined up and cut open
  - ❑ Water vessel full of drinkable cool water (15 to 20°C. in the summer this can be cooled with melted ice, or warmed slightly in winter)
  - ❑ Water gauging bucket cut to correct delivery quantity
  - ❑ Multiple mixing containers lined up
  - ❑ Drill and mixing paddle placed in drill and connected to electrical safety device
  - ❑ Plastic laid out to protect sub floor
  - ❑ Waste bin for disposal of empty bags
  - ❑ Sufficient labor for mixing, carrying of mixed product, and spreading of materials
  - ❑ Clean hardened FLC off studded boots
  - ❑ Set height for thickness rake, typically 3-4mm
  - ❑ Ensure smoothing spreader is straight
  - ❑ Trolley for conveying mixed material to work face
  - ❑ Team has necessary personal protective equipment
  - ❑ Area is well ventilated.
1. Take the Ardex gauging bucket and immerse it in the large water container. When full draw the bucket up, keeping the sides vertical and allow the water to run out of the side cut out till the desired level is reached. Tilt the bucket slightly away from the cut out side and pour the gauged water into the mixing bucket.



2. Take a bag of the floor leveling cement and pour it into the mixing bucket whilst at the same time commencing to mix with the power stirrer. *Note that hand mixing is not satisfactory and will not mix the product properly.*



By cutting the bag to produce a flap, it is possible to minimise the amount of dust produced during the pouring and mixing process.

It is recommended that the first 75% of the bag is added, then mixed for one minute, and then the remaining 25% added.



3. The material shall be mixed for two minutes in total and the paddle should be scraped around the sides to break up any adhering dry material.



After mixing the smoothing cement should be smooth and free flowing. *Note – Do not add water in excess of the recommended amounts as this can seriously effect the performance of the material.*

4. Wearing studded boots to allow walking in the wet material, apply the fluid Ardex FLC to an even layer and pour out in a line and working to a wet straight edge leaving no gaps or islands. Working to the wet edge is especially



important when it comes to using thin layers 2-3mm thick. It is usually good practice to pour the first couple of buckets together to get started. The material should be poured in such a way that only minimal spreading and smoothing is required to achieve a smooth flat finish.



Pour the smoothing cement whilst walking along, and always apply to the wet working edge.

5. The thickness rake is used when leveling over tiles or surfaces that do not have significant relief (for example already flat or only lightly ground). Drag the rake at 90 degrees to the direction that the material was poured on the floor. Keep the head main bar vertical to obtain the correct thickness when dragging the rake. Overlap each pass by approximately 30%.



6. The floor spreading tool is used to smooth out the surface after it has been raked, or spreading the poured cement if the surface is too irregular to use the thickness rake

The spreader blade is drawn at 90 degrees to the direction that the rake was dragged. The blade is started parallel to a wall, and then after starting to move, change the blade angle to act in a similar fashion to that of a grader blade. The blade should be at an angle of about 30° to 40° to the surface and held well behind the body. Walk at a brisk pace so that the smoothing spreader glides over the surface with only moderate downward pressure on

the trowel. A bow wave is produced and should be no more than  $\frac{1}{2}$  the thickness of the depth of material. Each pass of the smoothing spreader should be half the width of the trowel overlapped on the previous pass.

As the end of each run is reached the spreader is turned in a shallow arc for 90 degrees, and the subsequent pass is run in the opposite direction to overlap the turn.



7. The last pass against a door or wall is done by pulling the tool along and walking backwards to the exit point, which is then finished with hand trowels.

***Note: Do not overwork the material as this causes fines to rise to the surface and results in a soft surface. Also do not work, or walk onto material that has been previously laid for more than about 5 minutes.***



Hand trowelling of the FLC is necessary at doorways to finish off the job.

8. Clean up is done in water.
9. Once the material has been laid, allow to cure prior to laying the floor covering.
10. Subsequent coats of FLC, such as over bulk fills require re-priming prior to application of the smoothing cement.

Note -

The application of Ardex Arditex is the same except that a Latex Liquid is used instead of water and the surface can be finished with a spiked roller after trowelling where carpet or timber is to be laid.

Where the mix design requires the use of Ardex E25 Improver, this is added to the gauging water prior to addition of the powder.

#### THINGS TO WATCH OUT FOR

Surface preparation is vital to achieve a good long lasting installation. Poor surface preparation of the subfloor is the main source of problems in these installations.



Concrete surfaces need to be open and porous, and free of all contaminants, coatings, old adhesives, weak concrete layers or dust and dirt. Refer to Technical Bulletins TB039 and TB041 for more information.

Always prime the surface as failure to do so will result in air holing and possible poor adhesion.

Over-watering the product does not make it flow better, but does result in slower drying, poor strength development and weak surfaces.

Do not lay material at temperatures below 10°C and above 35°C. Refer to Technical Bulletin TB097 for more information.

**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**

Minor alterations to text.

**REVIEW REQUIRED**

24 months from issue.

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