

# TECHNICAL BULLETIN – TB102

## Deep Filling and Ramping of Subfloors With Ardex Floor Levelling Cements

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### INTRODUCTION & SCOPE

Floor levelling cements are commonly seen as a thin topping material applied prior to the application of the final floor covering. However, these materials can also be used as a bulk filler when mixed with a suitable aggregate filler. In this bulletin different systems will be highlighted that allow the applicator to use filled levellers and tackle these situations.

### THE PROBLEMS

A common situation that can arise when repairing concrete subfloors involves filling of holes or depressions deeper than 10mm. Typically this can occur after heavy scarification or scabbling, or when holes are left if fixtures are removed, or even if there is a significant fall in the slab.

Another common application that arises is the necessity for sloped fills. This can be either as ramps where adjacent floor areas may have different heights and require a ramp to avoid trip hazards, or in wet areas to create falls to drainage. A third scenario is to create a fall for a screed on a verandah for tiling.

The use of bulk fill aggregates and sands reduces the cost of the levelling materials making filling larger areas more economical. Since these ARDEX products are rapid drying, the problems associated with the slow drying of conventional sand cement screeds or concrete fills are eliminated, further reduction costs through lost time.

### SOLUTIONS

ARDEX manufactures a range of floor levelling cements which can be mixed with a suitable aggregate or coarse sand for ramping and bulk fill. One product is pre-mixed and ready to be used straight from the bag.

The base layer can be put down to a thickness approximately 3-4mm lower than the final level that is required, and then a 3-4mm topcoat of the same product without fill can be applied as a smoothing layer to provide the necessary surface for vinyl or carpet.

Between subsequent layers, allow the recommended drying time for the product being used and then apply a coat of appropriate primer. When the primer is dry the smoothing coat can be applied.

For dry internal applications, the surface can be lightly ground and a layer of Feather Finish applied to smooth the surface.

Surfaces to be tiled may not require any further smoothing of the dried surface prior to tile application, unless critical applications such as large format porcelain tiles are being laid.

There are three types of site conditions to consider;

- Internal dry applications where no moisture is expected to occur (under vinyl, carpet, and strip timber)
- Internal wet area applications where a membrane must be used (under vinyl)
- Wet/dry applications without/with membranes internally or externally (typically tiles)

The various situations will be discussed separately.



**Table 1. Dry applications under vinyl, carpet or strip timber***Typical applications for bulk filling and ramping in dry environments (internal applications only).*

Product	Application	Subfloor type	Drying time	Thickness
Ardex K15 mixed 1:1 to 1:1.25 with 2.5 or 3-8mm aggregate	Slab Deflections Ramping Additions /height variations Infilling	Concrete Ceramic tiles Metal decking	16 -18 hours regardless of thickness	Any thickness with aggregate. Minimum suggested thickness is 10mm
Ardex K10 mixed 1:1 to 1:1.25 with 2.5 or 3-8mm aggregate		Concrete Ceramic tiles Metal decking	16 -18 hours regardless of thickness	10-35mm
Ardex A45 mixed with 0.3:1 volume of sand <5mm, or 1:1 with 3mm aggregate		Concrete	After walkability (1 hour)	5-30mm
Ardex A55 mixed 1:1 to 1:1.25 with 2.5mm washed aggregate		Concrete	After walkability (1 hour)	10-20mm*
Ardex A45 mixed 1:1 with 10mm aggregate	Infilling	Concrete	After walkability (1 hour)	20-50mm
Arditex mixed 1:1 to 1:1.25 with 2-5 or 3-8mm aggregate	Removing dips, deflections and cupping on timber floors Ramping Additions /height variations	Timber including T&G and particleboard Fibre-cement	24-48hrs	12-30mm
Ardex K11 mixed 1:1 to 1:1.25 with 2.5mm washed aggregate	Slab Deflections Ramping Additions /height variations	Concrete	48hrs	8-15mm (maximum)
Ardex K12N mixed 1:1 to 1:1.25 with 2-5mm washed aggregate		Concrete	48hrs	10-50mm (maximum)
Ardex K250 mixed 1:1 to 1:1.25 with 2-5mm washed aggregate		Concrete	48hrs	10-50mm (maximum)

\*A55 is not thickness restricted but the limited is recommended for cost reasons, and also because A55 generates a high exotherm (temperature) during cure when thick.

Note – Ardex supplies aggregate in 25kg bags hence a ratio of 1:1.25 when mixed with 20kg of smoothing cement powder.



**Table 2 - Internal wet applications with a membrane (under sheet vinyl)**

Typical applications for bulk filling and ramping in internal wet environments *where a membrane is to be used over the infill, fall or ramp*. Suitable Ardex membranes include Ardex WPM002 and Ardex WPM155.

Product	Application	Subfloor type	Drying time	Thickness
Ardex K15 mixed 1:1 to 1:1.25 with 3-8mm aggregate	Ramping Falls to waste	Concrete	16 -18 hours regardless of thickness	Any thickness with aggregate. Minimum suggested thickness is 10mm
Ardex K15 mixed 1:1/4 parts of sharp clean sand 1-2mm (~5-6kg of sand to 20kg powder)	Falls to waste	Concrete	16 -18 hours regardless of thickness	Minimum suggested thickness is 10mm.
Ardex K10 mixed 1:1 to 1:1.25 with 2-5 or 3-8mm aggregate	Ramping Falls to waste	Concrete	16 -18 hours regardless of thickness	10-35mm
Ardex A45 mixed with 0.3:1 volume of sand <5mm, or 1:1 with 3mm aggregate	Ramping Falls to waste	Concrete	After walkability (1 hour)	5-30mm
Arditex mixed 1:1 to 1:1.25 with 2-5 or 3-8mm aggregate	Ramping Falls to waste	Concrete Fibre-cement	24-48hrs	12-30mm

**Table 3 – Wet or dry situations internal or external, applications with or without membranes**

Typical applications where fills or falls are required and membranes may or may not be required.

For example, general area internal floors and in bathrooms, kitchens, laundries or verandahs under tiles.

Product	Application	Subfloor type	Drying time	Thickness
Ardex LQ92 mixed 1:1 to 1:1.25 with 2-5mm aggregate	<b>Under tiles</b> Slab Deflections Ramping Additions /height variations Infilling	Concrete	4-6 hours	10-25mm
Ardex LQ92 mixed to desired consistency with coarse washed sand 0.3-2mm	<b>Under tiles</b> Ramping	Concrete	4-6 hours	3-25mm

Ardex K005	<b>Under other Ardex FLCs, tiles or carpets</b> Slab Deflections Ramping Additions /height variations Infilling	Concrete	4-6 hours	10-120mm
Arditex mixed 1:1 to 1:1.25 with 2-5 or 3-8mm aggregate	<b>Under external carpets</b> Slab Deflections Ramping Additions /height variations Infilling	Concrete	24-48hrs	12-30mm
Ardex K80 mixed with or 3-8mm clean gravel in ratios from 1:3 to 1:1 <i>Heavy duty</i>	<b>Dry Applications</b> Slab Deflections Ramping Additions /height variations Infilling	Concrete	24 hrs	>10mm Recommended 5-50mm without aggregate
Ardex K301 mixed 1:1 to 1:1.25 with 2-5 or 3-8mm aggregate	Slab Deflections Ramping Additions /height variations Infilling	Concrete	4-6 hours	10—30mm

Note: LQ92, K005 and Arditex are also suitable for patching or levelling concrete surfaces under ARDEX membranes such as the Shelterbit torch on range.

### MIXING & INSTALLATION

The installation of these products follow the general guidelines for the ARDEX floor levelling products these mixes are derived from, and specific details are available in the relevant data sheets for each product. Subfloors must be structurally sound and free of laitance, oil, grease, wax, dirt, asphalt, curing compounds, latex and gypsum compounds, dust, paint or any contaminant which might act as a bond breaker.

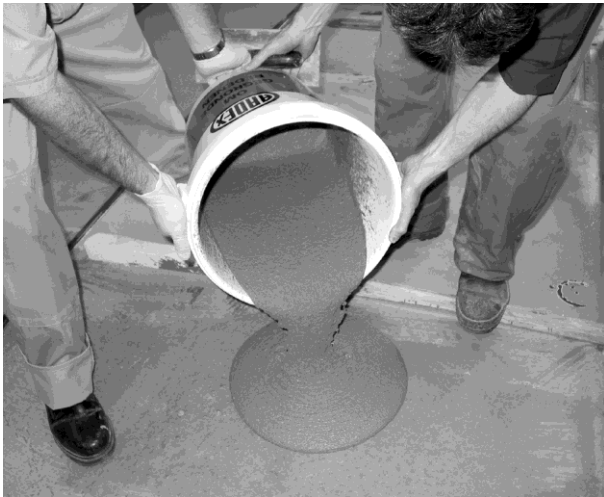
Mechanical preparation methods are required to produce surfaces suitable for application of floor levelling cements. Details are available in Technical Bulletin TB041. Priming is required after surface preparation with the appropriate primers. The primer for porous concrete is Ardex P51 diluted 1:2 with water. Ardex P82 primer is required for *dry* impervious surfaces such as terrazzo or tile, and also timber. Ardex Multiprime for is used with Ardex LQ92 onto porous concrete.

The correct amount of water (or polymer latex for Arditex) is measured out into a 20 litre or larger mixing bucket such as steel bin or plastic barrel, and the floor levelling cement powder is poured in at the same time as mixing is commenced.





Mixing is performed with a high speed mixer such as a drill fitted with an ARDEX mixing paddle. Normal mixing is done for 2 minutes, and then the aggregate/sand is added and mixing continued till the aggregate is wet out.



The mixed leveller is applied to the surface by pouring from the mixing container and working to a wet edge.

The material can also be pumped into the job for large areas.



The mixed material is spread to fill the depressed areas, or trowelled into shape to provide falls or form a ramp.



The poured material can be roughly shaped by scraping with a trowel after initial set, or once the filled leveller has cured, it can be diamond ground as required.

The rough finish produced can be used as it is, or smoothed by the application of a topping coat of leveller without the fill. A coat of Ardex P51 primer (or Multiprime for LQ92) is applied

to the filled leveller and allowed to dry. A normal mix of the leveller is then made and applied to the surface, and between 3-4mm is normally adequate. When the topcoat has cured floor coverings can be applied.

Where liquid membranes are applied as in applications listed in Table 2, the filled leveller may require a smoothing coat under the membrane, and the smoothing is done by applying Feather Finish to the membrane. Full details of this type of application are discussed in more fully Technical Bulletins TB012D and TB178.

## CONCLUSION

In situations where a fill or ramp is required, ARDEX FLC mixed with a suitable aggregate provides a fast track method of providing underlayment for floor coverings which is superior to sand-cement screeds. The smoothing cement bulk fill dries in under 3 days with most of the systems less than 24hrs, whereas sand-cement screeds dry at a rate of 1mm per day.

Careful selection of product will provide a system suitable for depths of between 5 and 120mm.

### **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**

24 month review. Slight change to K12N.

### **REVIEW PERIOD**

24 months from issue.

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