TECHNICAL BULLETIN – TB102

BACK FILLING WITH ARDEX LEVELLING COMPOUNDS

13th December 2024

INTRODUCTION & SCOPE

Levelling cements are commonly seen as thin topping materials applied before the final floor covering. When mixed with a suitable aggregate filler, these materials can also be used as bulk fillers. This bulletin highlights different systems that allow the applicator to use filled levellers to tackle these situations.

THE PROBLEMS

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

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

Using 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 reducing costs through lost time.

SOLUTIONS

ARDEX manufactures a range of floor-levelling cement that can be mixed with a suitable aggregate or coarse sand for ramping and bulk filling. However, there is also one product that 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.

Allow the recommended drying time between subsequent layers and then apply a coat of an 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 ARDEX Feather Finish can be applied to smooth it.

Surfaces to be tiled may not require 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)

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. The minimum suggested thickness is 10mm
ARDEX A45 mixed with 0.3:1 volume of sand <5mm, or 1:1 with a 3mm aggregate		Concrete	After walkability (1 hour)	5-30mm
ARDEX K55 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
ARDEX Arditex NA 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 K12 mixed 1:1 to 1:1.25 with 2-5mm washed aggregate		Concrete	48hrs	10-50mm (maximum)

*ARDEXK55 is not thickness restricted, but it is recommended to be limited for cost reasons and also because ARDEX K55 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 area applications with a membrane (under sheet vinyl)
Typical applications for bulk filling and ramping in internal wet environments *where a membrane will be used over the infill, fall or ramp.* Suitable ARDEX membranes include ARDEX WPM002 and ARDEX WPM155 Rapid Plus.

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. The 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	The minimum suggested thickness is 10mm.
ARDEX A45 mixed with 0.3:1 volume of sand <5mm, or 1:1 with a 3mm aggregate	Ramping Falls to waste	Concrete	After walkability (1 hour)	5-30mm
ARDEX Arditex NA 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 areas, internal floors, and under tiles in bathrooms, kitchens, laundries, or verandas.

Product	Application	Subfloor type	Drying time	Thickness
ARDEX LQ92 mixed 1:1 to 1:1.25 with 2-5mm aggregate	**Under tiles** Slab Deflections Ramping Height variations Infilling	Concrete	4-6 hours	10-25mm
ARDEX LQ92 mixed to desired consistency with coarse-washed sand 0.3-2mm	**Under tiles** Ramping	Concrete	4-6 hours	3-25mm
ARDEX K900 BF	**Under other ARDEX FLCs, tiles or carpets** Slab Deflections Ramping Height variations Infilling	Concrete	4-6 hours	3-90mm

Product	Application	Subfloor type	Drying time	Thickness
ARDEX Arditex NA mixed 1:1 to 1:1.25 with 2-5 or 3-8mm aggregate	**Under external carpets** Slab Deflections Ramping 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 *Heavy duty*	**Dry Applications** Slab Deflections Ramping 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 Height variations Infilling	Concrete	4-6 hours	10—30mm

Note: ARDEX LQ92, ARDEX K900 BF and ARDEX Arditex NA are also suitable for patching or levelling concrete surfaces under ARDEX waterproofing membranes such as ARDEX WPM002 and ARDEX WPM155 Rapid Plus.

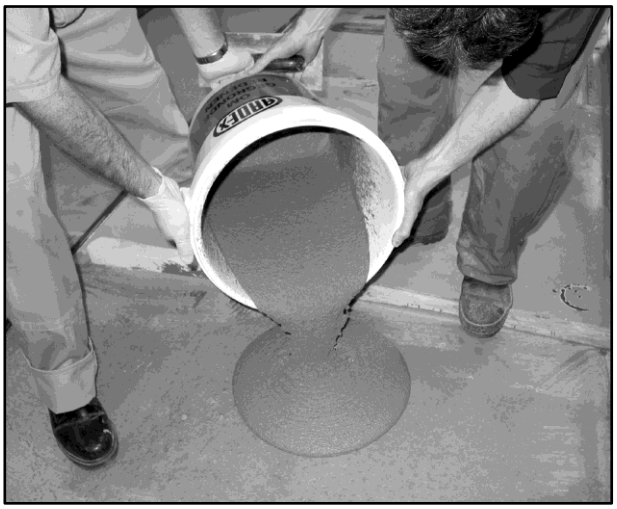
MIXING & INSTALLATION

The installation of these products follows 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 that might act as a bond breaker.

Mechanical preparation methods are required to produce surfaces suitable for applying floor levelling cement. Details are available in Technical Bulletin TB041. After surface preparation, an appropriate primer is required. 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 timber. ARDEX Multiprime is used with ARDEX LQ92 on porous concrete.

The correct amount of water (or polymer latex for ARDEX Arditex NA) 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. Mixing continues until 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.

After the initial set, the poured material can be roughly shaped by scraping with a trowel, 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 applying a topping coat of leveller without the fill. A coat of ARDEX P51 primer (or ARDEX Multiprime for ARDEXLQ92) 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 the applications listed in Table 2, the filled leveller may require a smoothing coat under the membrane, which is done by applying ARDEX Feather Finish. Technical Bulletins TB012D and TB178 discuss this type of application in more detail.

CONCLUSION

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

Careful selection of products 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.

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