TECHNICAL BULLETIN – TB107

GUIDELINES FOR ESTIMATING QUANTITIES OF ARDEX FLOORING PRODUCTS

16th December 2024

INTRODUCTION & SCOPE

ARDEX Technical Services frequently receives questions about the quantities and coverage of its flooring products, including levelling cements and primers. In this bulletin, we will examine some examples of working out coverage for a range of ARDEX products when used in typical applications.

ARDEX literature specifies coverage for flooring cement based on a 1mm layer spread over X square metres per 20kg bag. This calculation produces the *coverage factor*, or CF, which varies for different products and will be used in the examples we shall examine.

This coverage factor is also numerically the same as the volume of material that results in the bucket after the product is mixed with water or the latex liquid, in the case of ARDEX Arditex NA.

CASE 1 - FLOOD COATING

The most common application is a flood or patch coating to produce a smooth, flat surface over an area at a specified depth. The products typically used are ARDEX K15, ARDEX K12, ARDEX Arditex NA, ARDEX K80, ARDEX LQ92, ARDEX K55*, ARDEX K301 and the mortars ARDEX A45 and ARDEX A46*. The CF values are shown in the table –

Product	Mixed Volume in Bucket	Coverage Factor CF
ARDEX K15, K12, Arditex NA, K80, A45, K301	Approximately 12 litres	12
ARDEX LQ92	Approximately 11.4 litres	11.4
ARDEX A46* ARDEX K55*	Approximately 16 litres	16

(*Imported products are supplied in 25kg bags)

Nominally, ARDEX Arditex NA has a volume close to 13, but for simplicity, use CF12

Example 1) ARDEX K15 in a commercial application

A typical installation would be leveling an area in a supermarket for the installation of vinyl flooring. These areas are commonly rectangular in plan, so the coverage area is floor length x width. We shall assume 50m long and 20m wide, which is 1000m^2, to be laid to a thickness of 4mm. How much ARDEX K15 would be required?

The number of bags of K15 = (Area in m^2 x Thickness in mm) □□CF

area = 1000m^2, thickness = 4mm and CF for K15 = 12

20 kg bags of K15 required = 1000 x 4 ÷ 12 = *334 bags*

Example 2) ARDEX LQ92 to be used for levelling under tiles on a concrete veranda.

This is a common domestic type of installation for ARDEX LQ92. The area to be covered is 5m long and 3m wide, and the thickness required is 6mm. How much ARDEX LQ92 will be required for this application?

The number of bags of LQ92 = (Area in m^2 x Thickness in mm) ÷ CF

area = 5m x 3m = 15m^2, thickness = 6mm and CF for LQ92 = 11.4

20kg bags of LQ92 required = 15 x 6 ÷ 11.4 = *8 bags*

CASE 2 - BULK FILLING

Where a deeper area has to be filled before topping, either a purpose-made bulk fill product is used, or alternatively, one of the self-soothing types of cement can be mixed with an aggregate. The premixed bulk fills have consistent designed coverage. Still, when using separate aggregates, applicators must be aware that the mixed volumes will vary somewhat depending on the size and shape of the aggregate gravel. The figures given in the table below are approximate only –

Product	Mixed Volume in Bucket	Coverage Factor CF
ARDEX K900 Bulk Fill	Approximately 10.4 litres	10.4
ARDEX K15, K12, or Arditex mixed with 20kg of 2-5mm aggregate 25kg of 2-5mm aggregate	20 kg, approximately 18 litres 25kg, approximately 20 litres	18 20
ARDEX LQ92 mixed with 20kg of 2-5mm aggregate 25kg of 2-5mm aggregate	20 kg, approximately 18 litres 25kg, approximately 20 litres	18 20

ARDEX supplies 25kg bags of 2-5mm aggregate, so use the higher CF of 20 for ARDEX-supplied materials.

Example 3) A bulk fill is required to provide a base for an ARDEX K15 smoothing coat under plank flooring, where the newly laid concrete subfloor suffered severe rain damage and has been heavily scabbled down ~25mm to remove unsound material. The nominal depth of the fill is 20mm, and the smoothing coat is around 3-4mm. The slab area to be filled is 40m^2. ARDEX K15 and aggregate or ARDEX K900BF would be suitable bulk fills based on cost vs drying times.

a) The first choice is ARDEX K15 with added aggregate

Area = 40m^2, thickness = 20mm and the CF = 20

20kg bags of ARDEX K15 = 40 x 20 ÷ 20 = *40 bags*

A 20kg bag of ARDEX K15 requires a 25kg bag of aggregate, so the total number of bags of material is 40 bags of ARDEX K15 and 45 bags of aggregate.

b) The second choice is ARDEX K900BF, which has a CF of 10.4

20kg bags of ARDEX K900BF = 40 x 20 ÷ 10.4 = *77 bags*

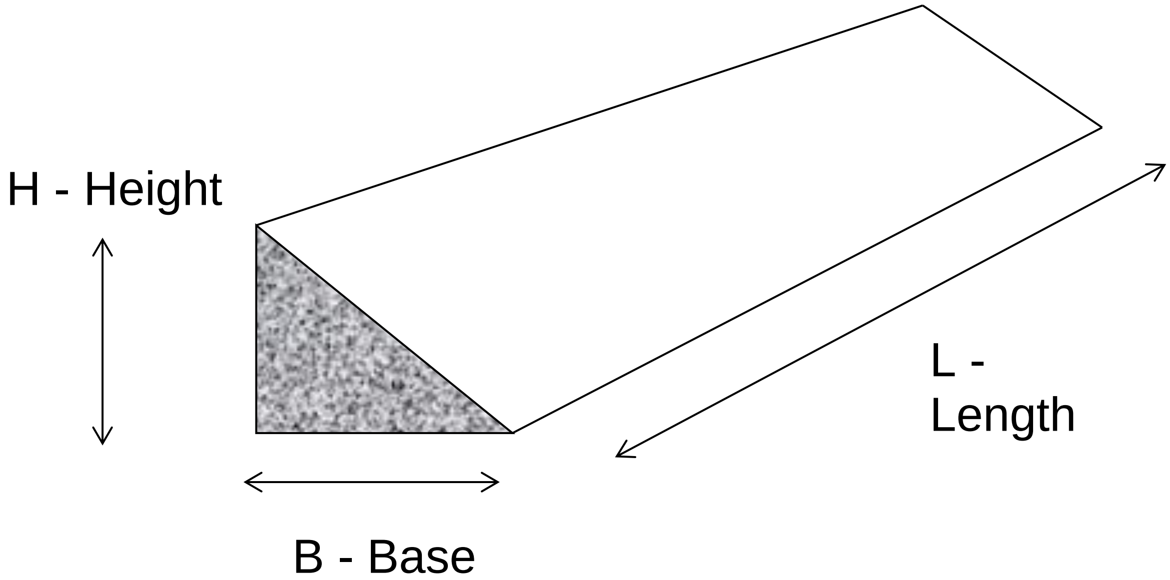
The final 3-4mm ARDEX K15 smoothing coat is applied as a flood coat and would require approximately 12 bags of material, the calculation being the same as in Case 1.

CASE 3 – RAMPING

The amount of material required for ramps is based on the volume of a triangular prism. Ramps are commonly made from products with less flow or patch mortars such as ARDEX A45 (aggregates can also be used). This application can also use bulk fill mixes such as ARDEX K15 or ARDEX Arditex with aggregate, ARDEX K900BF, or ARDEX LQ92 with coarse sand. ARDEX LQ92 is suitable for external ramps under tiles, and the bulk fill mixes are more appropriate for larger jobs. The following table gives mix volumes and CF values for ramping materials.

Product	Mixed Volume in Bucket	Coverage Factor CF
ARDEX LQ92 mixed with 6.5 litres of 0.3mm sand	Approximately 15.5 litres	15.5
ARDEX A45	Approximately 12 litres	12
ARDEX K15, or ARDEX Arditex mixed with 2-5mm aggregate	Approximately 18 or 20 litres	18 or 20
ARDEX K900BF	Approximately 10.4 litres	10.4

The calculation for the volume of a triangular prism is shown in the following figure -



The volume is (0.5 x Base) x Height x Length or (0.5 x B) x H x L

Example 4) A nursing home requires a ramp to be installed from one room to another with a 15-mm difference in height. The ramp must be at a low angle, allowing elderly residents to move with their

walking aids. It is going to be 1000m long and 800mm wide. How much ARDEX A45 would be required to build this ramp?
The number of bags of ARDEX A45 is calculated by using the following method –

The ramp volume is (0.5 x B) x H x L where B = 1000m or 1m, L = 800mm or 0.8m and H = 15mm.

The CF for ARDEX A45 is 12.

20kg bags of ARDEX A45 required = (0.5 x 1) x 15 x 0.8 ÷ 12 = *0.5 bags*

Example 5) A timber floored area requires a fall of 30mm over a base of 2m and a width of 3m before laying carpet. How much ARDEX Arditex NA would be required for this application?
Since ARDEX Arditex NA has a recommended single application thickness of approximately 12mm, an aggregate mix will be required. The surface could then be topped by 3mm of ARDEX Arditex NA (reducing the fill height to 27mm) or a thick skim coat of Feather Finish if the bulk-filled ARDEX Arditex NA is ground or cut back. Remember that the aggregate reduces the ability of the smoothing cement to feather out, so this estimate is approximate only.
The quantity of ARDEX Arditex NA required is estimated as follows –

The ramp volume is (0.5 x B) x H x L, where B = 2m, L = 3m, and H = 30mm. The CF for bulk-filled ARDEX Arditex NA is 20.

20kg bags of ARDEX Arditex NA required = (0.5 x 2) x 3 x 30 ÷ 20 = 4*.5 bags*

For each 20kg bag of ARDEX Arditex NA, one 4.8kg bottle of ARDEX Arditex NA Latex and one 25kg bag of 2-5mm aggregate will be required.

CASE 4: ESTIMATING THE AMOUNT OF MATERIAL REQUIRED FOR A SHOWER AREA

Shower areas with falls create a more complex problem again because of their shape, which is usually a hyperbolic dish. Assuming that the shower base is square, the volume of material can be roughly determined by subtracting an area equivalent to that of an upside-down rectangular pyramid from a simple rectangular prism, which would be formed if the shower base were filled with screed to the fall depth.

In this case, the maximum fall height is considered equivalent to the height of the inverted pyramid. The initial calculation is a simple one for a square prism; this would form the base area.

Volume is Length x Width x Height. (LxW = b^2 below)

The amount of material that would need to be removed to model the sloped floor is derived from a rectangular pyramid with sides having the dimensions of the wall enclosure, and the height is the fall from the drainage hole to the top of the screen.

The volume of a rectangular pyramid is
$V = 1/3b^2 \times h$

It should be noted that the volume calculated for the screed is an approximation and is affected by the degree of curvature in the sloping base sides and whether the drainage hole is centrally located.

Example 6) A screed is required to fill a shower base 1m x 1m square with a fall of 15mm from the edges to the centrally located floor waste.
The initial rectangular prism is calculated as follows

V= L x W x H

Where L = 1m

W = 1m

H = 15mm or 0.015m (1mm = 1/1000m)

$\therefore$V = 1x1x0.015

V = 0.015m^3 or 15 litres (1m^3 = 1000 litres)

The inverted pyramidal volume to be removed is calculated as follows

V = 1/3b^2 x h

Where b = 1m

h = 15mm or 0.015m

$\therefore$V = 1/3 x 12 x 0.015

V = 0.005m^3 or 5 litres

The required screed volume is, therefore, the volume of the rectangular prism minus the pyramid

V prism = 15 litres

V pyramid = 5 litres

$\therefore$Screed = 15 - 5 litres = 10 litres

With our standard screed mortar of CF 12, we would need around 1x 20 kg bag because 10÷12 = 0.83.

CASE 5 – SKIM COATING

The simplest process in floor finishing is a basic skim coating to smooth out the surface before laying a resilient floor. Depending on the surface roughness, a skim coat need only be 0.25-0.5mm thick.

Product	Mixed Volume in Bucket/Bag	Coverage Factor CF
ARDEX Feather Finish	4.5kg ≅ 9 litres	9
	10kg ≅ 20 litres	20

Example 7) A 100m^2 concrete floor requires a smoothing skim coat of Feather Finish approximately 0.5mm thick prior to laying vinyl flooring. How many bags would be required?

The quantity required is calculate by Area x Thickness ÷ CF

Area = 100m^2, thickness = 0.5mm and CF for Feather Finish = 9

4.5kg bags of Feather Finish required = 100 x 0.5 ÷ 9 = *6 bags*

CASE 6 – SPECIALISED PRODUCTS

There are two specialised products which may be required for particular jobs.

ARDEX A38

The first material is ARDEX 38, a rapid-cure screed. A mix contains 20kg of binder powder and 100kg of specially graded sand gravel. The CF for ARDEX A38 is 60 on a 120kg batch (wet specific gravity ~2).

ARDEX A48

The second material is ARDEX 38, a rapid-cure screed. A mix contains 20kg of binder powder and specially graded sand gravel within one bag. The CF for AQRDEX A48 is 10 on a 20kg batch (wet specific gravity ~2).

CASE 7 – PRIMING

The coverage rates for ARDEX primers are affected by surface roughness and porosity. The table below gives the *approximate* coverage rates for ARDEX primers.

Primer	Supplied Volumes	Surface	Dilution	Mixed Quantity in litres/kg	Coverage/litre	Coverage
ARDEX P51	5kg ~ 5 litres	Porous concrete	2:1	15 litres	~3.3m^2	~50m^2
		Highly porous concrete	3:1	20 litres	~5m^2	~100m^2
		Over 1:3	1:1	10 litres	~1.5m^2	~15m^2
ARDEX P9	1litre and 5 litres	Timber Some types of concrete	1:1	2 litres 10 litres	6-10m^2	6-10m^2 24-40m^2

Primer	Supplied Volumes	Surface	Dilution	Mixed Quantity in litres/kg	Coverage/ litre	Coverage
ARDEX P82 Ultraprime	1kg A +1kg B	Timber, Ceramic tiles, Moisture Barrier	Nil	2kg ~ 2 litres	~5-10m^2 (Nominally 7.5m^2/litre)	10-20m^2
	4kg A + 4kg B			8kg ~ 8 litres		40-80m^2

Primer	Supplied Volumes	Surface	Dilution	Mixed Quantity in litres/kg	Coverage/ litre	Coverage

ARDEX WPM300 Hydrepoxy with broadcast sand	4 or 10kg A 4 or 10 kg B	Concrete	Nil	4 or 20 litres >700gms sand per sqm	$3m^2$ (per coat)	12 or $60m^2$
ARDEX WPM368	20kg / 15 litres	Concrete	Nil	NA	$3m^2$ (per coat)	$22m^2$ (2 coats)

Example 8) A $200m^2$ porous concrete floor area must be primed with ARDEX P51 before laying ARDEX K12 levelling cement. The surface has been lightly diamond ground. How much primer is required? ARDEX P51 is diluted 1:2 with water for porous concrete, and the coverage is $3.3m^2$/litre or $50m^2$ per 5kg bottle.

Bottles of P51 required = Area ÷ Coverage = 200 ÷ 50 = *4 bottles*
This is diluted with 40 litres of clean water.

Alternatively - $200m^2$ ÷ $3.3m^2$/litre = 60 litres of diluted P51 which at 1: dilution equals 60 litres ÷ 3 = 20 litres or 4 x 5kg bottles.

Example 9) A floor has been coated with ARDEX Moisture Barrier before laying of Ardex K15 levelling cement. The primer required is Ardex P82 and the area of the floor is $55m^2$. How much P82 is required?

Kg/Litres of mixed P82 required = Area ÷ Coverage = 55 ÷ 7.5 = *7.3 litres or 1 x 8kg kit comprising 4kg of Part A and 4 kg of Part B.*

WASTAGE

It is always a good idea to account for material wastage, which is bound to occur on a job site. A reasonable figure to allow for is 10%, but it may be below 5%. To account for wastage, the final estimated figure has a percentage added.

For example, a job requires 250 bags of Ardex K15. Allowing 10% wastage, how much is required?
250 bags x 10% = 250 x 10 ÷ 100 = 25 bags.

Experience of installations and product usage will allow installers to tailor their estimate of wastages better.

CONCLUSIONS

Determining the coverage of floor levelers is not difficult. It basically requires working out the volume of the area to be topped. Once this volume is known, the coverage factors for each product can be applied.

Primer coverage is simply working out the area to be primed and then applying the coverages for each type of primer. Remember that primer coverage is affected by surface roughness and porosity, and the more porous the surface or extreme the surface texture, the greater the primer usage will be.

REASON FOR REVISION-ISSUER
Change of slogan and address
DOCUMENT REVIEW REQUIRED
36 months or whenever third-party suppliers change their recommendations.