



## TECHNICAL BULLETIN – TB028

# ARDEX FLC PRODUCTS FOR USE IN HIGH-STRESS ENVIRONMENTS

15 October 2025

### INTRODUCTION & SCOPE

Floors can be subjected to all types of stresses, so levelling compounds and floor coverings must be capable of withstanding these conditions.

Supermarkets, hospitals, and other institutional buildings, storage areas, etc., are subjected to forklifts and pallet jacks with heavy loads, which often require high-quality flooring. The resultant damage to floor coverings may be scratches, pits, indentations (vinyl tiles and sheets), roller marks, cracking or breakage of the material.

Vibration can be a consideration in buildings adjacent to major highways and railways or with moving machinery, so a polymeric additive is recommended.

Systems based on ARDEX K15 or ARDEX K12 mixed with ARDEX E25 Resilient Emulsion or products mixed only with water, such as ARDEX K80 or ARDEX K55, produce a levelling compound with improved flexural and ball impact hardness suitable for installations with high point loadings, heavy rolling loads, and subfloors subjected to vibrations.

The fast-track system enables floor coverings to be installed in 1-2 hours for ARDEX K55 and 16 – 18 hours for ARDEX K15, ARDEX K12 or ARDEX K80, with forklift traffic possible after 48 hours.

ARDEX K80 is used at a minimum thickness of 5-6mm and has a slightly rougher surface, which is not ideal for vinyl.

### SURFACE PREPARATION

Concrete floors must be structurally sound, with all previous coatings removed. They must be clean and free of oil, grease, wax, latex compounds, curing compounds, efflorescence, laitance, dust, and all foreign matter. The surface must be returned to an open porous matrix of concrete. Professional cleaning by mechanical means is advised.

Cleaning and preparation methods in accordance with AS1884-2021 must be performed before the installation of any underlayment.

ARDEX Technical Bulletin TB041 provides details on surface preparation. Its recommendations are based on the “International Concrete Repair Institute” Guideline No. 310.2R-2013 and include shot blasting, scarifying, or diamond grinding to provide a surface profile between CSP3 and CSP7.



## PRIMING

Prime porous concrete with diluted ARDEX P51 Primer. Mix ARDEX P51 1:2 with water and apply evenly with a soft push broom. Do not leave any bare spots and remove all puddles and excess primer. Allow to dry to a clear, thin film (min. 3 hours max. 24 hours).

The levelling compound should not be applied until the primer is dry.

Other surfaces may require ARDEX P9 primer, ARDEX WPM300 moisture barrier with broadcast sand. Contact Technical Services for more information on these primers and their uses with specific products.

## MIX DESIGNS

ARDEX K15 or ARDEX K12 should be mixed with ARDEX E25 Resilient Emulsion in the following ratios:

### ARDEX K15

4 litres of water plus 1.6 litres ARDEX E25  
per 20 kg ARDEX K15.

### ARDEX K12

4 litres of water plus 1.6 litres ARDEX E25  
per 20 kg ARDEX K15.

ARDEX K55 and ARDEX K80 are mixed in the following manner:

### ARDEX K55

5.25 litres of water  
per 20 kg ARDEX K55.

### ARDEX K80

4 litres of water  
per 20 kg ARDEX K80.

### Drying time (23°C)

The product can be walked on in 60 minutes for ARDEX K55 or 2 to 3 hours for ARDEX K15, ARDEX K12 or ARDEX K80. They can accept floor coverings after 60-90 minutes for ARDEX K55, 16 – 18 hours for ARDEX K15, ARDEX K12 or ARDEX K80

### Ready to receive traffic

ARDEX K55, ARDEX K80, ARDEX K15 and ARDEX K12 mixed with ARDEX E25 with applied floor coverings are intended for moderate forklift traffic, hand pallet trucks and similar uses. The products can accept these traffic conditions after approximately 48 hours at 23°C.



## FLOORING ADHESIVES

ARDEX recommends the use of ARDEX AF 145 or AF180 for;

- sheet vinyl
- up to 4 mm rubber, using a V2 trowel (AF145) or up to 9mm rubber with AF180
- Regupol 4515

Note: ARDEX AF145 is also suitable for vertical applications.

ARDEX recommends the use of ARDEX AF 175 or AF180 for;

- LVT
- Up to 4mm rubber tile (AF175)

ARDEX recommends the use of ARDEX AF 271 for;

- Vinyl-backed carpet tile
- Non-vinyl-backed carpet tile
- Vinyl composite tile
- For other carpet tile backing, consult ARDEX New Zealand.

High-quality tools, trims, profiles and profile accessories can be found at **DTA New Zealand**  
<https://www.dta.co.nz>.

## DISCUSSION OF ROLLING WHEEL TYPES

The types of wheels used influence the point loading applied.

The static or dead load is the force (expressed in Newtons) exerted by an object resting on the floor. The force is the weight of the object multiplied by the force exerted due to gravity ( $F = MA$ ). Dynamic loads are moving loads, whilst rolling loads are a combination of dead load and shear forces. Objects that exert rolling loads produce a point dead load from the contact and sideways shear load from the roller wheel.

Steel formed wheels are inelastic and transfer all the dead and dynamic loads to the floor, plastic wheels are less severe but still rigid, whereas rubber wheels have some give and absorb some of the stress.

The wider and longer the wheel contact patch, the lower the applied pressure the flooring system must withstand. The dead and rolling loads applied to a floor are divided between all the wheels in contact, albeit there may be some asymmetry where heavy weights are placed over some wheels and not evenly across the entire load.

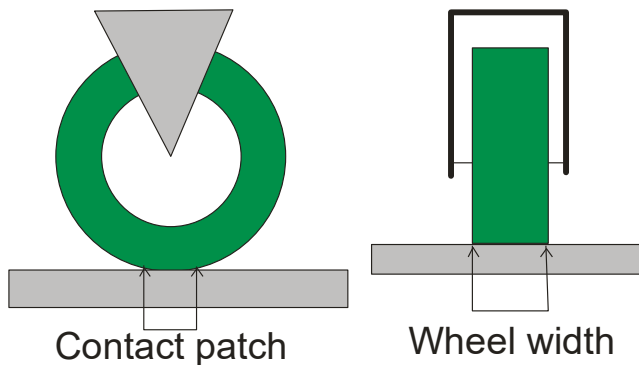
The usual questions we receive about pressure involve roller wheels, usually pallet jacks. A roller wheel's contact area is related to width and contact angles. Wheel diameter is not important in the general sense other than larger diameter wheels have larger contact widths.

Steel and hard plastic wheels

- transfer the entire load more effectively to the floor
- have less friction and less shearing
- are more likely to groove the surface

### Rubber wheels

- deform and take up some of the load in deformation
- increase the contact patch area
- May increase shearing.



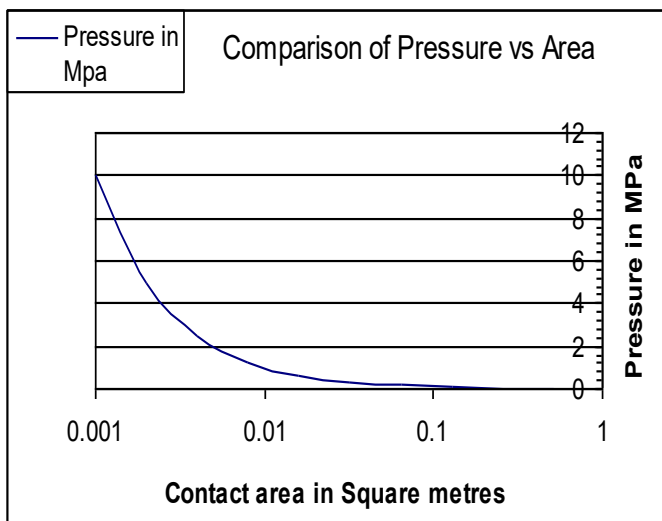
These schematics show the features of a roller which need to be known.

Area for load calculation is-

Wheel width x Contact patch with both dimensions in metres

Product Datasheets provide compressive strength results expressed in MPa (or N/mm<sup>2</sup>), that is in pressure units. Pressure is defined as force applied over a unit area where force is in Newtons and area is in square metres - 1MPa ~ 140psi ~ 10 atmospheres.

- A typical situation is where a piece of equipment sits on a floor
  - For example what is the exerted pressure for a set load?
    - A 4000kg piece of equipment has 4 legs with contact surface area 50 x 50mm per leg. How much pressure is exerted on each leg?
- There are three bits to problem..
1. What is the force exerted?
    - a) Force is weight x gravity
    - b)  $4000 \times 10 = 40\text{kN}$
  2. What is the surface area?
    - c)  $50\text{mm} = 0.05\text{m}$  so area for each leg is
    - d)  $0.05 \times 0.05 = 0.0025\text{m}^2$
  3. The force is divided over the four legs
    - e)  $40\text{kN} \div 4 = 10\text{kN}$  per leg
  4. Pressure per leg is force / area
    - f)  $10000 \div 0.0025 = 4 \times 10^6 \text{ Pa}$  or 4 MPa



- Reference to the graph shows how for a 10kN load as contact area decreases the pressure increases rapidly
- This means that small contact areas will develop high point loads



## PRECAUTIONS

The above calculations are only a discussion point. Equipment feet are generally not smooth, and trolley wheels rarely roll straight and correctly.

The above systems are not recommended for floors in sports areas or gymnasiums subjected to high impact loadings such as the dropping of weights. An impact load is significantly higher in applied force than a standing weight because the change in velocity of the dropped weight.

Always install test areas to determine the product's suitability for the intended purpose.

### **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**

NZ version

### **REVIEW REQUIRED**

36 Months from date of issue

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