

### INTRODUCTION

The aim of this Reference Guide is to offer useful guidelines to help correctly prepare substrates for the successful subsequent application of resilient floor coverings.

Fundamentally, an installed system is only as strong as the strength of the weakest bond between two successive materials. The correct preparation of the substrate is the first major step in achieving a successful adhesion.

The correct method of preparing the substrate will differ depending on the substrate material, characteristics and conditions. As each project differs in exposure/condition, specific recommendations may vary from the information contained below. However, MAPEI confirms that the recommendations detailed in this document are suitable for their defined applications.

### JOB SITE EXAMINATION

Before work commences, examine the areas to be covered and report any deficiency or adverse condition in writing to the general contractor, owner, developer or architect. Do not proceed with the work until surfaces and conditions comply with the requirements indicated in the manufacturer's instructions, applicable industry standards, federal, state, provincial, local regulations and good work practices. By beginning work, the applicator/user acknowledges that the conditions are acceptable for installation.

### SURFACE PREPARATION

#### 1. General

1.1 All substrates must be structurally sound, dry, solid and stable. The substrate should be clean and free of dust, dirt, oil, grease, paint, curing compounds, concrete sealers, loosely bonded toppings, old adhesive residues (unless otherwise recommended by MAPEI) and any other substance that may prevent or reduce adhesion. If the substrate contains these substances, they must be removed via mechanical means. AS 1884:2012 defines mechanical means as:

*“Mechanical means” is the process of surface preparation performed by application of applied physical forces to the substrate surfaces to remove contamination. For the purposes of installations on concrete this refers to the use of diamond grinders, scarifiers and captive shot blasters. For smaller areas this can include chippers and nail gun type scabblers. When installations are to be performed on timber floors ‘mechanical means’ refers to floor sanders. Regardless of the means used, the final process in a mechanical preparation is vacuum cleaning.”*

1.1.1 **Warning:** Do not install over vinyl asbestos tile (VAT) or any flooring, substrate or substance that may contain asbestos. Do not install over any adhesives, including asphalt cutback residue that may have

been used to install flooring containing asbestos. Do not sand or remove any existing resilient floors or cutback adhesive that contains asbestos fibers or crystalline silica. For removal instructions, refer to the Resilient Floor Covering Institute's Recommended Work Practices. Follow all local, state and federal regulations and industry standards when mechanical removal is required.

1.1.2 **Warning:** Certain paints may contain lead. Exposure to excessive amounts of lead dust presents a health hazard. Refer to applicable federal, state and local laws regarding appropriate methods for identifying lead-based paint and removing such paint.

1.2 All substrates must be smooth and flat to the tolerances outlined in the appropriate Australian Codes and Standards and flooring manufacturer's guidelines.

1.3 Imperfections and irregularities (holes, voids, bumps, cracks, depressions, etc.) must be corrected, and surfaces must be smooth and even before the application of MAPEI adhesives.

1.4 It is recommended to turn off all air-conditioners, forced ventilation and floor-heating systems 48 hours before installation, and turn them back on no sooner than 72 hours after work completion. Protect work against drafts during installation and again for at least 72 hours after completion to prevent damage to substrates, installation products and flooring materials.

1.4.1 When necessary, build a temporary shelter and use indirect auxiliary heaters to maintain an adequate temperature level in the working environment. Exhaust temporary heaters to the building's exterior to prevent health hazards and damage to workers from toxic fumes and emanations.

1.5 Always refer to the flooring and/or wall-base manufacturer's guidelines regarding site conditions, surface preparation requirements, acceptable underlayment's and proper conditioning of flooring material. In addition, refer to the correlating industry standard(s) such as AS 1884:2012 (Floor coverings—Resilient sheet and tiles—Installation practices), AS/NZS 2455.1:2007 (Textile floor coverings—Installation practice—Part 1: General), AS/NZS 2455.2:2007 (Textile floor coverings—Installation practice—Part 2: Carpet Tiles).

1.6 All recommendations and guarantees regarding any material used as a substrate for flooring are the sole responsibility of the manufacturer of said underlayment material. Suitability of any substrate to receive adhesive and flooring products should always be tested in an inconspicuous location before complete installation.



## 2. Screeds

- 2.1 Sand-cement and proprietary screeds must be in accordance with AS 1884:2012 and must achieve a minimum compressive strength of 20 MPa and tensile strength of 1.5 MPa.
- 2.2 Screed subfloors without polymer additives shall not be used for the installation of resilient flooring and their preparation products.
- 2.3 Screed subfloors shall be sufficiently dry with a relative humidity within the requirements of the relevant Australian Codes and Standards and the floor covering manufacturer's instructions.

## 3. Concrete

- 3.1 As any other substrate described in this guide, concrete floors must be structurally sound, dry, solid and stable. The current standard AS 1884:2012 makes the following comment about concrete.

*"(c) Surface new concrete subfloors on which floor preparation material, and the resilient covering are to be laid without underlay, shall be finish to a smooth and porous surface. Burnished concrete surfaces, waterproofing additives, curing compound and other types of treatments or coating will adversely affect the adhesion of the floor preparation and resilient covering to subfloor and shall be removed by mechanical treatments methods. Concrete surface physical defects which also compromise adhesion of flooring systems, such as laitance or rain damage to the concrete surface, shall also to be removed by mechanical preparation methods. All loose materials or dust present either as building debris, or residue from mechanical preparation shall be removed by vacuum cleaning. Surface cosmetic defects such as score marks, grooves or depression shall also be removed either by mechanical preparation methods or the installation of an underlayment."*

- 3.2 Due to the varying characteristics and finishes of concrete substrates, the applicable following recommendations should be followed.

### 3.2.1 New Concrete

- 3.2.1.1 Drying and shrinkage cracks occur as the concrete cures. Installing products over "green" concrete will result in cracks telegraphing through the underlayment as they develop in the concrete, to avoid this wait 28 days and repair cracks as per Section 3.2.2. All concrete substrates must be fully cured (minimum 28 days).

### 3.2.2 Cracked, Damaged, Spalling

- 3.2.2.1 Unsuitable surfaces, must remove all material down to solid clean substrate. Use hammer to sound out weak, hollow and unsound material. Where cracks are located in the concrete substrate, they should be opened via mechanical means (grinder), then cleaned and vacuumed. These cracks must then be filled using MAPEI **Eporip** or **Epojet**, in accordance with the relevant Technical Data Sheet, and the surface broadcast with sand to aid the bonding of subsequent products.

### 3.2.3 Release Agents, Curing and Sealing Compounds

- 3.2.3.1 These products/treatments act as bond breakers, inhibiting the ability of subsequent products to bond to the substrates and also affect curing times. All release agents, curing and sealing compounds, irrespective of the type (including dissipating curing compounds) must be completely mechanically removed.

### 3.2.4 Steel-trowelled, Highly Burnished, High Strength

- 3.2.4.1 These represent highly dense, non-porous surfaces with no surface profile, ie smooth. Adhesion without mechanical preparation is questionable. Recommended to remove glazed / dense surface to make rough and open porous matrix of concrete. Due to the varying porosity of concrete substrates, steel-trowelled, highly burnished, high strength surfaces in particular, a bond test should be performed to ensure there is an adequate bond. If an adequate bond is not achieved, the concrete floor should be scarified.

### 3.2.5 Contaminated Surface

- 3.2.5.1 This section refers to concrete substrates that are covered/coated in dirt, oil, grease, paint, laitance, old adhesive residue and any other substance that may prevent or reduce adhesion. Material used to remove oils and grease may also prevent adhesion, therefore recommended to additionally complete mechanical removed down to solid sound uncontaminated concrete.

- 3.3 All concrete substrates must be free of any hydrostatic and/or moisture problems. The relative humidity of a concrete slab must not exceed 75% in accordance with ASTM F2170 and or 70% in accordance with ASTM F2420, refer to AS 1884:2012. It also must not exceed the flooring or adhesive manufacturer's written limitations for suitable emission



rates. Refer to Technical Data Sheets at [www.mapei.com.au](http://www.mapei.com.au) for specific limits on MAPEI adhesives, membranes and surface-preparation products.

- 3.3.1 Where the relative humidity of a concrete slab exceeds the values listed above, but is less than 85%, consult MAPEI's Technical Services Department for further recommendations.
- 3.3.2 Where the relative humidity of a concrete slab exceeds 85%, use a MAPEI moisture-vapour-emission reduction product. Consult MAPEI's Technical Services Department for product recommendations. Refer to Technical Data Sheets for instructions.
- 3.3.3 Do not install where a moisture problem is expected.
- 3.5 For proper bonding of concrete overlays and coatings, it's important to give surface the correct concrete surface profile, or CSP. To help contractors make this assessment, the International Concrete Repair Institute has developed benchmark guidelines for CSP, a measure of the average distance from the peaks of the surface to the valleys. They range from CSP 1 (nearly flat) to CSP 9 (very rough). As a general rule, the thicker the overlay or topping, the more aggressive the profile needs to be. A skim coat requires a light CSP of 2 to 4. For thicker self-levelling or polymer overlays, Mapei recommends a range from CSP 3 to 7. Achieving surface profiles in the higher ranges often requires roughening by shot blasting or scarifying.



#### 4. Timber, Plywood and Particleboard

- 4.1 All wood underlays must be recommended and guaranteed by either the wood underlayment manufacturer or the floor-covering manufacturer and comply with the applicable Australian Codes and Standards, refer to AS1884:2012.

- 4.2 Stripwood subfloors, presswood, chipboard, flakeboard and similar types of dimensionally unstable materials are not acceptable substrates for the installation of MAPEI's surface preparation products and adhesives. Underlayment-grade particleboard and oriented strand board (OSB) may be used under specific conditions when specified by MAPEI and when approved by the floor-covering manufacturer. Follow the floorcovering manufacturer's recommendations regarding acceptable wood underlays.
- 4.3 Plywood surfaces must be installed with the smooth side facing up.
- 4.4 Do not install over a subfloor that is in direct contact with the ground. The requirements of the relevant local regulatory authority for underfloor clearance and provision of ventilators shall be followed. In the absence of such requirements, precautions outlined in AS1884:2012 must be observed.
- 4.5 Under no circumstances should any floor material be laid over wood underlayment or subfloors that are under conditions that might cause buckling or rotting of wood. Always replace wood subfloors or underlays that have been subject to water damage.
- 4.6 In any floor-covering installation, the timber, plywood or particleboard subfloor should be dry and the moisture content should not exceed the moisture content recommended by the wood and/or flooring manufacturer, refer to AS/NZS1080.1 for timber and AS/NZS 2098.1 for plywood.

#### 5. Gypsum Substrates

- 5.1 All gypsum substrates must be dry, clean, flat and properly primed with the manufacturer's recommended primer or MAPEI's **Primer G, Eco Prim T, Eco Prim T Plus or Eco Prim Grip**, refer to relevant MAPEI Technical Data Sheet.

5.1.1 **Note:** Un-primed gypsum substrates may leave a dusty residue on the surface and have a slightly higher porosity factor that could affect the adhesive's open time and weaken the adhesive bond. A complete -installation failure may occur if the substrate is not proper primed before the installation.

- 5.2 Allow the applied primer to dry completely before installation of the adhesives, waterproofing.

#### 6. Metal Substrates

- 6.1 Metal may be used under specific conditions: when recommended by MAPEI as a substrate for use with specific MAPEI product, and when approved by the floor/wall-covering manufacturer.
- 6.2 Metal substrates must be rigid, solidly fixed in place, and free of paint, primer, oil, corrosion or other contaminants.



6.3 Mapei recommends using the adhesive **Adesilex G19** and levelling with **Nivorapid** mixed with **Latex Plus** for installations over metal surfaces.

6.4 Consult MAPEI's Technical Services Department for adhesive recommendations over metal. Refer to Technical Data Sheets for further adhesive details.

## 7. Existing Floor Coverings

7.1 Existing non-cushioned sheet vinyl, vinyl composition tile (VCT), ceramic tile and cement terrazzo must be firmly bonded, clean, and free of dust, dirt, oil, grease, paint, wax, sealer, soap and any other substance that may prevent or reduce adhesion.

7.1.1 **Warning:** Do not sand or remove any existing resilient floors or cutback adhesive that contains asbestos fibers or crystalline silica. Follow all local, state and federal regulations and industry standards when mechanical removal is required.

7.2 In cases where the existing floor covering has any type of texture (such as raised patterned residential sheet vinyl and tile/grout lines in ceramic), all indentations must be completely levelled. It is required that the grout lines receive a thorough brush cleaning.

7.3 Non-cushioned sheet vinyl with a vinyl or urethane wear layer must be fully adhered (not perimeter-glued) and limited to one layer only. New vinyl and vinyl with a urethane wear layer must be slightly roughened to dull the finish (60-grit sandpaper is recommended). The wear layer must remain intact, and the underlying sheet-vinyl paper should not become exposed. The area must then be vacuumed, mopped and allowed to dry completely.

7.4 **Warning:** Do not install over vinyl asbestos tile (VAT) or any flooring, substrate or substance that may contain asbestos. Vinyl composition tile (VCT) must be limited to one layer only. A commercial-grade wax stripper must be used to remove any dirt, oil, grease, wax or sealer. The area must be neutralized, rinsed well with clean water and allowed to dry completely.

7.5 Ceramic tile and cement terrazzo must be roughened by sanding or shotblasting. The area must then be vacuumed, mopped and allowed to dry completely prior to the application of the selected primer.

7.6 Existing floor coverings not acceptable for the installation of MAPEI surface preparation products and adhesives include

the following: self-stick tile, glass tile, linoleum, laminate, fiberglass, poured epoxy floors and other dimensionally unstable and/or nonporous materials.

7.7 Consult the floor-covering manufacturer for approval before installation over existing flooring.

7.8 Consult MAPEI's Technical Services Department for recommendations for levellers and/or adhesives over existing flooring.

7.9 Refer to Technical Data Sheets for details on MAPEI product suitability over existing floor covering.

## 8. Cutback Adhesive Residues

8.1 Laying over cutback adhesive is often the easier and faster way for floor covering installation. However, this procedure is risky and not recommended because you are relying on the standards of the previous preparation, the bond and the cohesive strength of the old adhesive increasing the possibility of failure.

8.1.1 **Warning:** Do not install over any adhesives, including asphalt cutback residue that may contain asbestos or may have been used to install flooring containing asbestos.

8.1.2 **Warning:** Do not sand or remove any existing resilient floors or cutback adhesive that contains asbestos fibres or crystalline silica. Follow all local, state and federal regulations and industry standards when mechanical removal is required.

8.2 Do not use chemical solvents to remove cutback residue.

8.3 Consult MAPEI's Technical Services Department for adhesive recommendations over cutback adhesive residue.

8.4 Refer to Technical Data Sheets for details on MAPEI product suitability over properly prepared asphalt cutback residues

## 9. Test Area

This guide is to be used as general reference for preparing substrates to receive Mapei products. We tried to present a large variety of substrate condition however we cannot represent any possible situation that may occur on site.

As such we strongly recommend to complete a test area on site in order to ensure the suitability of the preparation.

