

## Adhesion and moisture tests - Guidance

### INTRODUCTION.

It is highly important that all substrates and surfaces where a waterproofing system component is being applied must be suitable to allow the waterproofing application to provide a satisfactory level of adhesion.

This guidance document provides some guidance in methods of undertaking both moisture and adhesion tests to a substrate. For further guidance please refer back to the manufacturer's specification document, technical datasheets.

### ADHESION AND MOISTURE READING TEST.

The whole area, where the waterproofing is to be applied is to be prepared in accordance with the specification. Substrates will vary in terms of the specific requirements to test the area for:

- Adhesion test.
- Moisture content

All substrates must be clean, dry and free from grease, curing compounds, laitance, dirt, silt and other contaminants. Any irregularities and loose material or other condition that may be detrimental to the adhesion to the substrate must be removed prior to undertaking any test area.

### ADHESION TESTS

An adhesion test must be undertaken to determine substrate compatibility. A key attribute for waterproofing is the bond achieved between the substrate and first waterproofing layer.

IKO recommends test procedures outlined below be performed on roofs prior to the application of any IKO waterproofing system. Running these tests will help ensure that the waterproofing will adhere properly once installed

Substrates need to be free of moisture, debris and contamination before the adhesion tests. To test for cleanliness, press a 100mm long piece of 50mm tape to the cleaned and dried roof using hand pressure. Then, peel the tape off the roof. If it comes off easily, and or is laden with dirt, degraded roofing material and other particulates, the roof is not cleaned satisfactorily. Re-clean and dry the roof and repeat this test. This test should be conducted in several areas around the roof, especially in ponded or other dirty areas

### ADHESION TESTS.

Undertake a number of adhesion tests to satisfy and determine if adhesion can be obtained to the prepared substrate.

The test area should be a minimum 300mm x 300mm square area. The test area must be allowed to fully cure, prior to the adhesion test being carried out.

The adhesion tests must be undertaken at locations over the whole roof area at max 50m<sup>2</sup> centres and must be undertaken at all locations where the substrate is different or has undertaken any form of mechanical abrasion and preparation, this is to ensure all areas are suitable for the application.

Each area must be suitably prepared and clean and dry before any adhesion test is undertaken. The findings must be recorded by the installing contractor.

Where adhesion is not achieved, IKO must be contacted immediately.



Where undertaking an adhesion test, the pull off should confirm where the mode of failure occurs. I.e. has the primer pulled away from the substrate suggesting an issue with the surface or primer used?



Adhesion tests on new concrete are critical, removal of surface laitance is highly critical to ensure suitable adhesion can be achieved.

Scarifying the concrete surface to remove the laitance is required before a test area can be undertaken.

Area should be primed with the specified primer, allowed to dry thoroughly prior to the application of the specified first waterproofing layer. Allow to cool and cure before undertaking the pull off test.



*Embed a strip of polyester fabric into the roof coating and allow to cure completely*



*Pull free end. Should the coating be freely removed from the substrate then a primer should be considered and re tested.*



*A good adhesion will require some amount of force to remove the test sample.*

After curing (upto 7 days for liquids), the strip is connected to a simple luggage weighing scale.

The carrier strip should then be pulled at 90° to the substrate, noting the force reading on the scale. It is important to note where the strip becomes detached known as the "mode of failure". This might be at the substrate which may delaminate. Providing the force is greater than 3.5Kg then this is adequate for the minimum recommended adhesion required.

Another method more frequently used is by using a sharp knife, cut through to the substrate making two cuts in the shape of a "V". The point of the V should then be peeled back. If no coating is removed or split cohesively, leaving a layer of coating on the surface, then the adhesion could be considered suitable.



*Adhesion test*

## MOISTURE READING OF SUBSTRATES:

Concrete, screeds, masonry and brickwork surfaces should be smooth and flat. Any raised areas or protrusions must be mechanically removed and areas filled to a flush finish as required. New concrete surfaces must be cured for a minimum of 28 days prior to application of the waterproofing first layer.

The substrate shall have a maximum moisture content of 6% or 75% relative humidity, and be prepared as required to provide adhesion of the system to the substrate with a minimum bond strength of 116 psi (0.8 N/mm<sup>2</sup>). Determinations of adhesion, bond strength and moisture content shall be performed periodically by the contractor throughout the course of work at locations over the whole area to be waterproofed.

Moisture readings can be undertaken by using a **Tramex CME4** concrete moisture meter



Moisture content reading should be within 6%

## Disclaimer

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