

# Technical Bulletin – May 2015

## **Moisture content of masonry and its effect on the application of coatings.**

Water is vital for all life on earth, but it can also create significant problems when it builds up within building structures.

Corrosion, moulds and algal growth, spalling of stone and brickwork, efflorescence together with failure of paint and coating finishes can often be attributed to high moisture levels.

When considering preparation and coating of buildings, the potential for high moisture levels within the structure of the building needs to be considered.

Moisture in external masonry can originate from a number of sources:-

- Water contained in new construction/repairs eg cement render and mortar
- Rising damp – generally only within a height of 1.5 metres from ground level
- Building faults – including faulty rainwater goods, leaking flashings, ingress through parapet walls
- Damp penetration through retaining walls
- Preparation work, especially power washing
- Rain ingress – water penetration through damaged/friable render, failed pointing and previous poor coatings
- Moisture vapour from within the building resulting from poor ventilation

Whilst all Andura's masonry coatings are permeable to moisture vapour, excessive moisture levels within the background masonry especially at the time of application, can result in premature failure and the occurrence of fungal growth under previous paint layers remaining on the surface.

In addition to these issues, where new render or mortar has been applied, high moisture levels can transport highly alkaline salts which can reduce adhesion and attack some coatings leading to eventual failure.

**British Standard BS6150 (Painting of buildings. Code of Practice) makes the following statement:-**

*Excessive moisture affects the adhesion of most types of paints, causes blistering and flaking and encourages the growth of moulds. Additionally, in combination with alkalis and salts contained in many wet materials of construction, it is the cause of other difficulties in relation to painting, including efflorescence, alkaline attack and staining. Until the contained moisture has substantially dried out, therefore, there is some degree of risk in applying most types of coatings. Drying out can take a long time even in favourable conditions, a rough estimate being one week of good drying conditions for each 5 mm thickness of wet construction (typically 4 to 6 weeks).*

Typically, following preparation of a property which has previously been in a poor state of repair, moisture in the fabric of the building will be a result of earlier rain penetration, power washing and newly applied renders or pointing.

It is difficult to assess the level of moisture within background masonry without some form of measurement.

In BS6150 the term 'dry' when applied to masonry is quoted as being less than 75% relative humidity when measured in equilibrium with the surface.

Moisture meters tend not to give an accurate result because of the presence of electrolytes (salts in solution) within renders and masonry.

The quoted method of measurement is to use a hygrometer enclosed in a sealed box attached to the surface being measured. After a period of time the measurement within the box will indicate the level of moisture within the surface.

A simple indication would be to tape an area of clear polythene onto the surface and check for heavy condensation after 12 – 24 hours which would point to high moisture levels.

**In practical terms a typical guide would be to allow 14 – 18 days drying for new render on a substantially dry background and 4 – 6 weeks before coating a property where the fabric of the building is saturated with water.**

**Obviously, in periods of cold damp weather, drying times will be extended whereas warm, dry weather will speed up drying.**

(Note: Cement based materials require moisture for the cement to hydrate and

set. If newly applied renders and mortars dry out too quickly, eg in hot direct sunlight, the surface may become weak and friable)

Where new render or pointing has been applied, and Classic 21 is the finishing material, it is important that Classic Primer is applied as an alkali resisting barrier coat. We strongly recommend that two coats are applied onto new cement based surfaces ensuring that the quoted spreading rate is achieved.

BS6150 again makes reference to the performance of such primers in relation to high moisture levels:-

*Alkali-resisting primers provide a measure of protection against alkaline attack and should always be used beneath oil-based systems applied to substrates in which alkalis might be present. However, it cannot be too strongly emphasized that the essential function of primers is to diminish the risk of failure on substrates that are substantially dry, and they do not obviate the need to allow time for this condition to be reached.*

