

Except in the cases of mastic asphalt the substrate should always be checked for moisture content prior to any attempt to lay Kaindl Laminate and Real Wood Flooring. Not only in the case of new buildings but also where structural alterations have been carried out should the moisture content of the screed be determined.

An inadequately dry substrate leads to deformation in the Kaindl flooring across the longitudinal axis as well as a pronounced swelling and associated dimensional distortions with the result that the expansion joint to the walls becomes too small, the flooring extends to the wall and thrusts up a dome at some point.

The **CM measurement** has been relied upon as a suitable criterion for many years already. Furthermore, this method of measuring is required by the relevant norms and standards.

**Measurements based on the principle of electrical resistance** entail the disadvantage that they can be influenced by additives present in the screed with the result that they may indicate that the screed is dry when in fact excessive moisture is present. In the case of measurements based on the principle of electrical resistance most measuring instruments express readings in terms of percentage by weight.

Note: Percentage by weight is not the same as CM-per cent:

Cement Screed	2.0 CM-% = ca. 3.4 percentage by weight
Anhydrous Gypsum Screed	0.3 CM-% = ca. 0.3 percentage by weight

A further advantage of CM measurements as opposed to an electrical measuring method is to be seen in the fact that the opening up with a chisel also enables determination of the screed thickness and the screed construction (composite layer, screed on interface, screed on insulating layer) at the same time. In many cases a standard thickness of 40 mm is given for the screed but quite often the screed is in reality considerably thicker with the result that longer drying times must also be allowed for. You can also determine whether an intermediate layer is present under the screed to keep moisture away from the floor surface.

The contractor should essentially check the substrate **well in advance** using suitable measuring methods in order to determine whether it is sufficiently dry for him to proceed with the laying of the laminate flooring. Well in advance is understood here to mean at least 8–14 days in advance. In the event of a screed not being sufficiently dry this fact should be reported **in writing** to the client.

The conscientious contractor can protect his own interests in this manner and by means of the more simple electrical measuring method can first determine the wettest spot within the surface area awaiting laminate flooring, and then at this point he can take a CM measurement.

We recommend taking 1–2 measurements for every 100 m<sup>2</sup>. Otherwise you should take a measurement at least for each storey.

A record should be kept of the moisture tests carried out (see attached).

The reading of the manometer pressure should be confirmed by the builder, the architect, or by any tradesman who is present.

On no account may the following values be exceeded:

Cement Screed < 2.0 CM %

Anhydrous Gypsum Screed < 0.3 CM %

Magnesium Oxide Screed < 3.0 CM %

The contractor responsible for the floor laying work is only required to check the substrate for moisture content down to the covered insulating layer in the case of floating screeds. In the case of screeds on separating layers this check must extend to the depth of the separating layer. In the case of composite layers only the screed down to the top zone of the supporting carrier (concrete floor) need be checked. However, since in the case of a composite layer moisture from the concrete surface can reach the screed unhindered – particularly if there is a vapour pressure gradient, the result of such a moisture measurement gives no guarantee that the floor covering will not be damaged by the action of moisture.

**Note on risks and precautions**

Pressure is built up in the CM pressure bottle as a result of the formation of minor volumes of acetylene. After having taken a measurement you should turn this bottle away from your face and open it so that the gas can slowly escape.

**The escaping gas is flammable.**

- a) Do not open the CM pressure bottle in enclosed spaces
- b) Do not smoke and do not work in the vicinity of a naked flame or electrical installations.
- c) In the event of fire, extinguish with sand, not water.

**The Measuring Principle:**

Calcium carbide reacts with water (residual moisture from the screed sample) to form acetylene (flammable, gaseous) and calcium hydroxide (alkaline, solid). All this takes place inside a pressure bottle. The pressure which is built up as a result of the liberation of acetylene can be read off the manometer. This pressure is dependent upon the residual moisture in the screed sample and the weight of the sample.

The moisture content can either be read directly from the manometer in CM % or converted into CM % with the aid of a conversion table.

The accuracy of the CM measurement depends on the following factors:

### 1. Sample Taking

Sample taking should essentially be made in the lower third of the screed. Screeds dry relatively quickly at the surface but in the lower regions the drying process takes over proportionally longer.

### 2. Speed of Sample Taking

The act of sampling and also that of crushing the screed sample must be done quickly as moisture may escape if this is carried out too slowly.

Samples with coarse grain size should be rejected.

### 3. Sample Size

The weight of the sample to be tested will depend on the suspected moisture content of the screed and the screed type.

### 4. Room Climate

The room climate and the temperature of the test equipment will influence the measurement. Accordingly the CM instrument should always be adjusted to room temperature before taking a measurement.

## CM Measuring Procedure

Take the sample from a suitable site and then prepare it as per Points 1+2 (note that in the case of heated floor constructions samples should only be taken from the points indicated by either the builder or the heating and ventilating engineer).

First charge the CM pressure bottle with the weighed sample material and the 4 steel balls. Then, holding the CM pressure bottle in a slanting position, carefully allow the calcium carbide ampoule to slide in. Now close the cap on the CM pressure bottle and shake it vigorously to reduce the calcium carbide ampoule. For the next six minutes carry out rotary movements with the pressure bottle in order to mix the sample material with the calcium carbide. After a further interval of 15 minutes a constant pressure can be read off the manometer scale.

## Suppliers of CM measuring instruments:

Roll GmbH  
Albstraße 12  
D-7280 Sonnenbühl  
Tel.: 0049/7128/92800  
Fax: 0049/7128/92800-11  
[www.roll-gmbh.de](http://www.roll-gmbh.de)

Janser GmbH  
Böblingerstraße 91  
D-71139 Ehningen  
Tel.: 0049/7034/1270  
Fax: 0049/7034/8838  
[www.janser.com](http://www.janser.com)