MEASURING OF MOISTURE AND AMBIENT CONDITIONS

SIKA SERVICES AG
MEASURING OF SUBSTRATE MOISTURE
CM-UNIT & SIKA TRAMEX

- **CM-Equipment (Calcium Carbide-Method)**

- A concrete sample from the substrate has to be hackled to small as possible pieces.

- Than the probe, steel balls and a calcium carbide cartridge has to be filled in a steel bottle.

- The bottle has to be closed. Than the bottle must be shaken for some minutes.

- The carbide reacts with the moisture and the result is a rising pressure.

- With the result of the pressure (measured with a barometer) it's possible to calculate the moisture content.
Sika Tramex is for measuring the moisture content instantly on concrete floors without the need to damage the surface.

Sika Tramex is an electronic moisture-meter operating on the principle of impedance measurement.

The electrodes, which are mounted on the base, transmit low-frequency signals to the concrete floor.

In operation it compares the charge in impedance caused by the presence of dampness and show the moisture contend in % by weight on the display.
MEASURING OF SUBSTRATE MOISTURE
THE PLASTIC SHEET METHOD ACCORDING TO ASTM D4263

- Place a piece of plastic foil (approx. 1 m²) on the floor.
- Fix it with tape
- Wait 24 h
- Check whether there is condensation underneath.
- If yes, is this an indication that the concrete contains moisture.
FURTHER METHODS

- **ASTM F 1869 Calcium Chloride Test**  
  [https://www.youtube.com/watch?v=C3GmF8mCJxc](https://www.youtube.com/watch?v=C3GmF8mCJxc)

- **ASTM F 2170**  
  This method combines a factory-calibrated sensor that remains in the concrete and a removable, reusable reader

- **Oven Dry Method**  
  - Remove a piece of concrete  
  - Weigh the concrete sample  
  - Store it for 24 h in an oven at +70°C  
  - Weigh the concrete sample again  
  - The difference is the absolute content of moisture
MEASURING OF AMBIENT CONDITIONS
HYGROTHERMOMETER & DATA LOGGER

- Relative humidity,
- Ambient temperature
- Substrate temperature

- Because of the possibility of continuous data recording over long periods, the use of a data logger is highly recommended.
- There are devices available which are able to measure temperature, air humidity and the dew point.
MEASURING OF AMBIENT CONDITIONS
HYGROTHERMOMETER & DATA LOGGER

°C

%rh

0.0 1.0 2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0

20:45:00 20:50:00 20:55:00 21:00:00 21:05:00 21:10:00

From: - 03 April 2010 20:45:00   To: - 03 April 2010 21:14:20

Celsius  dew point  Humidity

BUILDING TRUST
MEASURING OF AMBIENT CONDITIONS
DEW POINT

„The dew point, is the point at which a surface becomes wet with condensation“.
### Dew Point Table

<table>
<thead>
<tr>
<th>Air Temp °C</th>
<th>% Relative Humidity</th>
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<tr>
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</table>

**Example:**
At a air temperature of +18°C and a relative air humidity of 65% is the dew point at +12°C.
At substrate temperatures of less then +12°C + 3°C K = +15°C, it is not permitted to apply coating systems.
Dew Point:
at a rel. air humidity of 60% and an air temperature of +20°C
the dew point is at +12°C:  \[+ 3°C \, K = +15°C\]