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INVESTIGATION REPORT GIB 2022

Short title:	Volume resistance - floor coatings
Project / Order:	Carrying out measurements to determine the volume resistance of self-leveling floor coating
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1 Task / procedure

The task was to measure of the volume resistance from self-leveling floor coating according to "Method A" of the standard DIN EN 1081: 1998.

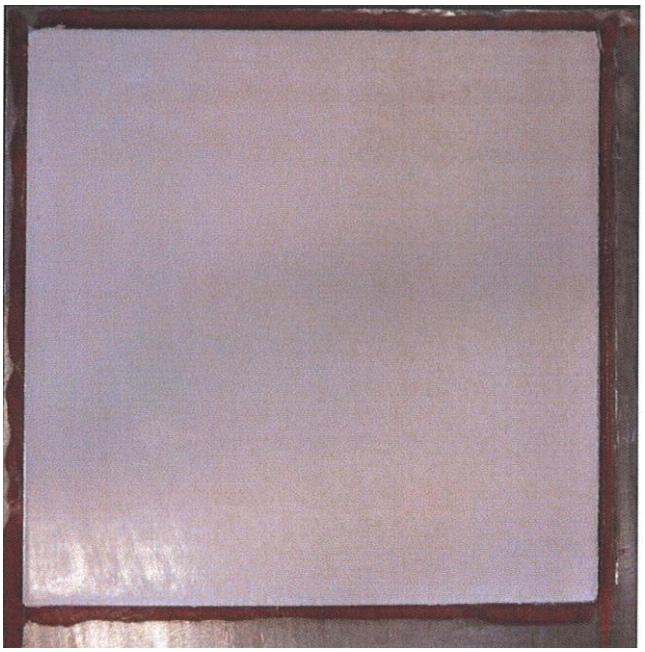
The customer has made and delivered samples of the following floor coatings:

Table 1: Samples to be examined

Item	Sample
01	ECO RAPID SL with ECO HYDRO SIL
02	ECO RAPID SL with ECO TOP COAT Mat
03	ECO RESIST with ECO HYDRO SIL
04	ECO RESIST with ECO TOP COAT Mat
05	ECO MORTAR with ECO HYDRO SIL
06	ECO MORTAR with ECO TOP COAT Mat

Deviating from the standard, the floor coatings were applied as areas of 400 x 400 mm by the customer on steel plates of size 450 x 500 mm (example see Figure 1).

Figure 1: Test specimen



The test specimens were stored exposed to a standard climate of 20 ± 2 ° c / 65 ± 5 % rel. humidity. To determine the volume resistance, the current flow through the specimen with an applied DC voltage of 100 V was measured.

The required volume resistance results of the applied voltage and the measured electric current using the following calculation:

$$R = \frac{U}{I}$$

R: Volume resistance in Ohm [Ω]
U: Voltage in Volt
I: Electric current in A

The measurements were carried out in accordance with DIN EN 1081 with a 3-foot electrode at three different positions of the floor coating. The 3-foot electrode was loaded with a weight of 300 N. The measurement values were determined 15 seconds after the measuring voltage was switched on and the load started.

Climatic conditions during measurements:

Temperature: 24 °C
Rel. Humidity: 45 %

2 Technique of measurement

For the measurement of the volume resistance two precision laboratory measuring devices, which were used for the current and voltage measurements.

Both devices have a digital display. The measuring instruments are retraceably calibrated.

Figure 2 shows the measuring chain used for the correct measurement.

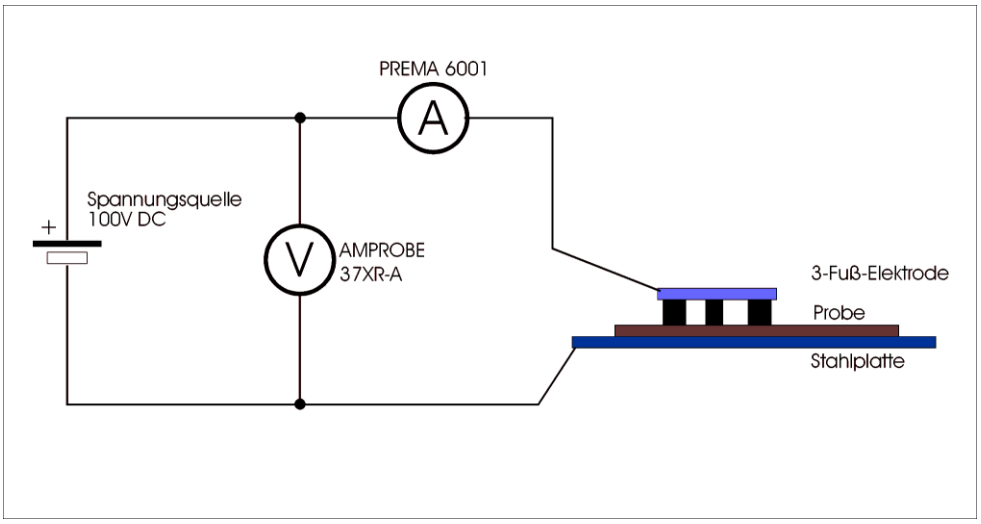


Figure 2: Display of the used measuring chain

The measuring chain was checked before and after the measurements of the volume resistance of the floor coatings by means of control measurements on 1 MΩ and 10 MΩ resistors.

3 Presentation of the measurement results

The table shows the measured results and the resulting volume resistances (1 MΩ = 10^6 Ω).

Table 2: Measurement results

Sample		Measurement 1 Electricity in mA	Measurement 2 Electricity in mA	Measurement 3 Electricity in mA	Mean Electricity in mA	conductivity in M Ω
ECO RAPID SL with	ECO HYDRO SIL	0,258000	0,244000	0,341000	0,2810 00	0,3559
ECO RAPID SL with	ECO TOP COAT Mat	0,002690	0,001 710	0,001920	0,002107	47,4684
ECO RESIST with	ECO HYDRO SIL	4,390000	3,710000	4,140000	4,080000	0,0245
ECO RESIST with	ECO TOP COAT Mat	0,006340	0,005650	0,004910	0,005633	17,7515
ECO MORTAR with	ECO HYDRO SIL	3,320000	2,690000	2,710000	2,906667	0,0344
ECO MORTAR with	ECO TOP COAT Mat	0,001480	0,001160	0,001010	0,001217	82,1918

4 Evaluation of the measurement

According to the health and safety rules for work BGR 132, a resistance to earth < 100 MΩ is required.

DIN EN 61 340-5-1 requires a resistance to earth of <1000 MΩ. The tested material and coating agent combinations meet the requirements of both guidelines.