

Determination of the inherent moisture of the source material for the production of RSS Flüssigboden

In order to comply exactly with the formula for RSS Flüssigboden specified by the Forschungsinstitut für Flüssigboden GmbH, it is necessary to determine the inherent moisture of the treated soil. The total water content per 1 m³ RSS Flüssigboden is decisive for all named properties, such as stiffening behaviour, strength, etc. The determination of the water content of the treated soil is to be carried out in accordance with DIN 18121. The determination and recording of the soil moisture content may only be carried out by trained personnel, as these are authorized according to the quality management of the Forschungsinstitut für Flüssigboden GmbH. Since many different influences can decisively alter the final properties of the RSS Flüssigboden, the inherent moisture content of treated soil has to be determined once a day before the start of the first production of RSS Flüssigboden, and additionally when the climatic conditions change (after heavy rain, longer sunshine), when the soil moisture apparently changes, or when the grain size distribution changes. The form sheet for recording the inherent moisture is handed over by the mix design adjuster or mix design developer.

Material selection: In order to be able to carry out a precise determination of the inherent moisture of treated soil, it is necessary that the soil sample is representative of the soil to be processed. The soil sample may not be taken from the top layer of the heap. Due to surface water or dehydration of the heap, a determination of the inherent moisture on material samples taken from the surface would falsify the result.

Determination of the required soil quantity: Depending on the soil group (A, B, C), different masses of the sample to be dried must be selected. The present soil group has to be indicated on the delivered liquid soil mix design.

- A – coarse-grained soil: for gravelly sand 500g; for gravel 1000g
- B – mixed soil 200 g
- C – fine-grained soil 100g

To determine the inherent moisture, first the mass of the wet sample has to be determined, then the mass of this sample in the dried state is required. For the latter, the sample must be dried to constant mass in the microwave oven, wherein the output of the microwave oven must be set to 700 watts. Caution! The vessel used for this can become very hot. The calculation is accompanied by an example with soil group B and a soil quantity of m = 200g.

Calculation of the mass of pore water mW

$$mW = m - md$$

$$mW = 200g - 180g = 20g$$

m mass of wet sample
mW mass of pore water
md mass of dry sample

Calculation of the inherent moisture w of the treated soil

$$w = mW/md \times 100$$

$$w = 20g/180g \times 100 = 11\%$$

w inherent moisture in %



Work equipment: 700 watt microwave oven, microwave suitable tray, scales (accuracy 1 gram), protocol Inherent Moisture



RSS Flüssigboden® meets the requirements of RAL-GZ 507

FiFB Forschungsinstitut für Flüssigboden GmbH
Wurzner Straße 139
D-04318 Leipzig

Tel +49(0)341-24469-21
Fax +49(0)3423-72424-74
E-Mail j.detjens@fi-fb.de
Internet www.fi-fb.de