

## Procedure sample collection for mix design development

### General

To develop a mix design, it is necessary to take representative samples of the source material. If possible, the samples should be taken during the geotechnical investigations. The applicable rules such as standards and guidelines for geotechnical investigations for construction purposes as well as environmentally relevant investigations must be adhered to. This also applies if the samples are taken after the geotechnical investigations. On the mix design sheets for the preparation of RSS liquid soil, the source material is described by means of a photograph and written description according to DIN 18196. Furthermore, tolerance ranges for the source material are usually specified. This information is not yet sufficient, though, for a complete definition of the source material. Therefore, it is specified that the mix design is valid only for the source material used for the development of the mix design and source materials that correspond to this. If it is not possible to implement the mix design within the specified tolerances during construction, the sample collection was not precise enough or the homogenization is insufficient. The producer is responsible for the homogenization; the builder is responsible for the representativeness of the source material.



From the heterogeneous to the homogeneous source material (bottom right)

### typical sample amounts for the mix design development:

Information per mix design, already representative material, screened -

Supply line construction:  
 district heating: 50 litres  
 heat conductivity: 20 litres  
 heat dissipation: 50 litres  
 - sewer construction: 10 litres  
 - immobilization: on request  
 - foundation slab: 20 litres  
 - drilled piles: 20 litres  
 In the case of aggravating conditions such as temperature dependence, organics, ammonia, or nitrate in the soil ... higher quantities can be required.

Recommended tools for sample division:

- sample splitter
- dividing cross
- auger
- quartering

Recommended procedure:

- Mix on a worktop with a shovel, pile up into cones and quarter with a dividing cross until the final quantity is reached.

### Useful sources:

DIN 4020, LAGA PN 98, DIN 18300, DIN EN 1997-2, DIN EN ISO 14688, Soil scientific mapping instructions

### Technology dependence

Depending on the technology defined in the technical planning, mix designs for different single or mixed soils are needed. Thus, the liquid soil can be made from a single homogeneous mixed pulp, from several smaller mixed pulps or from non-mixed source materials. Accordingly, the number of mix designs and the required sample collection and sample quantity must be adjusted.

### DIN 4020

Often the DIN 4020 "Geotechnical investigations for construction purposes" including supplementary sheets is also relevant for liquid soil construction sites. Here we cannot discuss the DIN in detail. Since, depending on the geotechnical category and requirements, for example in line structures of category 2 or 3, already outcrops or drilled holes (here every 20-200m) are required for geotechnical assessment, it makes sense to take the samples required for the development of the mix design at the same time and to store them for that purpose. Due to the unpredictable soil diversity, the geotechnical expert or geotechnical technical planner should independently determine the reasonable sampling points. The sample quantities vary depending on requirements and numbers of mix designs.



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