



Mix Designs

Quality assurance

Tests, Analyses

Training

Various services

**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

General services

With us as developers of the method, you can control liquid soil. Different source soils, demanding applications, different end properties can be mastered with liquid soil. Whether mix design development, quality assurance, or testing – our high-performance team provides all necessary services around the RSS® Flüssigboden method. We also offer training courses and construction site coaching at the highest level. Our referees are experts with many years of experience in handling liquid soil.

Mix Designs

Our mix designs for RSS® Flüssigboden are the basis for the production of high quality liquid soils. Mix design types are available for the following applications:

- Mix designs for sewer construction
- Standard mix designs
- for pumpable liquid soil
- Mix designs for district heating pipes
- for protection against root penetration
- Mix designs for heat dissipation
- etc.

In addition, we develop mix designs that can be adjusted to the needs of your construction site in three property groups.

Quality Assurance

There is no RSS® Flüssigboden without quality assurance. Only by adhering to the quality assurance, the production of high-quality RSS® Flüssigboden is permanently quality-assured and therefore free of damages. We offer you the following:

- quality assurance plans
- inspections
- self-monitorings
- external monitorings

Tests, Analyses

- unconfined compressive strength
- heat conductivity
- sheath friction
- moisture content
- ignition loss
- grain density
- sieve and slurry analysis
- Proctor tests
- consistency borders
- frame shear tests
- permeability tests
- water absorbency Enslin/Neff
- etc...

Field Tests

- knock-in cylinder
- vane shear apparatus
- penetrometer
- dynamic plate-loading test device

Training/lectures

Our experienced referees will gladly show you the possibilities of the liquid soil method. Our experience is your strength.

- Technical lectures
- seminars
- building site coaching
- university lectures
- presentations

Modelling

Modelling of groundwater situations and comparison of the conventional forms of groundwater lowering with the possibilities of the liquid soil method. Cost comparisons and support for the planning of such projects for various applications.



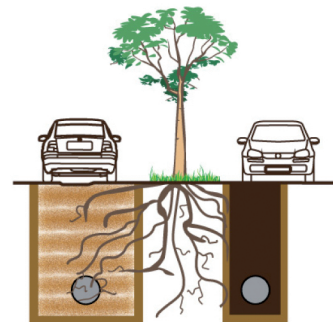
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RSS® Flüssigboden Mix Designs

The basis for the production of RSS® Flüssigboden (liquid soil) is the application of a valid mix design. From 31 December 2012 on, the sole mix design developers for RSS® Flüssigboden are the Forschungsinstitut für Flüssigboden GmbH and the LOGIC Logistic Engineering GmbH.

The prices for mix designs can vary greatly due to special requirements. For example, complex tests may be required for load-bearing capacity, water permeability, cohesion, grain density, grain size, state limits, Proctor density. For this reason, minimum prices are indicated for mix designs.



Article number	Article description	Price
100000	Mix design sewer construction (basic mix design)	from 1092,00 €
100060	Mix design district heating pipes	from 2050,06 €
100061	Mix design sewer construction (pumpable)	from 1240,06 €
100062	Mix design protection against root penetration	from 2050,06 €
100063	Mix design thermally stabilizing	from 3250,00 €
100000	Mix design various locations	from 1092,00 €



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RSS® Flüssigboden Quality Assurance/Monitoring

The quality assurance is conducted with the goal to guarantee a flawless production of RSS® Flüssigboden. The producer, who is monitored by a testing laboratory with expertise in the field of liquid soil and authorized by the RAL (German Institute for Quality Assurance and Labelling), must verify the suitability of the intended construction materials and construction material mixes for the intended use according to the project-specific requirements and the named conditions. The verification shall be furnished amongst others by test results of a testing laboratory approved for the respective construction material mixes, authorized by the RAL Gütegemeinschaft Flüssigboden e. V., and qualified in the specialist field and the system. The backfill material RSS® Flüssigboden is subject to self- and external monitoring according to the specifications of RAL-GZ 507, the factory standard, or the requirements of the quality assurance plan.

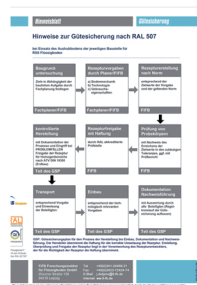
The quality assurance plan is designed to ensure the quality of the liquid soil for the respective construction project. It generally defines the requirements similar to a bill of quantities (BOQ):

- self-monitoring
- inspection
- external monitoring

Usually, the quality assurance plan is prepared according to the requirements of the Quality and Test Specifications of the RAL quality mark 507, the requirements of the client as well as external planners/technical planners and/or external supervisors. The quality assurance plan is not a fixed structure. It continues to be updated. In particular, the quality assurance commissioners of the participating construction companies are requested to submit additions and proposals for updating in order to optimise the quality of the quality assurance plan.



Article number	Article description	Prices
300201	Quality Assurance Plan	from 1200,00 €
300202	Quality Assurance Plan (short)	from 199,00 €
300003	Inspection (km and special tests extra)	from 1540,00 €
400000	RAL external monitoring (RAL is client)	on request
300001	self- monitoring cert. clients (km and special tests extra)	from 350,43 €
300000	self- monitoring not cert. clients (km and special tests extra)	from 680,00 €



RSS® Flüssigboden Tests, Analyses

Our high-performance testing laboratory, which regularly carries out tests on RSS® Flüssigboden, guarantees the use of quality-controlled additives. We only use Compound types with suitable and tested properties. In addition to high quality testing, our focus is on mix design development, consulting and product development. We also offer supervision services in the area of RSS® Flüssigboden at the highest level. As a test laboratory for liquid soil, we offer you sample collection, testing, coaching, monitoring, advice, and mix design development for RSS® Flüssigboden. In addition to the tests according to RAL-GZ 507, we also carry out product tests within the framework of in-house production controls. If tests are required which cannot be carried out in our company, we commission selected, high-quality external companies.



Article number	Article description	Price
100506	Unconfined compressive strength	from 37,36 €
100509	settlement	from 44,66 €
100500	k-value by triaxial cell	from 189,13 €
100517	Push-through test	from 210,00 €
100531	heat conductivity	from 808,50 €
100516	Shear test	from 415,00 €
100600	Modified Proctor test	from 463,39 €
100504	Simple Proctor test	from 366,06 €
100503	Grain density pycnometer	from 49,35 €
100016	soil physical feasibility of mix design	from 719,60 €
900503	Test source material according to LAGA	from 857,01 €
900504	Test liquid soil according to BBodSchV	from 986,75 €
100513	Dry sieving according to DIN 18123	from 61,43 €
100502	Sieve and slurry analysis	from 149,73 €
100515	State limits (flow or roll out limit)	from 72,45 €
100510	EVx value FiFB test, not conforming to DIN	from 24,57 €
200500	Test report	from 110,25 €

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Lecturer activity/trainings/coaching

The Forschungsinstitut für Flüssigboden GmbH offers well-founded and practical training in the field of liquid soil, which is sought in companies and planning offices, the construction industry, environmental technology and the public sector.

Technical lectures, training seminars and other presentations

- Presentation – RSS® Flüssigboden as a method
- Presentation – RSS® Flüssigboden possible applications
- Quality assurance for the liquid soil method
- Expertise and training
- RAL Quality Mark 507 – Liquid soil and its use for economical and damage-free construction with liquid soil
- etc...



Lectures at universities

- Basics of the liquid soil method
- technical subjects
- etc...

Coaching

- Application of the liquid soil method
- Production of RSS® Flüssigboden
- etc...

Article number	Article description	Price
600000	1 day building site coaching, national excl. km	from 995,00 €
600001	1 day building site coaching, international	from 2050,06 €
600010	1 day training seminar, national, min. 10 PT	from 499 €/TN
600011	1 h technical lecture, national, min. 10 PT	from 75 €/TN
600012	1 h technical lecture special subject, national, min. 10 participants	from 100 €/TN
600013	Other	on request

PT: participant

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Various services

Article number	Article description	Price
100518	Dynamic load plate test (EVd)	from 73,50 €
100520	EVd in test series 3-5 tests	from 31,50 €
100511	Pocket vane shear test	from 12,29 €
100521	Pocket penetration test	from 12,29 €
100514	Single test water absorption capacity	from 38,50 €
100002	Express surcharge mix design after 2-7 days	from 100 %
100001	Express surcharge m. d. after 7-14 days	from 50 %
500000	Travel costs	1,13 €/km
500300	Shipping of test specimens, max. 5 kg	from 34,51 €
500301	Shipping of test specimens, 5-16 kg	from 53,53 €
200010	Creation of test specimens RSS® FB	from 20,00 €
200013	Storage of test specimens RSS® FB	from 3.94 €/m
200014	Processing of test specimens RSS® FB	from 2,63 €
500400	Sale liquid soil construction kit	from 157,50 €
500402	Refill-set liquid soil construction kit	from 38,36 €
400500	Hourly rate senior geologist / geographer	from 126,00 €
400501	Hourly rate geologist / geographer	from 84,00 €
400502	Hourly rate laboratory technician	from 73,50 €
	Groundwater modelling	on request
	R&D	on request



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General Terms and Conditions

For services of the Forschungsinstitut für Flüssigboden GmbH,
private company,
(hereinafter referred to as FiFB)

1. TERMS AND CONDITIONS OF THE ORDER

- 1.1 Orders shall be placed with FiFB in writing or verbally or by request for a test, eg by making an appointment, handing over a sample. The FiFB assumes in principle that the the order placing party is authorised to place an order.
- 1.2 FiFB shall only accept orders in accordance with these General Terms and Conditions and assumes that they are known. Deviations require a written agreement. The FiFB only accepts orders that are compatible with its impartiality, independence, and integrity. The FiFB does not represent any interests. The FiFB only executes orders if the test is clearly defined, e.g. by a normative set of rules. If a normative set of rules cannot be used, an appropriate procedure must be defined and documented together with the client.
- 1.3 The FiFB shall be entitled to request an extension of the order if the scope of the order is insufficient to complete the order. If the requested extension of the order is rejected by the client, the examination shall be deemed incomplete and shall be referred to as such.
- 1.4 The FiFB reserves the right to reject orders even without giving reasons.
- 1.5 The client undertakes to inform the FiFB of all facts that are necessary for proper sample collection, testing, and/or evaluation, and which affect the rights of third parties as well as security.
- 1.6 The client undertakes to obtain official permits or authorisations or consents of third parties required for the performance of the services at his own expense, to take precautions to protect third-party rights and to ensure safety during field tests and, if necessary, to remedy any damage caused by the tests, eg backfilling of boreholes, at his own expense.
- 1.7 In routine cases, the test goods shall become the property of FiFB upon acceptance of the order, which shall ensure that they are properly stored and disposed of. If the storage and/or disposal causes unreasonably high costs, the acceptance of the order is bound to the assumption of the costs of storage and/or disposal by the contractor. If the client wishes to retain ownership of the test goods, they must inform the FiFB in writing before placing the order and collect the goods at their own expense after the test.
- 1.8 Product inspections (third-party inspections) shall only be carried out after the conclusion of a separate inspection contract.
- 1.9 The FiFB shall carry out the tests to the best of its knowledge and belief. It is only responsible for the commissioned performance and not, eg, for defects which are due to incomplete or incorrect information provided by the client. The FiFB shall only be liable for damage caused by intent or gross negligence. Further liability is excluded. The client shall keep the FiFB indemnified against any claims for compensation by third parties in the event of unrestricted further use of test results. If the client is held liable by third parties for defective condition of a good which has been tested by FiFB on single samples, they cannot assert any recourse claims against FiFB, in particular not with the reason that the test was faulty, defective or not carried out. If third parties assert such claims against FiFB, the client is obliged to indemnify FiFB. The client's claims against FiFB due to non-fulfilment of the order shall become time-barred after six months. The limitation period shall begin on the date of receipt of a written copy or other written notification from FiFB to the client.

2. TERMS AND CONDITIONS for THE ORDER FULFILMENT

- 2.1 Orders shall be processed in accordance with the provisions of the FiFB.
- 2.2 Order processing is the sole responsibility of FiFB.
- 2.3 Results of order processing shall be issued in writing in the form of test reports with or without target/actual comparison (evaluation) or expert opinions. Written copies shall be sent exclusively to the client of FiFB for the purpose of confidential order processing and unless other provisions provide for an additional distributor.
- 2.4 Mix designs are property of the FiFB. Publications, including partial or partial publications, require the written consent of the FiFB and must be designated as such. The FiFB reserves the right to evaluate test results in compliance with the confidentiality requirement for findings of a general nature. 2.5 The client shall have the right to request access to the corresponding internal records for the purpose of verification and, insofar as this is compatible with the requirement of confidentiality, to request their presence at the test for the purpose of information.

3. CONDITIONS for PAYMENT

- 3.1 The FiFB's services shall be invoiced in accordance with FiFB's current price list. Deviations require a written agreement.
- 3.2 Unless otherwise agreed, invoices are due two weeks after receipt without deduction (discount).
- 3.3 In case of default of payment, reminder charges of 20 € and 8% default interest will be charged.
- 3.4 The place of jurisdiction is Leipzig, Germany.



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