

TECHNOLOGY OFFER

VFTP – VIENNESE FLEXIBILITY TEST PROCEDURE

BACKGROUND

Asphalt facings are commonly used around the globe as a watertight surface sealing system for dams, reservoirs and landfills. These sealing elements have to be watertight and able to absorb strains without suffering from cracking and thus losing their sealing ability. In order to meet the requirements (flexibility, water tightness etc.) a high-quality mix design as well as an appropriate construction process is needed. Before an asphalt sealing element can be constructed a suitability test depending on the requirements related to the project conditions have to be performed for all asphalt concrete components as well for the mixed materials. The VFTP can be used to check the deformation capability and flexibility of the developed site specific asphalt concrete mix on laboratory samples as well on field samples.

TECHNOLOGY

The new developed VFTP enables a quick, direct and accurate test of the asphalt concrete flexibility in various stages (suitability tests, acceptant tests, control tests etc.). Specimens for testing with a dimension of 250x250xh [mm], wherein h describes the thickness of the facing can be produced in laboratory or can be cut out from an existing asphalt facings. The test samples can be installed very quick and easily. In order to simulate the acting water pressure on the facing close to reality, a surface load during the test procedure evenly loads the sample. A special feature is that the load transmission is uniformly despite material deformation, this leads to stress distributions as in the field (see Fig 2). Beneath the sample is an under pressure chamber. If cracks through the specimen occurs as a result of the deformations a pressure equalization between the under pressure beneath the sample and the atmospheric pressure above the sample take place. During a flexibility test the load, the under pressure and the deformation is recorded by sensors and transmitted in real time to a computer. The test results can be clearly displayed and evaluated in a diagram immediately after a test.



Fig 1: VFT rig - main parts

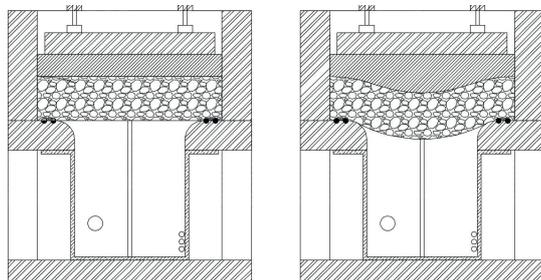


Fig 2: left.) Prepared specimen in test rig, right.) Specimen after testing

ADVANTAGES

- Testing of material characteristics (flexibility and deformation capabilities) in various aging conditions
- Testing of laboratory samples for material optimization in design stage (suitability tests)
- Testing of samples from existing sealing elements (determination of aging condition, quality check etc.)
- Combinable with artificial aging methods (e.g. HMAAT) to provide a forecast of the asphalt concrete flexibility after construction of the sealing element

REFERENCE:
M057/2016

POTENTIAL APPLICATIONS:

- Mix design and material optimization
- Quality control etc.

DEVELOPMENT STATUS:
Working Prototype

KEYWORDS:

Material testing for asphalt in hydraulic engineering, mix design development, quality control

IPR:

Patent AT granted,
DE pending

OPTIONS:

Site specific asphalt mix design development and optimization (TU-Laboratory), license agreement, sale, R&D cooperation

INVENTOR:

Mathias Smesnik

CONTACT:

Angelika Valenta

TU Wien

Vienna, Austria

T: +43.1.58801.41538

angelika.valenta@tuwien.ac.at

www.rt.tuwien.ac.at