SHEAR1

SHEAR1 is a simplified tool for testing hot mix asphalt (HMA) to determine the shear parameters in relation to the permanent deformations of asphalt mixtures in a uniaxial repeated shear test with horizontal deformation limitation. HMA mechanical-physical parameters are derived by evaluation of the measured deformations from loading.

The lack of devices to measure the shear properties of asphalt mixtures in Europe and the attempt to simplify the equipment compared to that used in North American countries, called the Superpave Shear Tester (SST), were motives for development of the SHEAR1. Compared to SST, the SHEAR1 is of significant lower purchase and operational costs, due to its simpler design and its complementary use with Universal Testing Machines (a device eligible for a variety of other laboratory tests). Therefore, it is not a single-purpose device such as SST. The SHEAR1 can be used as well for other types of tests, for instance a Uniaxial Shear Frequency Sweep Test.

In this test, cylindrical test specimens prepared in the laboratory or samples taken from roadway boreholes are subjected to uniaxial repeated shear stress. The repeated shear test determines the shear parameters in relation to the formation of permanent deformations in asphalt mixtures. The tempered cylindrical test specimen with a hole is inserted into a steel socket with an inner flange. A steel insert is then inserted into an opening between two parallel load plates. The entire set is placed on a pedestal and three LVDT probes are installed at an angle of 120°. A stress is then applied to the hemisphere-shaped joint at the center of the steel insert. The steel insert is pushed down through the specimen of the asphalt mixture producing a shear stress and deformation. The steel socket limits the horizontal deformation of the asphalt mixture in the sides which characterizes the influence of the surrounding material.

Note: ATS can supply temperature control chambers and UTMs For Your Application!

Features

- Lower purchase and operational cost than Superpave Shear Tester and Hamburg-Wheel Tracking
- Can be correlated to AASHTO T320-07
- Compatible with servo or electromechanical UTMs
- Multipurpose device – can be utilized for Uniaxial Shear Frequency Sweep
- Shear stress is placed into an application in the direction that matches the stress generated from actual traffic load on pavement; resulting in acceptable test results relating to the shear properties of asphalt mixtures.

Implementations

- Pavement maintenance and quality inspections
- Evaluation of the asphalt mixture resistance to permanent deformations
- Component enhancement and asphalt mixture layout

Product Specifications

Operating Environmental Conditions	-20°C to 70°C; 20% to 80% relative humidity, non-condensing
Altitude Limit	2,000 m
Storage	-25°C to 65°C; 10% to 86% relative humidity
Electrical Power	None
Weight	5 kg
External Dimensions	17 cm W x 20 cm H
Materials	Stainless Steel, Plastic