

PCG 3 - Measurement of aptitude for compaction -



Description 1/2

The design of this machine is the result of 20 years of experience. It ensures very high stiffness of the specimen receptacle and its consistency on 360°, two parameters that contribute to the quality of the trial and its high reproducibility regardless of the characteristics of the materials tested.

The dissociation of the two complementary functions of shear and clamping also gives this machine a great accessibility to all its active components.

The PCG 3 consists of two parts:

- Test module;
- Command - control - acquisition system.

The test module combines the functions of shear and torque:

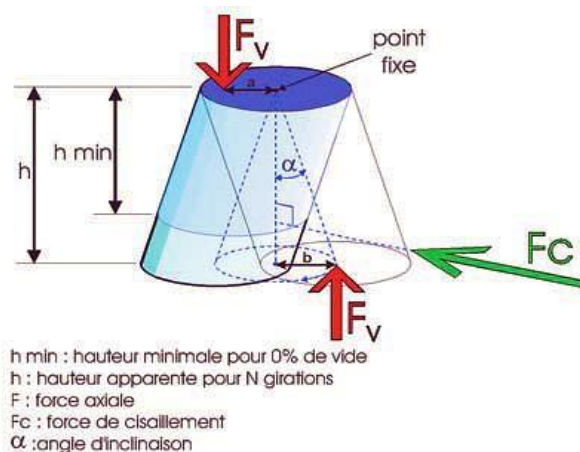
- The shear function is integrated in the upper part of the machine that receives the test specimen. A vernier associated with stops allows instant adjustment of the halfangle at the apex of the gyration cone. The gyration is controlled by an electric motor. A set of four bearings ensures the decoupling between the rotation and gyration functions.

The study of granular bituminous mixes is one of the fundamental components of the study of pavement materials. This study relies on: - A method developed by the IFSTTAR sites, Institute the French of Sciences and Technologies of transport, development and networks, and enriched by more than 20 years of experience; - A machine: the Rotary Shear Press, including the latest generation, the PCG 3, allows to satisfy the various requirements of the European standard NF EN 12697-31 and in particular the study of the compatibility and the manufacture of specimens and the SHRP criteria.

Principle

The effect of compaction is obtained by the action of compression on a measuring cylinder which describes a cone at the summit confused with the center of the upper surface of this specimen and a half angle chosen on the basis of the standard or the desired test. The process shall submit the materials constituting the specimen to the combined effects of a static compression force and mixing by shearing that guides the grains of the mineral skeleton. It allows for high densities with low compaction energies.

Schematic diagram



Description 2/2

- The measurement of the shear stress is possible by means of a compression sensor positioned on the tilt adjustment axis.
- The clamping function forms the lower part of the machine, it essentially consists of a slave electrical actuator whose guidance has been optimized so that it does not affect the selected angle during the test. The coupling between the shear and clamping functions is ensured by a special plate supporting the pad forming the bottom of the test specimen.

Command & control of acquisition system includes:

- A cabinet attached to the machine,
- A PC-compatible computer equipped with PCG 3 software and a printer on a remote console,
- An operating software specific to PCG 3.

Optional Grave Emulsion Kit

Features

Metrological characteristics:

- Tilt angles predetermined to meet French, European and American standards.
- Rotation speed: 30 rpm,
- Molds according to standard: Ø 150 mm (5.9 in) and Ø 100 mm (3.94 in).
- Compression efforts corresponding to an axial stress of 6.105 Pa (0.00089 psi): -for molds Ø 150 mm (5.9 in): 10550 N (237 lbs-f), -for molds Ø 100 mm (5.9 in): 4700 N (105 lbs-f),
- PCG 3 software driving the test according to the selected standard

Technical specifications:

- Dimensions: L = 1.3 m ; D = 0.80 m, L = 4.26 ft ; D = 2.62 ft. h = 1.00 m (3.28 ft) without the stem and the winch h = 1.85 m (6.07 ft) without the stem and the winch
- Weight: 350 kg (1,808 lbs)
- Installed power: 0.75 kW (3.25 HP)
- Power supply: 230 V single phase - 50 Hz (60 Hz on request).

Applications

Expression of results: Depending on the test method chosen (French, European, SHRP),... for a series of specimens subject to the same tests, the microcomputer saves a text file containing:

- The study references,
- The description of the material,

- The test execution conditions,
- The parameters measured during the test for each specimen at pre-chosen gyration numbers. The results are presented in the form of a table and graphs.



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