



CVST®

Compressed Volume Structure Tester

KEY FEATURES

Void volume vs. applied, transmitted & geometric mean pressure measurement

Controlled compression and decompression

Compatible with various porous materials (tested with carbon black, silica, and ceramics)

No wear parts

Minimal maintenance

1" cylinder standard - ½" optional

Residual void volume reflecting COAN structure

Material friction losses reflecting NSA/STSA surface

Dimensions: Floor model on rolls 610 x 480 x 1310 mm (WxDxH)

Weight: 150 kg

VOID VOLUME TESTING – PHYSICAL CHARACTERISATION TO ASTM D7854 AND MUCH MORE!
FOR CARBON BLACK, SILICA OR OTHER GRANULATE, POWDER & POROUS MATERIALS

The CVST by HITEC Luxembourg is a void-volume tester, measuring void volume versus pressure of a sample. Originally developed from the now superseded ASTM standard D6086, it now meets the requirements of the active ASTM D7854 "Standard Test Method for Carbon Black-Void Volume at Mean Pressure".

Extensive research by HITEC Luxembourg and its partners has shown that:

- A very detailed physical characterisation can be achieved, obtaining several independent material properties, beyond the basic results from ASTM D7854
- The test method can be equally applied to various granulate, powder and porous materials (.e.g. carbon black, silica, ceramics, ...)

Beyond the "raw" void volume data, the CVST generates metrics that reflect the sample structure (correlated to ASTM D3493 – COAN) and surface area (correlated to ASTM D6556).

The fact that the CVST does not need any additives or consumables (like the oil in ASTM D2414 and D3493 methods for oil absorption numbers), not only makes void volume testing a very clean method, but it also results in outstanding repeatability.

From a practical point of view, the compression chamber has been designed to facilitate sample handling, while optimizing accuracy.



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SYSTEM CHARACTERISTICS: COMPRESSED VOLUME STRUCTURE TESTER - CVST

MEASURING CAPABILITIES

Raw data:

- Applied pressure
- Transmitted pressure
- Geometric mean pressure calculated in real-time
- Void-volume during compression and decompression

Derived characteristics:

- Initial void-volume from compression curve
- Residual void-volume from decompression curve
 - ➔ linear correlation to structure (close to COAN)
- Pressure loss and statistics as function of mass
 - ➔ power correlation to carbon black surface
- Work absorbed by the sample during compression and decompression cycle

FORCE MEASURING SPECIFICS

Force Measuring Range	95 kN
Measuring accuracy	0.04% FR
Pressure limit 1" cylinder	up to 185 MPa
- with optional ½" cylinder	up to 600 MPa

TRAVEL DRIVE & MEASURING SPECIFICS

Optical linear gauge	170 mm
Measuring resolution	0.5 µm

SAMPLE CYLINDER / PISTON ASSEMBLY

Precision paired – maintenance free	
Standard diameter	25.4 mm (1 ")

CALIBRATION

Zero-thickness and equipment deflection

OPERATION MODES

- Constant speed or constant pressure rate
- freely programmable in a wide range
 - including ASTM D7854 conditions

DIMENSIONS & SUPPLY

Power supply	230/115 VAC, 50/60 Hz, 800 VA
Pressurized air supply	6 bar
Floor model (incl. rolls)	610 x 480 x 1310 mm (W x D x H)
Weight	150 kg

INTERFACES

Serial port (RS232) to standard PC serving as operator interface

SOFTWARE

Menu guided application

Environment	Microsoft Windows® 32/64 bit XP/W7/W8 (Java based)
Features	Extensive test sequence support
	Extensive data treatment
	Extensive data base support
	Extensive maintenance support
	Extensive logging capabilities (all activities in log files)
	Full retrieve and copy of previous data: can be installed for retrieve only on any PC having access to result files
	Configurable report generation
	Data export (.csv, .xls)
	Supports calibration and normalization

OPTIONS

Sample cylinder	½" cylinder and piston assembly
Scale	0.001 g resolution



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