



Precision Unbound Material Analyser

CRT-PUMA

Innovative test equipment which fills the gap between complex laboratory tests and CBR

The Precision Unbound Material Analyser (PUMA) is a new type of laboratory test equipment designed to fill the gap between expensive and complex laboratory tools (such as triaxial cells) and more empirical methods (such as the California Bearing Ratio test). It is designed to generate realistic values of modulus for use in road pavement design.

The PUMA can be used to test unbound, hydraulically bound and asphaltic materials. It has been designed as a low cost, easy to use and practical tool, but one which is capable of generating scientifically meaningful data (Modulus and Resistance to Permanent Deformation), for use in road pavement design. It can be used to test specimens made from granular material, soil or lightly stabilised material etc, with a maximum particle size of 31.5mm. The PUMA is proposed as a direct equivalent to the Springbox, with the advantage that initial stress conditions can be accurately controlled. It is a simple test, suited to generic specification, that holds the promise of increased confidence in pavement foundation design, particularly in cases where favourable weather conditions during construction result in unrepresentatively high Dynamic Plate Test (DPT) values, or in cases where stabilised soils or cold-mix asphalt are employed.

Standard

- To Be Confirmed: IAN 73/06 - DESIGN GUIDANCE FOR ROAD PAVEMENT FOUNDATIONS

Key Features

- Designed for use within a UTM loading frame
- Compatible with existing loading systems currently used for asphalt testing
- Compaction can be carried out using existing vibrating hammer equipment
- Flexibility to alter stress conditions (vertical and horizontal) and the number of load cycles if desired
- Possibility to carry out the test directly under DPT equipment in order to simulate as closely as possible the likely in-situ value
- Equipment is applicable to all unbound materials with particle size up to 31.5mm
- Suitable for tests on hydraulically bound materials

Key Uses

- Determination of stiffness modulus under different stress conditions, allowing pavement design to be more scientifically based than is possible when relying on an assumed relationship to an in-situ DPT value
- Measurement of rate of increase of permanent deformation, which can be directly related to design against rutting, applicable to relatively thinly surfaced roads
- Tests cold mix asphalt

Software

- User friendly, intuitive and reliable Windows™ software developed using LabVIEW™
- The software records the following to text file for compatibility with common spreadsheet software such as Microsoft Excel:
 - ✓ Axial Stress
 - ✓ Axial Strain
 - ✓ Radial (Confining) Stress
 - ✓ Radial Strain
 - ✓ Stiffness Modulus
 - ✓ Poisson's Ratio



Specifications

Technical specifications are subject to change without notice.

Maximum Applied Force	15.5kN using CRT-UTM-NU and 25kN using CRT-UTM-HYD
Specimen Height mm	150
Specimen Ø mm	150
Dimension mm (WxDxH)	240 x 320 x 200
Electrical Supply ¹	220-240 Volts 50 Hz @ 13A
Working space required mm (WxDxH)	Designed for use within CRT-UTM-NU and CRT-UTM-HYD
Estimated Weight Kg	25
PC	Not required, integral to UTMs

¹ others available upon request

Calibration & Maintenance

Calibration, Annual Service and Maintenance Contracts are available for this device.

Please enquire for further details.

Note: This device should be checked and calibrated annually.

Datasheet Version: 19.01/01