

# M Troxler Thin Layer Density Gauge

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## For Compaction Control of Thin Lift Asphalt and Concrete Overlays

The Troxler 4640-B features patented technology to measure the density of thin asphalt and concrete layers from 2.5 to 10 cm thick (1 to 4 inches) without influence from underlying material. The 4640-B is specified by many state DOTs, government agencies and contractors as the best test method for determining the density of bituminous overlays.

### Advantages of the Model 4640-B:

**Fast/Accurate Results:** In as little as 1 minute, the 4640-B measures and displays densities with an accuracy within  $\pm 1.5\%$  of cores. Results may be expressed in lb/ft<sup>3</sup>, kg/m<sup>3</sup> or g/cm<sup>3</sup>, and as percent Marshall, percent voids or percent theoretical maximum density (voidless).

**Patented:** Available only from Troxler.

**Eliminates the need for nomographs and manual corrections:** Variations in the density or composition of the base material do not affect the test results. No field calculations or charts are needed.

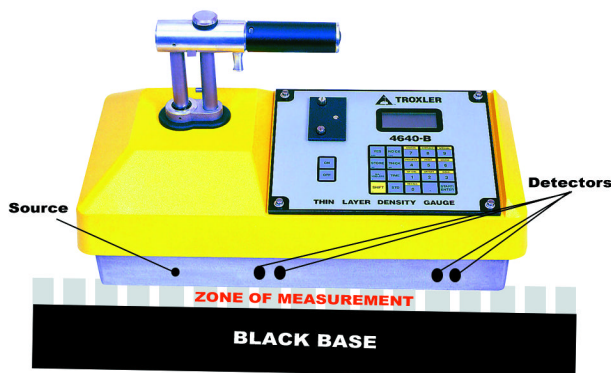
**Operator selected depth of measurement:** Enter the thickness of the overlay into the gauge memory and then accurately measure the overlay density (compaction) without influence from the underlying material.

**Data storage is computer compatible:** Store up to 750 readings by location and project number. Transfer stored readings to a printer or computer via RS232 interface. Additional site information can also be stored with each test.

**ASTM approved:** The 4640-B meets or exceeds all applicable ASTM Standards.

**Calibration:** The Troxler 4640-B calibration process is unique. Your test results will improve and job penalties can be eliminated. For special materials, up to 11 field calibrations can be performed and stored.

**User friendly:** The operator will find the 4640-B very easy to use. It is a menu driven gauge, prompting the operator through the test procedure.



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# SPECIFICATIONS

## Mechanical Specifications

Case	Colored polycarbonate top shell with aluminum cast base
Operating Temp: Ambient	-10 to 70°C (14 to 158°F)
Surface	175°C (350°F)
Storage Temperature	-55 to 85°C (-70 to 185°F)
Gauge Size (excluding handles)	472 x 231 x 158 mm (18.6 x 9.1 x 6.2 inches)
Gauge Height (including handles)	240 mm (9.5 inches)
Weight	13.5 kg (29.7 pounds)
Shipping Weight	40.8 kg (90 pounds) w/transport case

## Radiological Specifications

Gamma Source	8 ±1mCi Cesium - 137
Troxler Drawing Number	TELA-102112
Source Encapsulation	Stainless Steel
Shielding	Tungsten and lead
Surface Dose Rates	5 mrem/hour max. top and sides of gauge, 15 mrem/hour max. bottom of gauge, gamma in shield position
Shipping Case	DOT 7A, Type A, Yellow II Label, 0.2 Transport Index
Source Seal Approval for Domestic & International Shipment	Cs-137, Special Form Certificate GB: SFC 140

## Measurement Specifications

	Time	Thickness	kg/m <sup>3</sup>	pcf
Gauge Precision (±1 std. deviation) at 2240 kg/m <sup>3</sup> (140 pcf)	1 min.	2.5 cm (1")	±16	±1.0
		5.0 cm (2")	±10	±0.6
	4 min.	6.3 cm (2.5")	±8	±0.5
		2.5 cm (1")	±8	±0.5
Depth of Measurement	25-100 mm (1-4")	5.0 cm (2")	±5	±0.3
		6.3 cm (2.5")	±4	±0.25

## Calibration Specifications

Accuracy of Density Standards	±0.3%
Calibration Range	1600-2700 kg/m <sup>3</sup> 100-170 pcf density

## Field Data Conversion:

4640-B contains a microprocessor providing direct reading in engineering units in pcf, kg/m<sup>3</sup> or g/cm<sup>3</sup>; no calculation is required.

## Electrical Specifications

Stored Energy	30 watt hours
Battery Recharge Time	14-16 hours (automatic shutoff)
Battery Recharge	110/220 V, 50-60 Hz or 12-14 VDC
Power Consumption (average)	0.16 watt/hours
Readout (LCD) Liquid Crystal Display	- 4 x 6 alpha numeric
Battery packs are fully protected against overcharge and overdischarge. Provided with RS232 interface. Capable of operation with D size batteries for emergency use.	

## Special Functions:

Automatic standard count comparison and storage. Determination of count time for selected precision. Field offsets of density. Field calibration for special asphalts. Calculator mode with storage. Self-test and service programs: Display, Keypad and Ram Test; GM Tube Test; Statistical Stability and Drift Test; Gauge Identification Program.

## Standard Accessories:

Supplied with the Model 4640-B: air gap fixture, 1" magnesium block, AC battery charger, DC charger cord, transport case

## Optional Accessories:

PN 021140 Radiation Sign Kit, PN 102866 Leak Test Kit, PN 104262 Radiation Survey Meter and TLD Film Badge Service

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