Road Surface Absorption Measurement System Type 9740 is state-of-the-art in normal incidence absorption measurement technology. Affixed directly to the surface of an ISO 10844 and ISO 13472 regulated test track, the system is used to measure the absorption coefficient of the asphalt without drilling a core sample, based on ISO 13472.

Type 9740 is a lightweight, compact, robust and user-friendly system, suitable for research and production quality control with absorption and impedance measurements up to 155 dB SPL. It allows extraction of key acoustic parameters, such as impedance spectra versus OASPL, and acoustic resistance versus acoustic velocity.

Uses and Features

**Uses**
- Research and quality control absorption measurements
- Measurement of the acoustic properties of ISO test track based on ISO 10844 and ISO 13472
- Measurement of:
  - Acoustic absorption coefficient
  - Acoustic reflection coefficient
  - Normalized impedance
- Measurements on complex or composite materials
- Measurements on orientation-sensitive materials

**Features**
- Turnkey system for ease of operation during calibration, measurement and data export
- Measure at OASPL up to 155 dB
- Measurement parameters and routines include:
  - Absorption and reflection coefficients
  - Normalized impedance and admittance
- Measurements viewable in real-time for ease of monitoring
- Measure with broadband, pure-tone, or user-defined source
- Based on two-microphone, transfer function test method, allowing fast data measurement
- Employs PULSE™ data acquisition and analysis system, providing high speed and accuracy
- Continuing customer support to ensure system longevity
- Compact: Length 619 mm (24.37"), max. diameter 110 mm (4.33"
- 100 mm (3.94") inner diameter tube sized for optimum performance between 220 Hz and 1800 Hz with narrow-band analysis and 250 Hz to 1600 Hz with 1/3-octave analysis
- One carrying case for complete system
- Flat flange designed for optimized sealing:
  - Flange removable for replacement with custom-built curved flanges, for maximized sealing to contoured panels
A Versatile and Modern Measurement System

**Fig. 1**
The Road Surface Absorption Measurement System
(PC not included)

Road Surface Absorption Measurement System Type 9740 can be used for in situ measurement of the quality assurance acoustic properties of test track asphalt, which is regulated by ISO 10844 and ISO 13472.

The system is based on the two-microphone, transfer-function test method, which means that measurements take only a fraction of the time required by traditional, standing-wave ratio systems. Using two fixed microphones, the test system makes simultaneous measurements at all frequencies of interest.

PULSE Acoustic Material Testing Type 7758 works in conjunction with a PULSE data acquisition unit and Road Surface Absorption Measurement Tube WA-1599. As a result, all the benefits of the PULSE platform are available, including advanced features for calibration, measurement, display and reporting, the PULSE task-oriented user-interface, and extreme accuracy. The system also contains all the functionality of the standard material testing software, which is a complete and fully integrated system for making acoustic measurements in the frequency range 220 Hz to 1.8 kHz with narrow-band analysis, and 250 Hz to 1.6 kHz with 1/3-octave band analysis.
SYSTEM REQUIREMENTS
The PC requirements for PULSE must be fulfilled (see the System Data BU 0229).

FREQUENCY RANGE
Tube: 220 Hz to 1.8 kHz (narrow-band analysis)

ZERO ABSORPTION
250 Hz to 1.6 kHz: < 4% (calculated in 1/3-octave bands)

¾" CONDENSER MICROPHONE CARTRIDGE TYPE 4187
To optimize the measurement accuracy, the microphones have a non-removable protection grid that forms an airtight front cavity. This gives a coupling between the tube and the microphones that is well-defined with respect to phase

Open-circuit Sensitivity (250 Hz): 4 mV/Pa (~48 ± 3 dB re 1 V/Pa)
Capacitance (250 Hz): 6.4 pF, typical
Frequency Response Characteristic (flush-mounted) ±1 dB:
1 Hz to 8 kHz
Polarization Voltage: 200 V

PREAMPLIFIER
Type 2670-W-007

ENVIRONMENTAL SENSORS
Integrated sensors measure temperature, pressure and relative humidity

LOUDSPEAKER
Max. Average Power: 10 W at 20 °C (68 °F)
Max. Pulsed Power: 50 W for 2 s (limited by protection circuit)
Impedance: 4 Ω
Diameter: 80 mm (3.1")

OPERATION
Sound source activation and status indicator integrated in handle

DIMENSIONS
 Tube Inner Diameter: 100 mm (3.94")
 Tube Length: 619 mm (24.37")
 Max. Diameter: 110 mm (4.33")

WEIGHT (WITHOUT ACCESSORIES)
4.2 kg (9 lb 4 oz)
Ordering Information

Type 9740 Road Surface Absorption Measurement System includes the following:

- Type 7758-N: PULSE Acoustic Material Testing Program
- M1-7758-N: PULSE Material Testing Program Software Maintenance and Support Agreement
- Type 7770-N2: PULSE FFT Analysis, 2-channel license
- M1-7770-N2: PULSE Annual Software Maintenance and Support Agreement
- Type 3160-A-042: Generator, 4/2-ch. Input/Output Module LAN-XI 51.2 kHz (Mic, CCLD, V)
- WA-1599-W-003: Road Surface Absorption Measurement Tube (220 Hz – 1.8 kHz, max. 155 dB SPL) including:
  - Power Cable, 10 m (32.8 ft.)
  - 2 × ¼” Condenser Microphone Type 4187 with Preamplifier Type 2670-W-007
- WB-3592: Power Amplifier (Optional)*
- Type 2735: 2 × 35 Watt Measurement Power Amplifier (Optional)*
- WE-0214: Carrying Case for Type 9737 System to carry all elements of the system (except the laptop computer) plus optional Pistonphone, Sound Calibrator and accessories. WE-0214 is fitted with wheels and an extendable handle

* Please specify one when ordering

OPTIONAL ACCESSORIES

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 4228</td>
<td>Pistonphone</td>
</tr>
<tr>
<td>Type 4231</td>
<td>Sound Calibrator</td>
</tr>
<tr>
<td>DP-0775</td>
<td>Adaptor for ¼” Microphones (for Type 4231)</td>
</tr>
<tr>
<td>WS-4929-W-002</td>
<td>Flat Flange for Machining to Curved Surface, 65 mm (2.56”)</td>
</tr>
<tr>
<td>Type 2670-W-007</td>
<td>Short Preamplifier Type 2670 with 10 m (32.8 ft) cable</td>
</tr>
<tr>
<td>Type 4187</td>
<td>¼” Condenser Microphone</td>
</tr>
<tr>
<td>WC-0015</td>
<td>Microphone Fixing Knob</td>
</tr>
</tbody>
</table>

Brüel & Kjær and all other trademarks, service marks, trade names, logos and product names are the property of Brüel & Kjær or a third-party company.