

# ACOUSTIC IMPEDANCE TUBE/INSULATION TEST APPARATUS

## B400



Year 1  
study

30  
participants

2 hours  
duration

Space required  
500 metres

Acoustics  
modules

### Features

- Clearly demonstrates acoustic attenuation of a range of common building materials (carpet, cork and fibre board).
- Oscilloscope enables students to visually see immediate changes to acoustic attenuation
- Safe for use without ear protection as noise source is enclosed.
- A Low cost alternative to the well-known Laboratory Standard Acoustic Impedance tube.

### Description

The B400 consists of a transparent plastic tube fitted at one end with a glass reinforced plastic enclosure containing two loudspeakers and at the other with a heavy sample holder. A small microphone may be moved axially along the tube and its position measured. The loudspeakers are fed with a common pure tone from a function generator and the sound waves pass along the tube to the sample. Dependent upon the type of material and the tone frequency, a portion of the sound energy is absorbed and the remainder is reflected back along the tube. The portion absorbed being converted into heat by the viscous action of the airborne wave as it passes through the absorber. Interference between the incident sound waves and those reflected result in a standing wave field whose amplitude varies along the length of the tube. With the aid of the optional B400A instrumentation package the amplitude of the maximum and minimum signals received by the travelling microphone may be measured and from these values the Sound Absorption Coefficient at the test frequency may be measured.

**Related Laws/Applications**

- Sound and Vibration Engineering.
- Mechanical Engineering.
- Aeronautical Engineering.
- Civil Engineering.
- Architecture.
- Building Services.
- Plant Engineering
- Health and Safety

**Learning capabilities**

- Determine the Sound Absorption Coefficient for many of the normal building lining materials such as carpet, cork, fibre board and many of the better acoustic attenuating materials.
- Determine the Sound Absorption Coefficient of these and some poor absorbers at a range of frequencies between approximately 300 and 4000Hz.
- Determine the speed of sound in air at ambient temperature and comparison of this with the calculated value.

**Technical Specification**

- Tube Clear rigid plastic, internal diameter Ø69mm x 1200mm long.
- 2 x Loudspeaker housed in a G.R.P. enclosure.
- Sample Holder: Dense 'Tufnol' plug on which samples are mounted. Fitted with quick release catches.
- Amplifier Unit To amplify loudspeaker and microphone signals.

**Recommended Ancillaries**

- B400A

**What's in the Box?**

- 1 x B400
- 1 x Amplifier Console
- 1 x Set of test samples
- 3 x BNC leads
- Instruction manual
- Packing list
- Test sheet
- Spares

**Weights & Dimensions**

- Weight: 9 kg
- Length: 1500mm
- Width: 500mm
- Height: 200mm

**Essential Services**

- 300W 220/240 Volts, 50Hz. (With earth/ground).
- 300W 110/120 Volts, 60Hz. (With earth/ground).

**Ordering information**

To order this product, please call PA Hilton quoting the following codes:  
B400/230  
B400/115

All brand and/or product names are trademarks of their respective owners. Specifications and external appearance are subject to change without notice. The colour of the actual product may vary from the colour shown in the brochure.

Copyright © 2018 P.A. Hilton Limited. All rights reserved. This technical leaflet, its contents and/or layout may not be modified and/or adapted, copied in part or in whole and/or incorporated into other works without the prior written permission of P. A. Hilton Limited. Hi-Tech Education is a registered trade mark of P. A. Hilton Limited.

COUNTRY OF ORIGIN - UK WARRANTY PERIOD - 5 YEARS