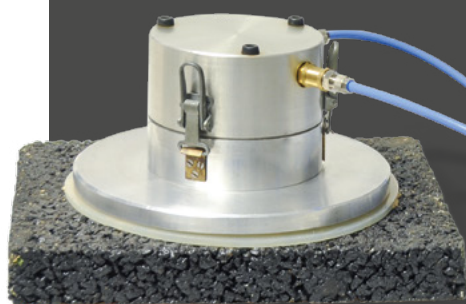# Measuring system AED 300 – AcoustiFlow®
for determination of airflow resistance

The measuring system AED 300 – AcoustiFlow® allows the determination of the airflow resistance of materials with open porosity on the basis of the direct-airflow method described in DIN EN 29053 (ISO 9053). This technique requires the measurement of the pressure drop across the specimen to be examined as a function of the volume airflow.

Application for quality control during manufacturing process, acoustic modeling or for research and development.

Measuring system AED 300 – AcoustiFlow®

Fields of Application

The measuring system possesses a wide operational area. Among other things, this includes:

Quality control during manufacturing process

· cylindrical specimens in the laboratory
· plates of materials in situ without destruction

Input parameters for acoustic modeling

· Absorber model according to Delany / Bazeley
· Phenomenological Model for open porous asphalts, for example for rating of texture of road surfaces
· Biot-Theory
· numerical software solutions such as Comsol Multiphysics*
· calculation of transmission loss and insertion loss of silencers and mufflers with muffler software AED 8001 – AcoustiCalc® Silencer

Optimization in reasearch and development

· of materials with open porosity
· of structures and components

Specimen holders

Depending on the application, there are different specimen holders available – specially adjusted types can be delivered on demand.

Compression specimen holder for measurement of airflow resistance of compressed materials with open porosity, fills, fabrics and multilayer systems

Specimen holder I

· **Application:** determination of airflow resistance of materials with open porosity in the laboratory
· **Specimens:** cylindrical specimens with a diameter of 100 mm as well as fills, fabrics and coverings
· **Method:** prepared cylindrical specimens of variable thickness are mounted and sealed into the specimen holder

Specimen holder II

· **Application:** nondestructive determination of the airflow resistance of materials with open porosity in situ
· **Specimens:** material samples with plane surface of at least 240 mm diameter
· **Method:** pressing of specimen holder onto the specimen with defined force; different seals between specimen holder and specimen can be delivered depending on the application

Software

The measuring system is supported by the analysis software AED 311.

· determination of airflow resistance as a function of airflow velocity / volume airflow
· computation of linear regression and extrapolation of airflow resistance to airflow velocity of 0,5 mm/s
· averaging of results of various material samples
· simple management and comparabilty of results by application of database

Technical Data

Measurement range (Standard)
· Airflow resistance: 5,5 kPa·s/m^3 – 1.900 kPa·s/m^3
· Specific airflow resistance: 0,05 kPa·s/m – 15 kPa·s/m
· Airflow resistivity: 0,3 kPa·s/m^2 – 3.000 kPa·s/m^2
· possible adjustment of measurement range on demand

Extended measurement range I
· suitable for investigation of fabrics and other thin open porous material samples
· Airflow resistance: 1,1 kPa·s/m^3 – 1.900 kPa·s/m^3
· Specific airflow resistance: 0,01 kPa·s/m – 15 kPa·s/m
· Airflow resistivity: 0,05 kPa·s/m^2 – 3.000 kPa·s/m^2

Extended measurement range II
· suitable for investigation of open porous material samples with high airflow resistance as well as of road surfaces in situ
· Airflow resistance: 5,5 kPa·s/m^3 – 75.000 kPa·s/m^3
· Specific airflow resistance: 0,05 kPa·s/m – 600 kPa·s/m
· Airflow resistivity: 0,3 kPa·s/m^2 – 120.000 kPa·s/m^2

Requirements
· Personal computer: Windows 2000 / XP / Vista / 7 / 8, 2x USB-interface
· Primary pressure at measuring system: 2 bar – 5 bar (for example optional compressor)
· Power supply: 230 V (AC), 50 Hz
· Ambient air temperature: 5 °C – 60 °C

Dimensions
· insert for 19" rack (6 HU, 374,5T)

* Comsol Multiphysics is a registered trademark of the COMSOL, Inc.