



Sound absorption meter AcoustiAdrienne for nondestructive measurement of sound absorption, sound insulation and sound diffraction



The sound absorption meter AcoustiAdrienne serves the nondestructive measurement of the sound absorption, sound insulation and the sound diffraction of a noise barrier on the basis of the Adrienne method described in DIN EN 1793-4, DIN EN 1793-5 and DIN EN 1793-6.

By means of an adapter, the sound absorption coefficient of a road surface according to DIN ISO 13472-1 in situ as well as the sound absorption coefficient of a noise barrier according to DIN CEN/TS 1793-5 can be determined nondestructively.

On the basis of the measuring results, the rated sound absorption coefficient according to DIN EN ISO 11654 of a wall absorber or ceiling absorber being installed in a room can be gained as well.

Sound absorption meter AcoustiAdrienne

Fields of application

The sound absorption meter AcoustiAdrienne (measuring system AED 800 + analysis software AED 801) serves the nondestructive measurement of

- **sound reflection index and sound absorption coefficient of a noise barrier** or a sound screen in situ on the basis of the Adrienne method described in DIN EN 1793-5.

An extension of the sound absorption meter additionally allows the measurement of

- the **sound insulation (transmission loss) of a noise barrier** or a sound screen in situ according to DIN EN 1793-6 (measuring system AED 810 + analysis software AED 811) as well as
- the **sound diffraction at a noise barrier** (Miller index) and its crown elements (Miller index difference) according to DIN EN 1793-4 (measuring system AED 820 + analysis software AED 821)

on-site. By means of an adapter, also

- the **sound absorption coefficient of a sound absorbing road surface** in situ according to DIN ISO 13472-1 (sound absorption coefficient $> 0,15$) as well as
- the **sound absorption coefficient of a noise barrier** or a sound screen according to DIN CEN/TS 1793-5 (measuring system AED 830 + analysis software AED 831)

can be determined in situ.

Furthermore, the method is suitable to nondestructively measure the **sound absorption coefficient of a sound absorber being installed in a room** in order to reduce its reverberation time (e. g. wall absorber, ceiling absorber) as well.

In contrast to the operation of the impedance tube AcoustiTube®, the sound absorption coefficient cannot only be determined for perpendicular sound incidence,



Indoor measurement of the sound absorption coefficient of a wall absorber in situ with AcoustiAdrienne

but also for statistical sound incidence. By applying a specific model to consider the effect of sound diffraction at edges, these results can be directly compared to measurement results gained in the reverberation chamber according to DIN EN ISO 354.

Principle of sound absorption meter

In order to determine the acoustic properties of sound absorbers in situ, in each case two measurements have to be carried out, one measurement with specimen and on measurement without specimen (free field).

Exemplarily, from the first measurement of a sound absorption test with specimen an impulse response is calculated that contains a direct component, a reflected component of the specimen as well as further reflected components caused by surrounding obstacles. Latter ones can be excluded by application of a time window (Adrienne window). From the second measurement without specimen (free field) an impulse response is calculated that solely contains a direct component. Finally, the sound absorption coefficient and the sound reflection index of the specimen to be characterized can be determined by subtracting both calculated impulse responses from each other.