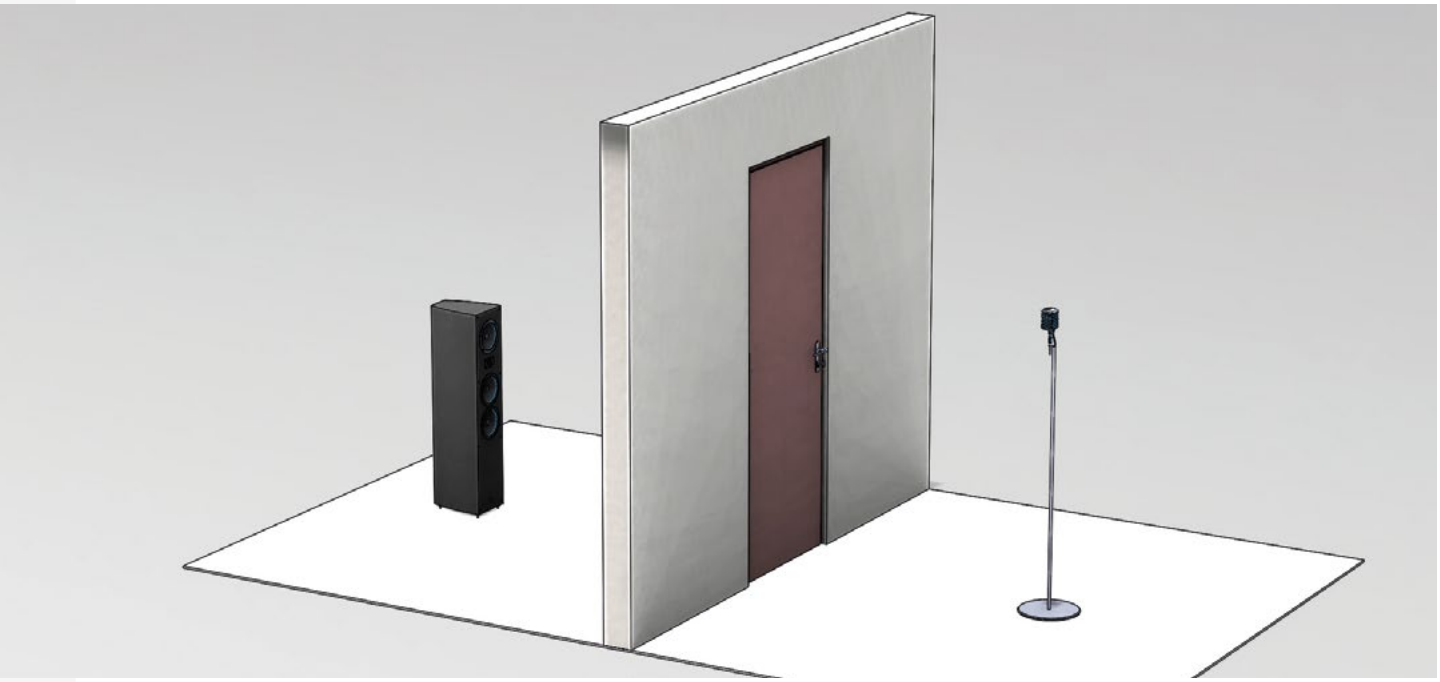
ACOUSTIC PERFORMANCE

EN ISO 717-1

A brief explanation

Standard **EN ISO 717-1** summarises the acoustic insulation to airborne sound in the frequency range **from 50 to 5,000 Hz** in a single index (Rw).



The test circumstances

Measuring (R) is carried out in an approved laboratory with perfect acoustic insulation, that is without any lateral transmission of noise or phonic bridges.

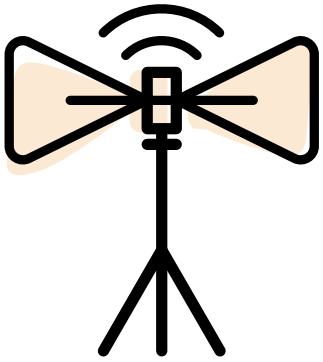
The test is carried out following the diagram below, calculating the reduction in noise from one room to another.

Room A contains **an amplifier and speakers** that will send out noises in a frequency range from 50 Hz to 5,000 Hz, at a powerful volume of +/-90 dB, equivalent to the noise of a discotheque.

Room B contains **a microphone** that will record the noise level that reaches it.

The element to be tested, in our example a Heinen door, is to be fitted in a fully soundproofed wall in order to be able to measure the precise acoustic attenuation of the door thanks to the difference in the noise levels recorded between room A and B across all frequency ranges.

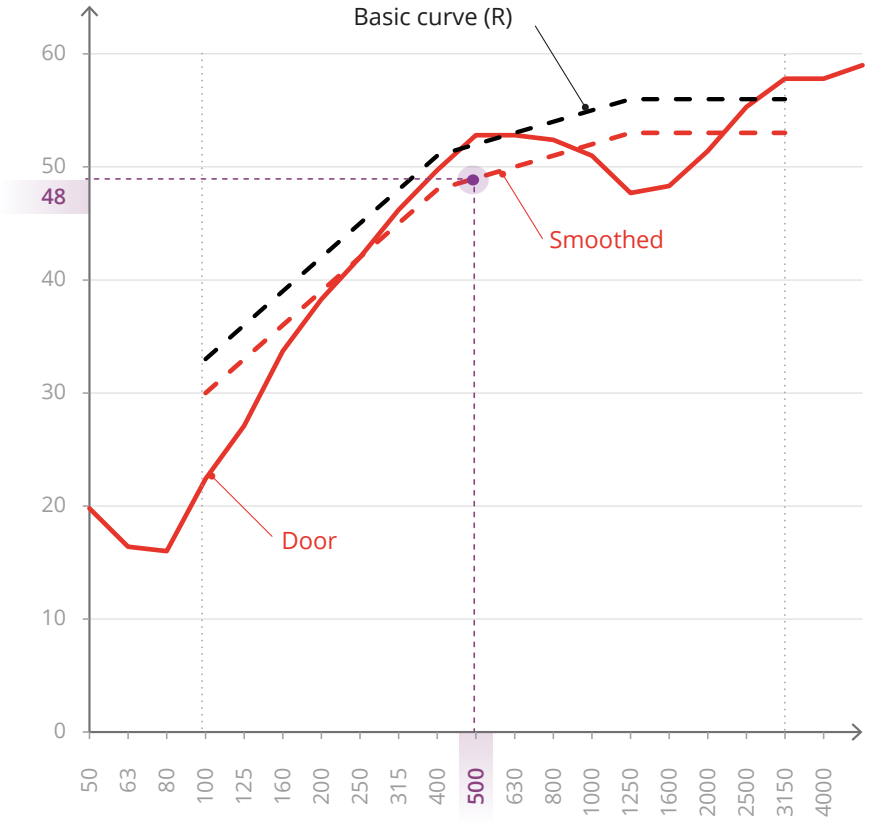
To be able to determine a single acoustic attenuation value (Rw) representing all the frequency ranges, the standard provides for a **basic curve (R) going from 100 to 3,150 Hz**, which will be superimposed on the **results curve** of the door in order to establish an average, a sort of **"smoothed" curve**, from which we will take the Rw at 500 Hz.



In the graph below, the red curve represents the acoustic attenuation of the door for all frequencies, while the dotted line is the “smoothed” curve, that is the basic curve (R) superimposed on the curve of the door (depending on the requirements stipulated in the standard).

The overall Rw of the door can be determined simply by reading the value in dB on the “smoothed” curve at the fixed value of 500 Hz.

For the example below, the Rw value will be 49 dB, even though the actual acoustic attenuation value of the door at this frequency of 500 Hz is higher (52.8 dB).



High and low frequencies

HIGH FREQUENCIES OR “PINK NOISE”

Pink noise is a standard reference noise with the same energy in the octave bands from 125 to 4,000 Hz. Pink noise is the reference used to characterise the qualities of the elements in a construction: walls, floors, façades, joinery, roof, etc.

This noise is used to take measurements with regard to the noise made by air traffic. It may be likened to the laughter of children playing, everyday noises or fast road traffic (motorway).

LOW FREQUENCIES OR “ROAD NOISE”

Road noise is also a standardised unit.

Its spectrum is rich in low frequencies and poor in high levels compared with pink noise. It is a reference for the noise of rail and road traffic comprising a standard proportion of light and heavy vehicles. It can be likened to the noise of a discotheque or urban traffic.

The C and Ctr indices

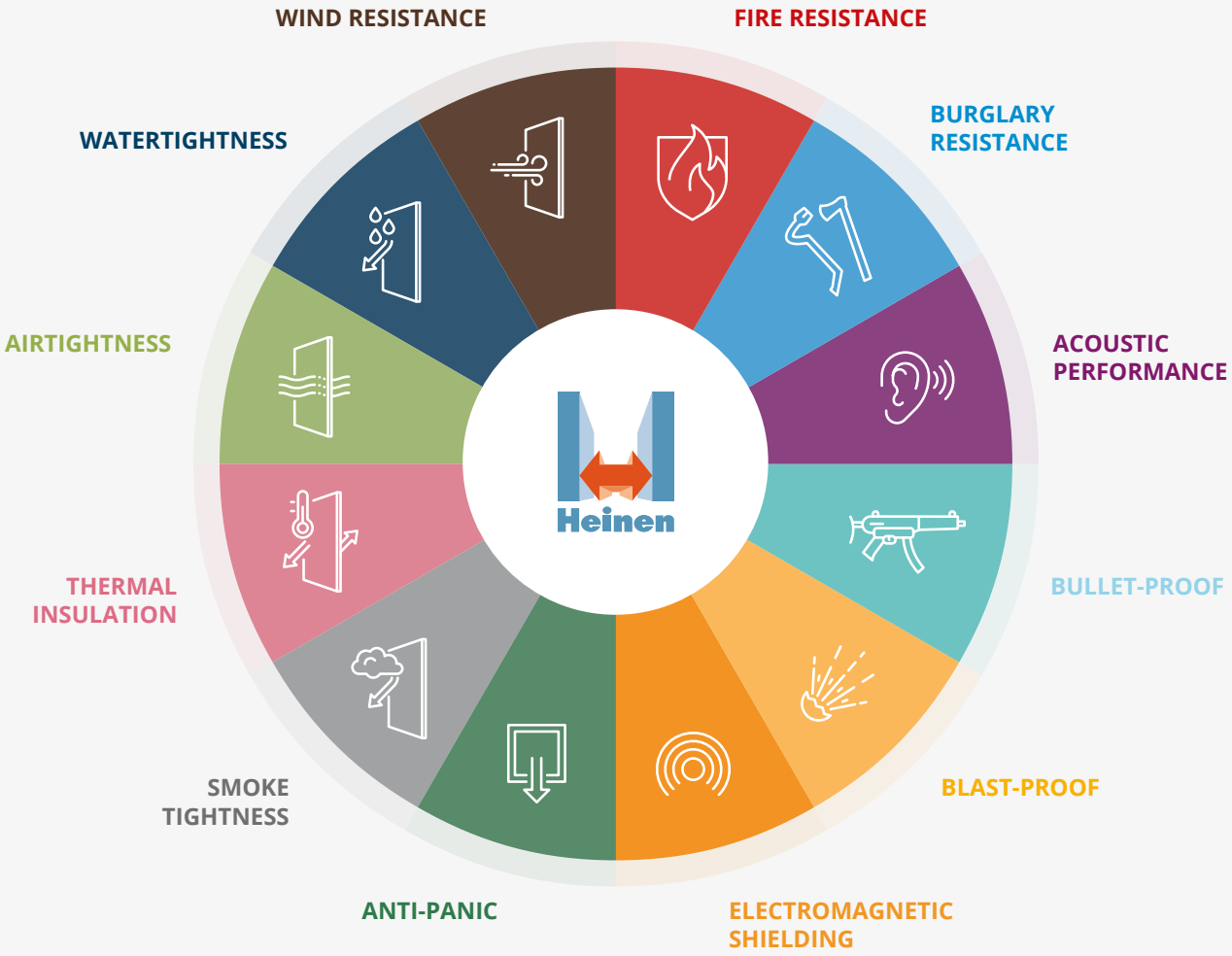
Two Rw adaptation indices have been created to take into account the properties of the noise source.

- "**C**” is the adjustment for noise sources containing few low frequencies (**pink noise**);
- "**Ctr**” is the adjustment for noise sources containing many low frequencies (**road noise**).

These indices can be obtained by following the same procedure as for the overall index (Rw), but by applying curves other than the basic curve (R).

For our example, the results obtained are as follows: Rw (C; Ctr) = 49 (-3; -9).
Insulation for fast motorway traffic (pink noise) C therefore corrects the insulation.

Combining bespoke performance features



Heinen doors can combine performance features on a bespoke basis. Depending on your needs, one or more performance features are added to the basic, robust METAL+ door.