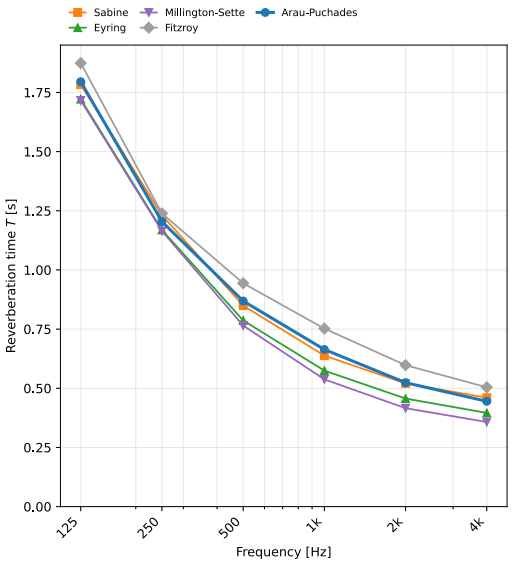
Reverberation-time prediction

Design-stage prediction of the reverberation time by five statistical-acoustics models (Sabine, Eyring, Millington-Sette, Fitzroy and Arau-Puchades).

Client:	Example client	Room:	Classroom C1 (example)
Description:	Classroom, one wall lined with a broadband absorber	Room volume V [m³]:	120
Total surface area S [m²]:	158	Temperature [°C]:	20
Relative humidity [%]:	50	Ambient pressure [kPa]:	101.3
Date of prediction:	2026-07-21		

Reverberation time by model [s]

f [Hz]	Sabine	Eyring	Millington-Sette	Fitzroy	Arau-Puchades
125	1.78	1.72	1.72	1.87	1.80
250	1.23	1.17	1.16	1.24	1.20
500	0.85	0.79	0.77	0.94	0.87
1000	0.64	0.57	0.54	0.75	0.66
2000	0.52	0.46	0.42	0.60	0.52
4000	0.46	0.40	0.36	0.50	0.45



Predicted T_{mid} (Arau-Puchades, 500-1000 Hz) = **0.77 s**

Sabine: 0.74 s
Eyring: 0.68 s
Millington-Sette: 0.65 s
Fitzroy: 0.85 s
Arau-Puchades: 0.77 s

■ Target reverberation time T = 0.80 s

Design-stage prediction from the room geometry and surface absorption by the classical statistical-acoustics models; it is not a measurement. The five models bracket the reverberation time likely to occur; Arau-Puchades is recommended for a non-uniform absorption distribution and drives the boxed descriptor.

Sabine T = 24 ln10/c0 * V/(A + 4mV); Eyring replaces A by -S ln(1 - alpha_bar); Millington-Sette sums -S_i ln(1 - alpha_i) per surface; Fitzroy and Arau-Puchades are the area-weighted arithmetic and geometric means of the three axial Eyring times.

Laboratory: Phonometry reference example
Report no.: EXAMPLE-REVERB
Date: 2026-07-21
Operator: phonometry Signature: _____

■ The results relate only to the tested specimen.