

# Absorption Coefficients of Building Material And Finishes

<b>Floor Materials</b>	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
carpet	0.01	0.02	0.06	0.15	0.25	0.45
carpet on concrete	0.02	0.06	0.14	0.37	0.6	0.65
carpet on foam	0.08	0.24	0.57	0.69	0.71	0.73
concrete (unpainted, rough finish)	0.01	0.02	0.04	0.06	0.08	0.1
concrete(sealed or painted)	0.01	0.01	0.02	0.02	0.02	0.02
marble or glazed tile	0.01	0.01	0.01	0.01	0.02	0.02
vynil tile on concrete	0.02	0.03	0.03	0.03	0.03	0.02
wood parquet on concrete	0.04	0.04	0.07	0.06	0.06	0.07
wood flooring on joints	0.15	0.11	0.1	0.07	0.06	0.07
<b>Seating Materials</b>	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Benches (wooden, empty)	0.1	0.09	0.08	0.08	0.08	0.08
Benches (wooden, 2/3 occupied)	0.37	0.4	0.47	0.53	0.56	0.53
Benches (wooden, fully occupied)	0.5	0.56	0.66	0.76	0.8	0.76
Benches (cushioned seats and backs, empty)	0.32	0.4	0.42	0.44	0.43	0.48
Benches (cushioned seats and backs, 2/3 occupied)	0.44	0.56	0.65	0.72	0.72	0.67
Benches (cushioned seats and backs, fully occupied)	0.5	0.64	0.76	0.86	0.86	0.76
Theater seats (wood, empty)	0.03	0.04	0.05	0.07	0.08	0.08
Theater seats (wood, 2/3 occupied)	0.34	0.21	0.28	0.53	0.56	0.53
Theater seats (wood, fully occupied)	0.5	0.3	0.4	0.76	0.8	0.76
Seat (fabric-uphoisterd, empty)	0.49	0.66	0.8	0.88	0.82	0.7
Seat (fabric-uphoisterd, fully occupied)	0.6	0.74	0.88	0.96	0.93	0.85
Seat (empty metal/wood)	0.15	0.19	0.22	0.39	0.38	0.3
<b>Reflective Wall Materials</b>	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Brick (natural)	0.03	0.03	0.03	0.04	0.05	0.07
Brick (painted)	0.01	0.01	0.02	0.02	0.02	0.03
Concrete Block (coarse)	0.36	0.44	0.31	0.29	0.39	0.25
Concrete Block (painted)	0.1	0.05	0.06	0.07	0.09	0.08
Concrete (poured, rough finish, unpainted)	0.01	0.02	0.04	0.06	0.08	0.01
Doors (solid wood panels)	0.1	0.07	0.05	0.04	0.04	0.04
Glass (8mm plate, large pane)	0.18	0.06	0.04	0.03	0.02	0.02
Glass (small pane)	0.04	0.04	0.03	0.03	0.02	0.02
Glass (window)	0.35	0.25	0.18	0.12	0.07	0.04
Plasterboard (12.5mm paneling on studs)	0.29	0.1	0.06	0.05	0.04	0.04
Plaster (gypsum or lime, on masonry)	0.01	0.02	0.02	0.03	0.04	0.05
Plaster (gypsum or lime, on wood lath)	0.14	0.01	0.06	0.05	0.04	0.04
Plaster (smooth on tile/brick)	0.013	0.015	0.02	0.03	0.04	0.05
Plaster (rough on lath)	0.02	0.03	0.04	0.05	0.04	0.03
Marble/Tile	0.01	0.01	0.01	0.01	0.02	0.02
Sheetrock 12.5mm 16"o.c.	0.29	0.1	0.05	0.04	0.07	0.09
Plywood (3mm paneling over 31.7mm airspace)	0.15	0.25	0.12	0.08	0.08	0.08
Plywood (3mm paneling over 57.1mm airspace)	0.28	0.2	0.1	0.1	0.08	0.08
Plywood (5mm paneling over 50mm airspace)	0.38	0.24	0.17	0.1	0.08	0.05
Plywood (5mm panel 25mm fiberglass in 50mm airspace)	0.42	0.36	0.19	0.1	0.08	0.05
Plywood (6mm paneling, airspace, light bracing)	0.3	0.25	0.15	0.1	0.1	0.1
Plywood (10mm paneling, airspace, light bracing)	0.28	0.22	0.17	0.09	0.1	0.11
Plywood (19mm paneling, light bracing)	0.02	0.18	0.15	0.12	0.1	0.1
<b>Absorptive Wall Material</b>	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Draperly (340g/m2, flat against wall)	0.04	0.05	0.11	0.18	0.3	0.35
Draperly (476g/m2, flat against wall)	0.05	0.07	0.13	0.22	0.32	0.35
Draperly (612g/m2, flat against wall)	0.05	0.12	0.35	0.48	0.38	0.36
Draperly (476g/m2, pleated 50%)	0.07	0.31	0.49	0.75	0.7	0.6
Draperly (612g/m2, pleated 50%)	0.14	0.35	0.53	0.75	0.7	0.6
Curtain (340g/m2 fabric)	0.03	0.04	0.11	0.17	0.24	0.35
Curtain (476g/m2 fabric)	0.07	0.31	0.49	0.75	0.7	0.6
Curtain (612g/m2 fabric)	0.14	0.35	0.55	0.72	0.7	0.65
Fiberglass Board (25mm)	0.06	0.2	0.65	0.9	0.95	0.98
Fiberglass Board (50mm)	0.18	0.76	0.99	0.99	0.99	0.99
Fiberglass Board (70mm)	0.53	0.99	0.99	0.99	0.99	0.99
Fiberglass Board (100mm)	0.99	0.99	0.99	0.99	0.99	0.97
Foam (25mm)	0.13	0.22	0.68	1	0.92	0.97
Foam (12.5mm)	0.09	0.11	0.22	0.6	0.88	0.94
Open Brick Pattern Over 75mm Fiberglass Board	0.4	0.65	0.85	0.75	0.65	0.6
Pageboard Over 25mm Fiberglass Board	0.08	0.32	0.99	0.76	0.34	0.12
Pageboard Over 50mm Fiberglass Board	0.26	0.97	0.99	0.66	0.34	0.14
Pageboard Over 75mm Fiberglass Board	0.49	0.99	0.99	0.69	0.37	0.15
Perfomated Metal (13% open, over 50mm fiberglass board)	0.25	0.64	0.99	0.97	0.88	0.92
<b>Ceiling Material</b>	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Acoustic Tiles	0.05	0.22	0.52	0.56	0.45	0.32
Acoustic Ceiling Tiles	0.7	0.66	0.72	0.92	0.88	0.75
Plasterboard (12mm in suspended ceiling grid)	0.15	0.11	0.04	0.04	0.07	0.08
Underlay in Perforated Metal Panels 25mm Batts	0.51	0.78	0.57	0.77	0.9	0.79
Metal Deck (perforated channels, 75mm batts)	0.01	0.02	0.02	0.03	0.04	0.05
Plaster (gypsum or lime, rough finihs or timber lath)	0.14	0.1	0.06	0.05	0.04	0.04
Plaster (smooth on tile/brick)	0.013	0.015	0.02	0.03	0.04	0.05
Plaster (rough on lath)	0.02	0.03	0.04	0.05	0.04	0.03
Sheetrock 12.5mm 16"o.c.	0.29	0.1	0.05	0.04	0.07	0.09
Wood 10mm Plywood Panel	0.28	0.22	0.17	0.09	0.1	0.11
Wood	0.15	0.11	0.1	0.07	0.06	0.07
Wood Tongue And Groove Roof Decking	0.24	0.19	0.14	0.08	0.13	0.1
Fiberglass Board (50mm) No Airspace	0.22	0.82	0.99	0.99	0.99	0.99
Foam (25mm)	0.13	0.22	0.68	1	0.92	0.97
Foam (12.5mm)	0.09	0.11	0.22	0.6	0.88	0.94
Sprayed Cellulose Fiber 16mm on Solid Backing	0.05	0.16	0.44	0.79	0.9	0.91
Sprayed Cellulose Fiber 25mm on Solid Backing	0.08	0.29	0.75	0.98	0.93	0.76
Sprayed Cellulose Fiber 32mm on Solid Backing	0.1	0.3	0.73	0.92	0.98	0.98
Sprayed Cellulose Fiber 75mm on Solid Backing	0.7	0.95	1	0.85	0.85	0.9
Sprayed Cellulose Fiber 25mm on Timber Lath	0.47	0.9	1.1	1.03	1.05	1.03
<b>Miscellaneous Surface Material</b>	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
Water	0.008	0.008	0.013	0.015	0.02	0.025
Ventilating Grilles	0.3	0.4	0.5	0.5	0.5	0.4
People - Adults (per 1/10 person)	0.25	0.35	0.42	0.46	0.5	0.5
People - High Scholl Students (per 1/10 person)	0.22	0.3	0.38	0.42	0.45	0.45
People - Elementary Students (per 1/10 person)	0.18	0.24	0.28	0.32	0.35	0.35