PLEXIGLAS® SHEET: Sound Transmission

ACRYLIC SHEET

Sound Transmission Characteristics

Plexiglas® sheet offers sound loss characteristics that are equal to or better than those of glass. Since Plexiglas® sheet is also more resistant to breakage, it can be used as a transparent sound barrier to reduce noise levels and increase safety at the same time. Tables 1, 2, and 3 show noise reduction values and STC ratings for Plexiglas ® sheet and other construction materials.

TABLE 1
Noise Reduction Values for Plexiglas® Sheet
(Ten panels were 75 x 100 in)
Approximate noise reduction-dB(A)
sheet thickness (in)

Frequency Spectrum of Noise Source	0.118* (3mm)	0.236 (6mm)	0.472 (12mm)	0.944 (24mm)	Double Glazed**
Low Frequencies Pre-Dominant	15	21	26	30	34
Flat Frequency Spectrum	25	29	33	35	38
High Frequencies Predominant	28	31	34	36	40

*Estimated from measurements of .236", .472", and .944 sheet.
** 0.236" Plexiglas® sheet, air space, 0.177" Plexiglas sheet.

TABLE 2
Noise Ratings of Plexiglas® Sheet

Construction Thickness	STC
Plexiglas® sheet (0.118")*	25
Plexiglas® sheet (0.236")	29
Plexiglas® sheet (0.472")	33
Plexiglas® sheet (0.944")	35
Plexiglas® sheet [(0.236") air space (0.177")]	38

* Estimated from measurements of .236" .476", and .944" sheet.

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TABLE 3
Comparison of Noise Reduction Characteristics of Plexiglas® Sheet With Other Materials

Construction material thickness	Approximate dB(A) noise reduction*
Plexiglas® sheet (0.118")	25
Plexiglas® sheet (0.236")	29
Plexiglas® sheet (0.472")	33
Plexiglas® sheet (0.944")	35
Double glazed Plexiglas® sheet	38
Glass (1/8")	25
Glass (1/4")	27
Plywood (1")	26
Steel (1/8")	37
Sheet lead (1/16")	38
Wood stud partition	38

* Noise reduction obtained in enclosures depends on the completeness of the enclosure, tightness of joints, etc. The above as dB(A) noise reductions were obtained in a completely enclosed, tightly joined structure. These conditions are seldom achieved in the real world; however, even under more realistic conditions, the use of Plexiglas sheet barriers can reduce noise levels enough to protect against heavy damage. The main purpose of this table is to indicate the relative noise reduction capabilities of commonly used materials in terms of dB(A).