MADE IN USA

Certified 100% Mold Resistant

Acoustiblok®

when what you don't hear counts

CLASSIFIED UL

All U300, U400, & V400 walls & L500 floor / ceiling assemblies.

A few amazing facts about Acoustiblok®

A standard metal stud 5/8" gypsum board wall with only 1 layer of 16 oz. Acoustiblok has better sound reduction, (STC 53*, Riverbank Laboratories), than a solid 12" poured concrete wall (STC 51).

Lead, no longer permitted in construction, was the best sound-isolating performance per weight material with a Sound Transmission Class (STC) of 26 @ 16 link oz. sq. ft. Acoustiblok 16 Oz. material not only has a minimum STC of 26 (Riverbank Labs), but is environmentally friendly, and is U.L. classified & approved for public or commercial construction.

A standard 2 x 4 wall with 5/8" gypsum has a STC of 36. Adding only 1 layer of Acoustiblok provides an impressive STC of 52! (to the human ear this represents an approximate 80% reduction). With 2 layers of Acoustiblok, STC can be in the 60s, depending on wall configuration.

Not only can Acoustiblok be sold as an added feature in high rise construction, it is usually less expensive and easier to install, than other sound abatement wall construction. Acoustiblok also allows easier accessibility to the interior of the wall for electrical & plumbing maintenance.

Acoustiblok was recently awarded first place in the British House of Commons, for best sound abatement product of the year.

References from:

Underwriters Laboratories
Riverbank Audio Laboratories
Architectural Acoustics - M. David Egan
California Office of Noise Control

NOTE: Our U.L. Classification number is R21490, (which will specify all U.L. approved uses on U.L. website.) Our audio specifications (STC, NRC) are independent laboratory test results by Riverbank Acoustical Laboratories. Don't put your project at risk by relying on uncontrolled vendor "field test" or self test results -- ask for a certified lab report.

Do ***not*** rely on the "U.L. 94" flame test standard, which "...tests for flammability of plastic materials used for parts in devices and appliances." Underwriters Laboratories specifically states, **"These requirements *do not* cover plastics when used as materials for building construction or finishing."**

- STC = "Sound Transmission Class", the higher the better for noise abatement.

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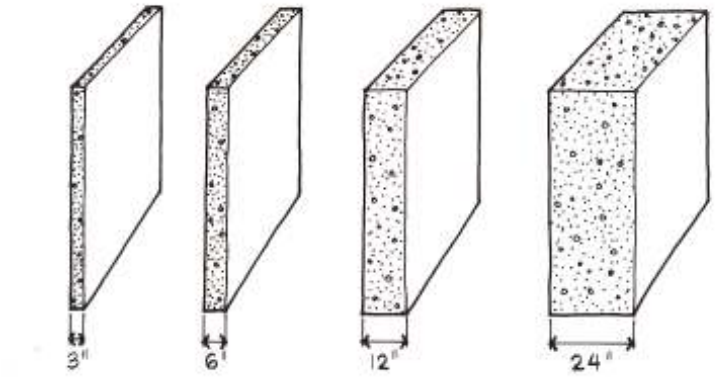
Sound Transmission Loss (TL) IMPROVEMENT FROM INCREASING WEIGHT

The figure below shows the Sound Transmission Class (STC) ratings for 3-in-thick dense concrete (12 lb/ft^2 per inch of thickness) and for three successive doubled thicknesses of 6 in, 12 in, and 24 in.



Weight (lb/ft^2) :	**36**	**72**	**144**	**288**
STC Rating:	**42**	**46**	***51***	**58**

STC comparison with 12" solid concrete wall:
Wood 2x4 / Gypsum with 16 oz Acoustiblok = *52* (Riverbank Labs)

Mass law follows the law of diminishing returns. As shown by the above data, the STC of a homogeneous construction increases about 5 for each doubling of weight. However, **it is the initial doubling that provides the most practical improvement. Each successive doubling produces proportionally less STC (or TL) improvement** per unit weight and a greater increase in cost per unit STC (or TL) increase. **Consequently, complex constructions are required when it is necessary to achieve high STCs and TL improvements**, especially at low frequencies.

From *Architectural Acoustics* by M. David Egan © McGraw-Hill Inc ISBN 0-07-019111-5
Emphasis added by Acoustiblok, gray field is our comment

Effectiveness of STC Ratings: The following chart estimates what sound privacy various STC levels provide.

STC	PRIVACY AFFORDED
25	Normal speech easily understood
30	Normal speech audible, but unintelligible
35	Loud speech understood
40	Loud speech audible, but unintelligible
45	Loud speech barely audible
50	Shouting barely audible
55	Shouting not audible

Source: U.S. Dept. of Commerce / National Bureau of Standards. Handbook 119, July, 1976: Quieting: A Practical Guide to Noise Control; Page 61

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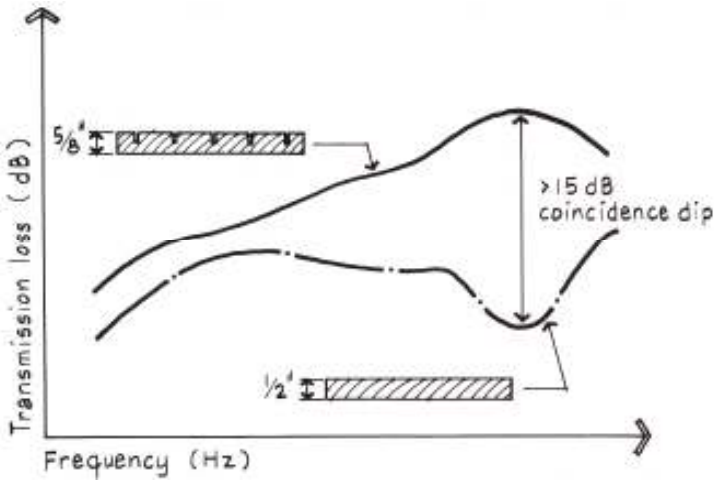
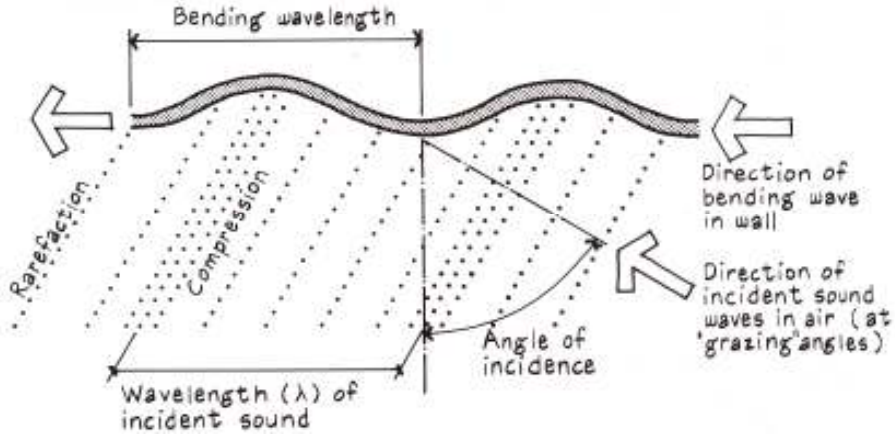
EFFECT OF STIFFNESS ON TL

The sound isolation efficiency of materials depends on stiffness as well as mass. For example, the graph below shows TL performance for two plywood layers of equivalent total weight. According to the mass law, the TL performance should be the same. **However, the grooved, less stiff layer has much higher TL performance, especially at mid- and high frequencies.**



As shown by the above graph, the coincidence dip can be greater than 15 dB for stiff materials. **This significant difference in TL is caused by the altered response to bending waves, which are excited by the impinging sound energy.** Bending waves are similar to the wave motion in a rope shaken at one end. The exaggerated sketch below shows bending-wave coincidence for a wall.



To achieve high TL performance, use double-wall constructions with wide separation between layers, **light-gauge metal studs instead of wood studs**, or metal channels to "resiliently" support gypsum board layers. These elements, if properly installed, can **reduce the stiffness of a barrier. The ideal sound-isolating construction would be *heavy, limp, and airtight*! (Acoustiblok is "heavy, flexible, and airtight"!)**

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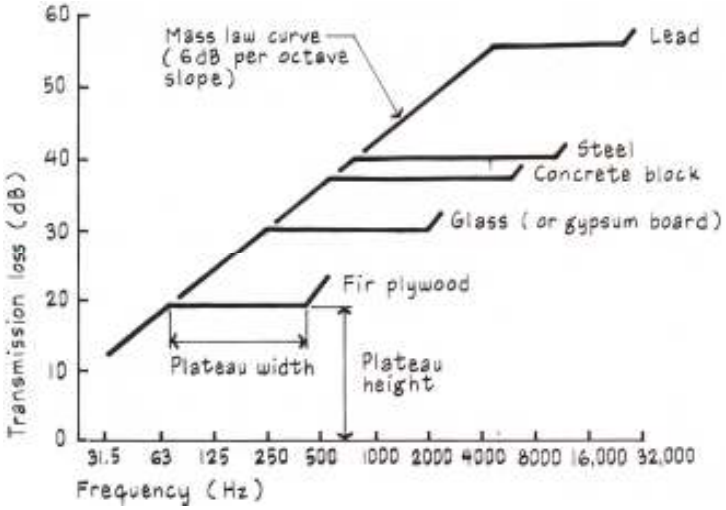
Transmission Loss (TL) FOR SINGLE WALLS

The graph below shows transmission loss performance based on equal surface weight for several materials. The curve describing TL performance for most single (or homogeneous) walls consists of three basic parts: the low frequency mass-controlled region at about 6 dB per octave slope; the plateau region of relatively constant TL which depends on bending stiffness and internal damping of the material; and the critical frequency (and mass controlled) region above the plateau, usually at 10 dB per octave slope. Consequently, high-frequency hissing or whistling sounds can be isolated by a material which allows low-frequency rumbling sounds to be easily transmitted.



The stiffer a wall, the lower the plateau height, meaning the poorer the sound-isolating performance Conversely, the limper a material, the higher the plateau height and the better the sound-isolating performance. As shown by the curves, **lead has the highest plateau height and the best sound-isolating performance on an equivalent weight basis. The more damping a wall has** (i.e. energy loss from internal friction), the narrower the plateau width, resulting in **better sound-isolating performance**. Notice that plywood and lead have far narrower plateau widths than steel. When plywood is struck, it "thuds" because of its internal damping. When steel is struck, it "rings" because it has far less internal damping. For example, sheet metal air-conditioning ducts are poor isolators of sound and, as a consequence, often must be enclosed by gypsum board when they pass through noisy areas (see Chap. 5).

The TL at 500 Hz of homogeneous materials can be estimated by the formula:
TL = 20 + 20 log G , where TL = transmission loss at 500 Hz (dB), and G = surface density (lb/ft^2)

Surface densities for common building materials are: brick at 10 lb/ft^2 per inch of thickness, concrete block at 6 to 12 lb/ft^2 per inch, plywood at 3 lb/ft^2 per inch, and plaster at 9 lb/ft^2 per inch.

Acoustiblok, at 1.1 lbs/ft^2, does far better than any of the above, including (unusable) lead.

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INDEPENDENT LAB TEST RESULTS OF STC RATINGS FOR WALL ASSEMBLIES

Without Acoustiblok	**STC**
Wood Stud	
• Standard 2 x 4 wood stud 24" O.C. with 5/8 gypsum both sides	**36**
• Staggered 2 x 4 wood studs 24" O.C. on 2 x 6 plate, with 5/8 gypsum both sides	**39**
• Standard 2 x 4 wood stud, 16" O.C. with 5/8 gypsum, and resilient channel	**45**
Metal Stud	
• Standard 3-5/8” metal stud wall	**43**
Concrete	
• 12" Poured Concrete Wall	**51**

With Acoustiblok	**STC**
Wood Stud	
• Standard 2 x 4 wood stud, 5/8 gypsum, with one layer of 16 oz. Acoustiblok and 3" of loose fiberglass insulation	**52**
• Standard staggered wood stud, 5/8 gypsum, one layer of 16 oz Acoustiblok	**57**
• Double 3-5/8" wood stud, 5/8 gypsum, two layers of 16 oz Acoustiblok and 2 layers of 6" of fiberglass insulation	**61**
Metal Stud	
• Standard metal stud, 5/8 gypsum, one layer of 16 oz Acoustiblok	**53**
• Standard metal stud, 5/8 gypsum, two layers of 16 oz Acoustiblok	**57**
• Double 3-5/8" metal stud, 5/8 gypsum, two layers of 16 oz Acoustiblok and 2 layers of 6" of fiberglass insulation	**66**
Concrete	
• 8" Concrete Block Wall with a 3-5/8” metal stud, 5/8 gypsum, one layer of 16 oz Acoustiblok on one side of the block wall.	**71**
• 8" Concrete Block Wall with a 3-5/8” metal stud, 5/8 gypsum, one layer of 16 oz Acoustiblok on each side of the block wall.	**85**

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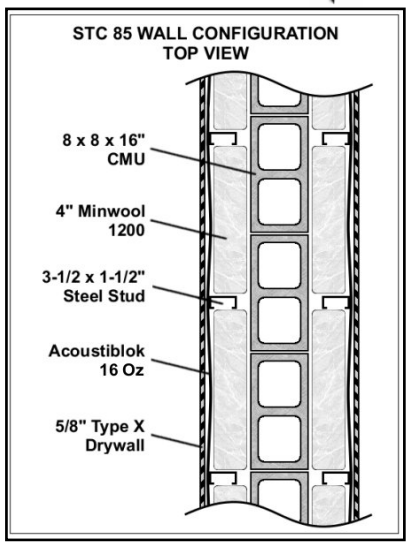
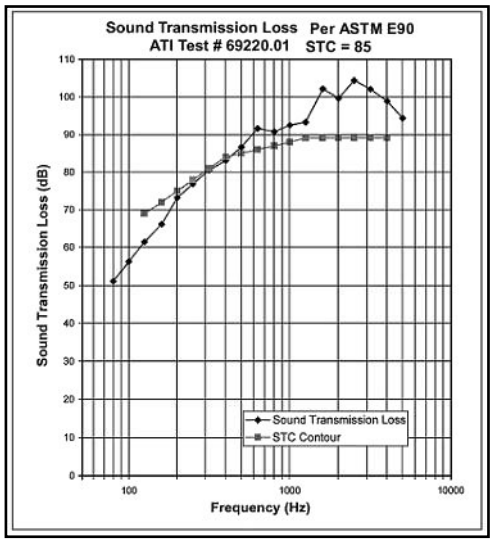


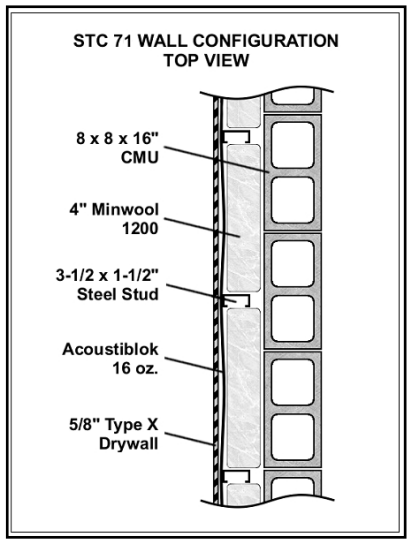


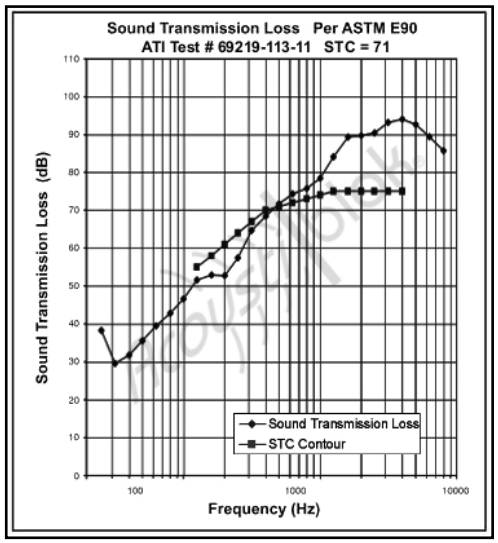
STC 85 Wall Assembly

Architectural Testing, Inc. -Test # 69220.01-113-11
Weight: 45.79lb/ft^2 (223.547kg/m$^{2)}$ Thickness: 12.75in (32.385cm)

Assembly Construction: Standard 8” (20.32cm) hollow block, 25 ga. steel studs 24” (61cm) o.c. spaced 1/2" (1.27cm) from block, with 4" (10.16cm) Thermafiber S.A.F.B. insulation, 16 oz. (453.59g) Acoustiblok, 5/8” (1.59cm) Type X gypsum board, on both sides of the block wall.

Independently Tested Sound Transmission Loss Reference								
Frequency	25hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	35 dB	49 dB	60 dB	76 dB	88 dB	92 dB	97 dB	93 dB





STC 71 Wall Assembly

Architectural Testing, Inc. -Test # 69219.01-113-11
Weight: 40.89lb/ft^2 (199.625kg/m^2) Thickness: 12.625in (32.068cm)

Assembly Construction: Standard 8” (20.32cm) hollow block, 25 ga. steel studs 24” (61cm) o.c. spaced 1/2" (1.27cm) from block, with 4" (10.16cm) Thermafiber S.A.F.B. insulation, 16 oz. (453.59g) Acoustiblok, 5/8” (1.59cm) Type X gypsum board, only one side of the block wall.

Independently Tested Sound Transmission Loss Reference								
Frequency	25hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	38 dB	43 dB	52 dB	57 dB	72 dB	78 dB	90 dB	93 dB

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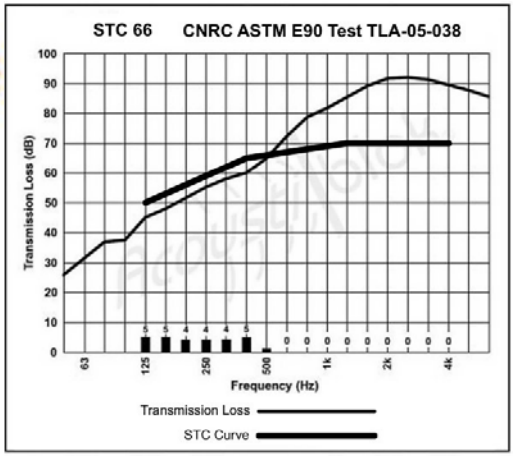


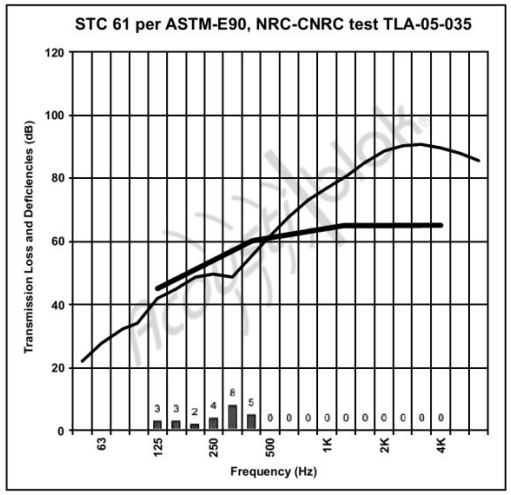
STC 66 Wall Assembly

NRC-IRC -Test # TLA-05-038

Weight: 7.69lb/ft^2 (37.55kg/m2) Thickness: 11in (27.94cm)

Assembly Construction: 25 ga. steel studs 24” (61cm) o.c., 2 1/2” (6.35cm) air space between walls, 6" (15.24) R-21.5 glass fiber batt, 16 oz. (453.59g) Acoustiblok, 5/8” (1.59cm) Type X gypsum board.

Independently Tested Sound Transmission Loss Reference								
Frequency	50hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	26 dB	37dB	45 dB	55 dB	65 dB	82 dB	92 dB	88 dB



STC 61 Wall Assembly

NRC-IRC -Test # TLA-05-035

Weight: 6.824lb/ft^2 (33.32kg/m^2) Thickness: 9.75in (24.765cm)

Assembly Construction: wood studs 24” (61cm) o.c., 1” (2.54cm) air space between walls, glass fiber batt, 16 oz. (453.59g) Acoustiblok, 5/8” (1.59cm) Type X gypsum board.

Independently Tested Sound Transmission Loss Reference								
Frequency	50hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	22 dB	32 dB	42 dB	50 dB	62 dB	77 dB	90 dB	88 dB

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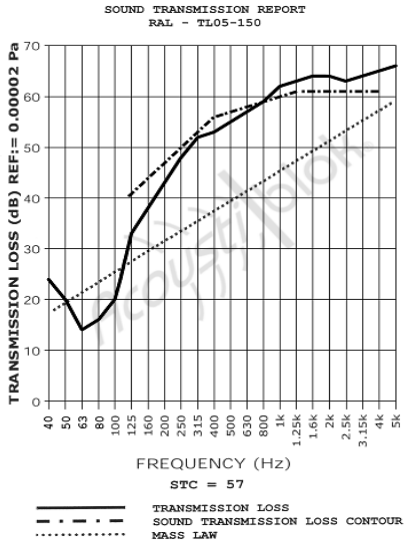
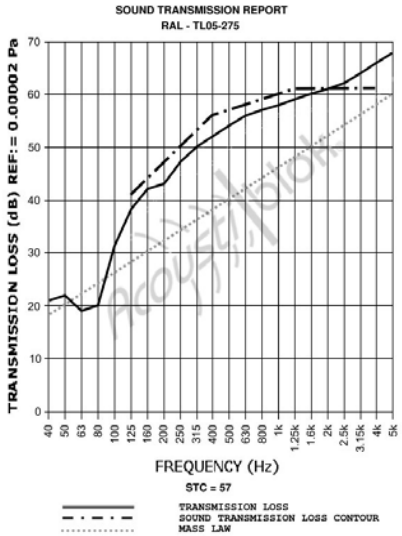


STC 57 Wall Assembly

Riverbank Acoustical Laboratory -Test # TL-05-150
Weight: 7.5lb/ft^2 (36.6kg/m^2) Thickness: 5.125in (13cm)

Assembly Construction: 20 ga. steel studs 24” (61cm) o.c., 3 1/2" (8.89cm) R-13 glass fiber batt, 2 layers - 16 oz. (453.59g) Acoustiblok, 5/8” (1.59cm) Type X gypsum board.

Independently Tested Sound Transmission Loss Reference								
Frequency	40hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	24 dB	16 dB	33 dB	48 dB	55 dB	62 dB	63 dB	66 dB



STC 57 Wall Assembly

Riverbank Acoustical Laboratory -Test # TL-04-275
Weight: 8.1lb/ft^2 (39.6kg/m^2) Thickness: 6.75in (17.1cm)

Assembly Construction: wood studs 16” (40.64cm) o.c. staggered 8” (20.32cm) o.c., 3 1/2” (8.89cm) glass fiber batt, 16 oz. (453.59g) Acoustiblok, 5/8” (1.59cm) Type X gypsum board.

Independently Tested Sound Transmission Loss Reference								
Frequency	40hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	21 dB	20 dB	38 dB	47 dB	54 dB	58 dB	62 dB	68 dB

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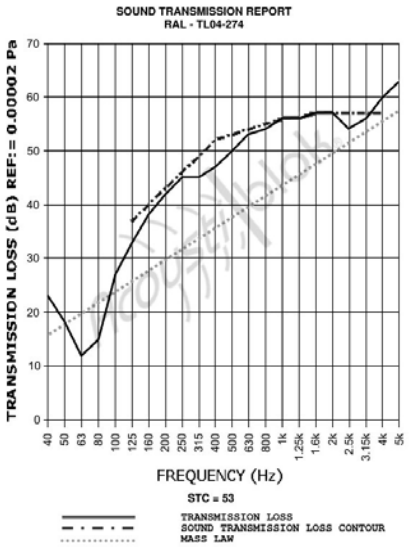
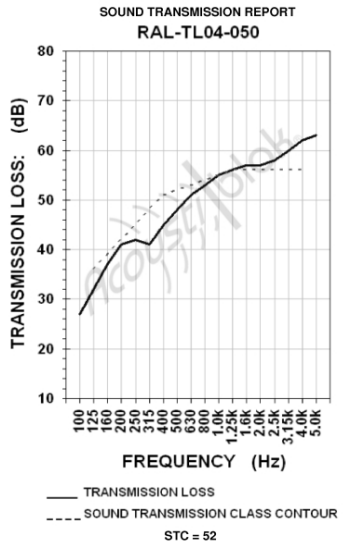


STC 53 Wall Assembly

Riverbank Acoustical Laboratory -Test # TL-04-274
Weight: 6lb/ft^2 (29.2kg/m^2) Thickness: 4.875in (12.4cm)

Assembly Construction: metal studs 24" (61cm) o.c., 3 1/2" (8.89cm) R-13 glass fiber batt, 16 oz. (453.59g) Acoustiblok, 5/8" (1.59cm) Type X gypsum board.

Independently Tested Sound Transmission Loss Reference								
Frequency	40hz	80hz	125hz	250hz	500hz	1000hz	2500hz	5000hz
T.L.	23 dB	15 dB	33 dB	45 dB	50 dB	56 dB	54 dB	63 dB



STC 52 Wall Assembly

Riverbank Acoustical Laboratory -Test # TL-04-050
Weight: 6.8lb/ft^2 (33.3kg/m^2) Thickness: 5in (12.7cm)

Assembly Construction: 2"x4" (5cm,10cm) wood studs 24" (40.64cm) o.c. 3 1/2" (8.89cm) glass fiber batt, 16 oz. (453.59g) Acoustiblok, 5/8" (1.59cm) Type X gypsum board.

Independently Tested Sound Transmission Loss Reference								
Frequency	100hz	160hz	250hz	500hz	800hz	1000hz	2500hz	5000hz
T.L.	27 dB	37 dB	42 dB	48 dB	53 dB	55 dB	58 dB	63 dB

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Independently Tested and Rating Certified Acoustiblok® Floor/Ceiling Assemblies

CARPET ON WOOD

HARDWOOD

TILE ON CONCRETE

Floor/ceiling construction presents special challenges for noise control: Impact noise is a major factor, and as load bearing surfaces, floors can not be floated or isolated with an air gap without using costly exotic materials and techniques. Acoustiblok sound barrier material, in conjunction with Acoustipad or Acoustiwool underlayments, are the core components for cost effective solutions that meet code requirements and architectural specifications while using conventional construction design and installation methods.

IIC, Impact Insulation Class, is a standardized measurement of a floor/ceiling assembly's capacity to block impact noise (footsteps, dropped objects, etc.). STC, Sound Transmission Class, is a measurement of a partition's ability to block airborne sound (speech, music, etc.). The higher the IIC or STC value, the more noise is blocked. Minimum IIC and STC values are often called out in architectural specifications, and in some cases are required to meet code or public policy requirements.

HARDWOOD & GYPCRETE

TILE ON CONCRETE

HARDWOOD ON PAN FLOOR

Acoustiblok enables designers to meet demanding IIC and STC specifications while using conventional construction materials and techniques, reducing both design and construction costs. All IIC and STC values cited by Acoustiblok Inc. are from independent acoustical laboratory test results. To obtain results comparable to tested values, it is necessary to conform closely to the configuration detailed in the applicable test reports, and use good practices to control penetrations and flanking noise paths. Acoustiblok is UL Classified for commercial, institutional, and residential use in all L500 series floor/ceiling designs per the UL Fire Resistance Catalog. Contact Acoustiblok for independent laboratory test reports, technical and application support for design & installation.

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