



STC SOUND CONTROL



Comprehensive Guide to the
**STC BOX SEAL™ &
INTUMESCENT INSERT™**



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THE NEED FOR ACOUSTIC COMFORT

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**Most of the time, we ignore sound until it becomes a problem.
But once it does, it's often a big one.**

From hotel guests, to office workers, to residential tenants – occupants of buildings rightfully demand privacy in their rooms and office spaces, and that peaceful experience extends to sound. Occupants don't want to be heard by their neighbors, and they likewise don't want to hear what's happening in the next room.

The STC Box Seal provides a simple, high-performance, and cost-effective solution for reducing sound that passes through electrical outlets, thereby improving acoustic comfort.

WHY ELECTRICAL OUTLETS MUST BE SEALED

SOUND CONTROL

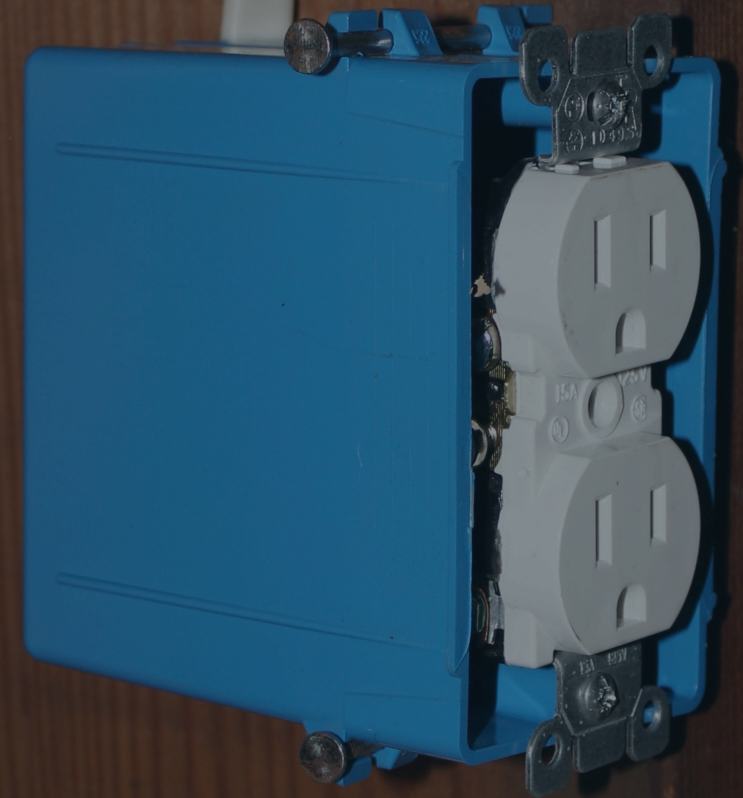
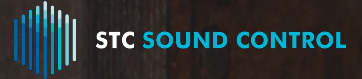
When noise becomes or is expected to become an issue, the instinctive response is often to build a thicker wall. However, sound travels readily through flanking paths like recessed outlet boxes, which are essentially holes in the wall. Building a thicker partition won't solve the problem. Rather, the holes need to be sealed.

FIRE PROTECTION

Partitions not only isolate rooms from noise, but also protect rooms from the spread of fire. When electrical outlets are recessed into these partitions, and outlets on opposite sides of the wall are within 24-inches of each other, building code (IBC 714.3.2) requires special protective measures for these outlets to prevent fire from spreading.

Building code requires fire partitions to be 1-hour fire rated as separations for dwelling units in apartments, condominiums, and assisted living facilities, as well as for sleeping rooms in hotels and dormitories. These are the same partitions where sound control is desired, and often required by code (IBC 1207.2).

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CHALLENGES OF MARKET STANDARD SOLUTIONS

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The most common solution for providing fire protection in electrical outlets is a putty pad.

When it comes to sound however, malleable clay provides almost no resilience for sound isolation; it is only the additional mass of putty pads that provides some acoustic benefit: 3 dB at most.

Meanwhile, putty pads require an inspection since they are hidden in the wall. They can also fall off undetected and cannot be installed once the partition is completed.

Luckily, STC Sound Control provides a better solution.

A BETTER SOLUTION

PRODUCT OVERVIEW

The STC BOX SEAL™ & STC INTUMESCENT INSERT™ remove the mess and hassle of putty pads by providing two single-component units that easily fit into the electrical box.

Together, they provide better sound isolation, and the same level of fire protection as putty pads. They can also be easily verified by inspection, even after the partition is constructed.

STC BOX SEAL™



The **STC BOX SEAL™** is a patented neoprene rubber gasket designed to reduce sound that passes through recessed electrical outlets and into adjoining rooms.

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STC INTUMESCENT INSERT™



The **STC INTUMESCENT INSERT™** is a single-component fire-rated pad that expands in the event of a fire to seal off the opening and prevent the spread of flames.

PERFORMANCE



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SOUND CONTROL

Calculated projections, lab tests, and field tests all show that the Box Seal improves the value for the **outlet** from STC-19 to **STC-26**: a 7dB improvement that translates to significant sound isolation performance of the separation. Looking at the overall partition, the STC Box Seal can bring the total effective sound isolation value to **STC-62** and higher.

FIRE CONTROL

The **STC INTUMESCENT INSERT™** is certified and listed by UL as a wall opening protective material, and can be used for outlets in 1-hour fire-rated partitions to meet the "24-inch rule." When exposed to fire, it expands to form a char that will seal off the opening, prevent the spread of flames, and limit temperature rise on unexposed surfaces.

BOX SEAL ADVANTAGE

The STC Box Seal and Intumescent Insert provide a simple, high-performance, and cost-effective solution.

SIMPLE

Reduced installation complexity

Just fit the STC BOX SEAL around the device and use a screwdriver to secure it in place with the wall plate. For the STC INTUMESCENT INSERT, simply remove the adhesive cover strip and apply to the inside rear surface of the box device.

HIGH- PERFORMANCE

Best-in-class acoustic ratings

A 7dB improvement in the sound rating of the outlet with the seal translates to noticeable sound reduction from adjoining rooms, especially for high-STC partitions. Meanwhile, a 1-hour fire rating from the insert provides all the fire protection that is required.

COST- EFFECTIVE

Comparable price to putty pads

STC Intumescent Inserts are sold at lower prices than competitors' inserts or putty pads. Sold as a set together with the STC Box Seal, the total cost for both is lower or comparable to that of most other inserts or putty pads.

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BOX SEAL & INTUMESCENT INSERT COMPARISON

Compared to putty pads, the STC Box Seal and Intumescent Insert provide multiple benefits.

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	STC SOLUTION	PUTTY PAD
Noise Isolation	Δ STC-7	Δ STC-3
Fire Protection	1-hour fire rated	1-hour fire rated
Installation	No mess or waste; simple fit into outlet	Must be cut and molded to box. Can create mess & waste
Retrofit for Code Upgrade	Can be installed after partition is completed	Cannot be installed to outside of box after partition is completed
Evident Compliance	Can be verified simply by removing wall plate	Can fall off undetected. Unverifiable after partition is completed

WHAT STC CAN DO FOR YOU



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The STC Box Seal provides multiple benefits for electricians, building owners, and occupants.

We're here to answer your questions and provide any technical guidance required.

Contact us today to find out how you could make your building more **acoustically comfortable**.

Email: info@stcsoundcontrol.com
Phone: 716-839-0900
Web: www.stcsoundcontrol.com



APPENDIX: TECHNICAL DETAILS & FAQ



INTUMESCENT INSERT INSTALLATION

OVERVIEW

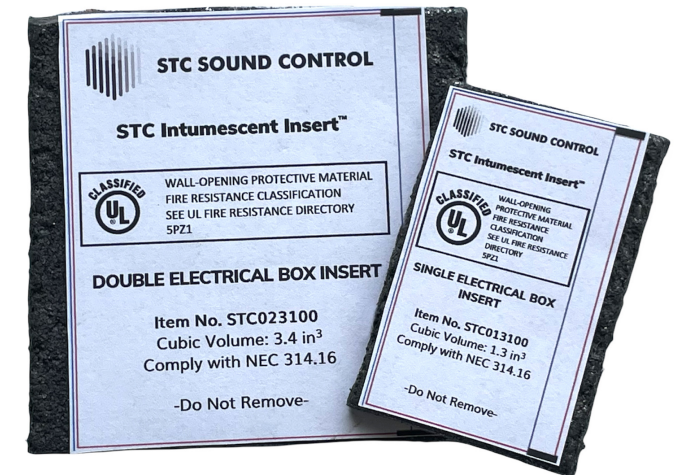
Remove the adhesive cover strip and apply to the inside rear surface of the box device

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STC INTUMESCENT INSERT™

1. Make sure that the rear interior surface of outlet box is clean, dry and not contaminated.
2. Remove the protective adhesive cover paper from the tape on the STC Intumescent Insert and secure the pad to the inside back wall of electrical box prior to installing wires or devices.
 - a. Center pad from top and bottom of box. Use the single pad for a single box (2" x 3"), and double pad for double box (4" x 4").
 - b. Limit wire number and size to comply with NEC 314.16 (formerly 370.16) or other applicable codes.



BOX SEAL INSTALLATION

OVERVIEW

Fit the STC BOX SEAL around the device and use a screwdriver to secure it in place with the wall plate.

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STC BOX SEAL™

1. Verify that the edge of the outlet box is flush with or slightly recessed from the wall surface. Remove any burrs from the cut edge of the gypsum board opening that may interfere with a smooth, tight fit to the wall.
2. With the electrical device installed and the wall plate removed, place the preformed STC Box Seal over the exposed outlet box flush with the device protruding through the precut opening in the seal.
 - a. The front of the Box Seal faces the wall plate and has long recesses for stiffening ribs on some manufacturer's wall plates to fit without warping.
 - b. The back of the Box Seal faces into the outlet box. It has ribs that fit into the annular space of the opening for the outlet box.
3. Fit the wall plate over the preformed seal and hold in place with plate-securing screws.
 - a. Leave any rubber flash covering the screw holes and punch through with the screws. The added flash will provide for additional sealing.
 - b. Use ½" long 6-32 oval head screws (some wall plates come with screws that are too short to fit into the device).
4. Tighten screws to pull the device flush with the wall plate and the wall plate snug against the face of the gypsum board.



Figure 1: Front View



Figure 2: Back View

CONFIGURATIONS

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CONFIGURATIONS

The STC Box Seal comes in 14 different configurations across one-gang and two-gang layouts, while the STC Intumescent Insert comes in two sizes for single and double boxes.

OUTLET SIZE		
BOX SEAL	One-Gang	Two-Gang
	Duplex Receptacle	Duplex Pair
	Toggle Switch	Toggle Pair
	Decora	Decora Pair
	Single Data/Phone	Duplex/Toggle
	Double Data/Phone	Duplex/Decora
	Four-port Data	Decora/Toggle
	Blank	Blank
BOX TYPE		
INTUMESCENT INSERT	Single (2x3)	Double (4x4)
	Single Insert	Double Insert

PERFORMANCE:
STC 62+

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The STC Box Seal™ performs at STC-62 and higher.

Consider a conference room, 15' x 20' x 8' high with 347 sabins of sound absorption due to padded carpet, acoustical panel ceiling, and upholstered seating. The shared wall, 15' x 8' to an office, is constructed at STC-62 with sound attenuation blankets and has one back-to-back outlet. With no treatment for the recessed outlet the wall performs with an effective *STC-57.5* and *returns to STC-62* with the *Box Seal* installed at the outlet.

This style of presentation of product performance depends upon the STC-rating and size of the partition, the number and location of outlets, and the amount of sound absorption in the receiving room. With more sound absorption in the conference room performance could actually exceed STC-62. ***This style of presentation does not indicate the actual performance of the sealing system by itself in a consistent way.*** However, this has been the presentation style employed by other manufacturers, without the details, for their electrical outlet sound sealing products.

A better presentation of performance would indicate what the sealing system contributes as a *component* in a *composite* of construction in the same way that doors as components within partitions are evaluated and presented. Such a method provides a consistent value so that any combination of partition size, STC performance, number of outlets, and sound absorption can be analyzed and evaluated for the *effective composite STC value*.

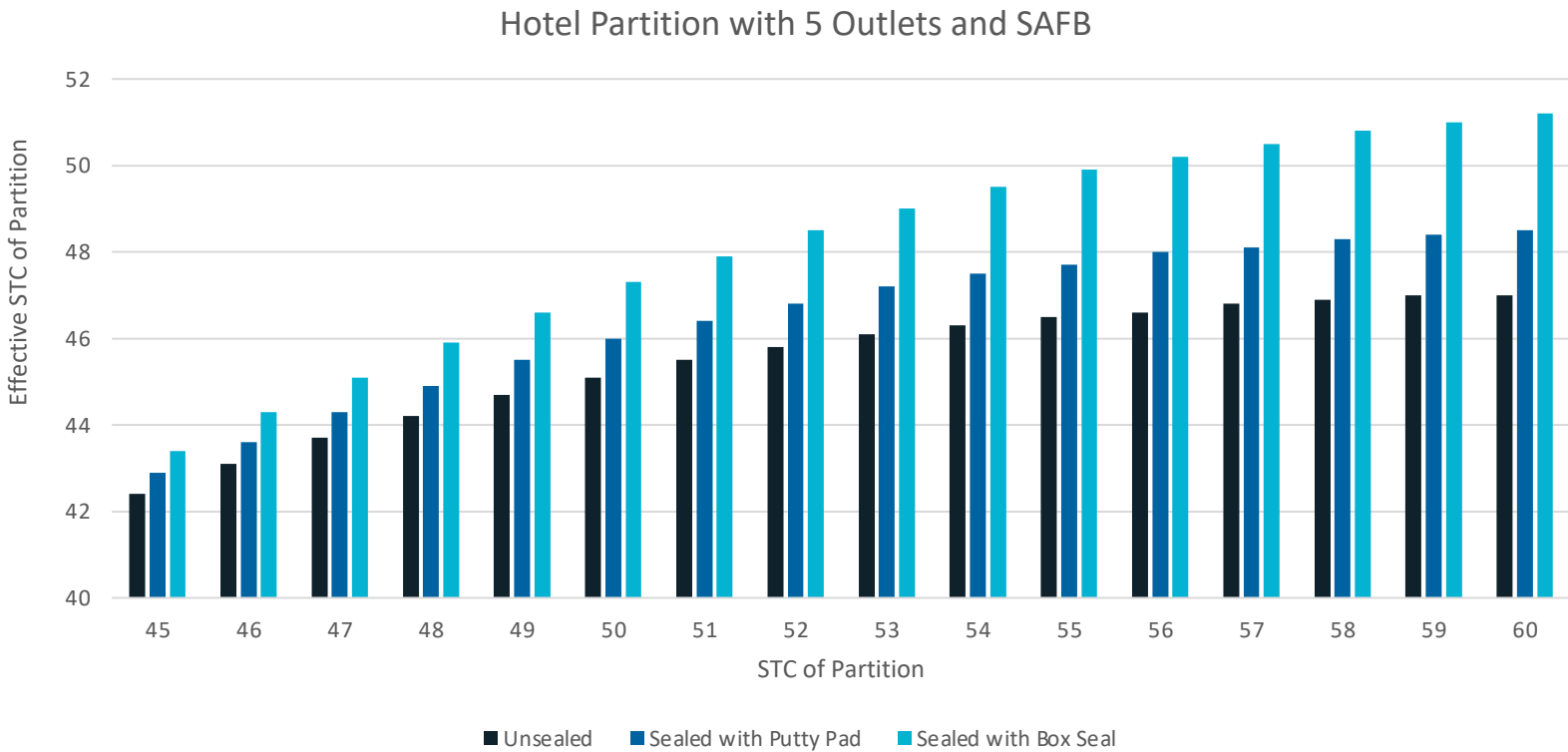
Composite analysis adds the amount of sound coming through the wall to the amount coming through the outlets (using pressure variation, not decibels, so the amounts can be added arithmetically). The values for unsealed outlets and sealed outlets, all back-to-back, have been analyzed based upon independent testing (NGC Testing Company No. 3012001, March 22, 2012, STC Box Seal)

	Component STC Values
Unsealed Outlets:	19.0
Outlets Sealed with the Box Seal:	26.2

PERFORMANCE: BOX SEAL VS PUTTY PAD

The STC Box Seal provides better sound isolation than putty pads, especially in high-STC partitions.

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WHY THE BOX SEAL IS NECESSARY FOR NOISE CONTROL

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Why the STC Box Seal™ is necessary for noise control

- Partitions are tested for sound isolation under ideal laboratory conditions and are given a rating for the amount of sound they stop from passing through called the Sound Transmission Classification (STC). This generally ranges in value from STC-38 to STC-60, measured in decibels, for common gypsum board partitions.
- ***Recessed outlets are essentially holes in the wall that let sound through from one side to the other.*** A pair of outlets on each side of a partition has a value of only STC-19 so they stop much less sound than the wall. Depending on the size and number of outlets in the wall, overall performance of the sound isolation separation is severely compromised.
- ***Increasing the STC performance of the partition does nothing to improve the overall sound isolation*** since the sound still comes through the recessed outlets. Consider a pail of water with holes in it – increasing the thickness of the shell of the pail does nothing to keep water from pouring through the holes.
- ***The outlets need to be sealed to obtain the performance level of the partition.*** Calculated projections, lab tests and field tests all show that the Box Seal improves the value for the outlet from STC-19 to STC-26.2, an increase that translates to significant improvement in the overall sound isolation performance of the separation. Full recovery of the partition STC value is usually achieved, given a reasonable number of outlets and normal sound absorption values in the receiving room.
- ***Building Codes require sealing of outlets.*** The International Building Code (IBC) is the standard for most state and local codes. Dwelling units and sleeping rooms in apartments and hotels are required by IBC 1207.2 to have recessed outlets sealed in separating partitions and at corridors.

Putty pads claim to have sound isolation properties. However, they are made of malleable clay, not resilient neoprene rubber. The additional mass of putty pads provides a little benefit, 3 dB at most, and malleability offers none. Resilience and mass together, as in the Box Seal, is what will stop the passage of sound through this flanking path with up to 7 dB improvement.

The presence of sound attenuation blankets (insulation) in the stud cavity of the partition will also have an effect on the performance of the Box Seal. According to calculations based on laboratory and field tests, an unsealed set of back-to-back outlets in a partition **without** sound attenuation has a **STC-19** and improves to **STC-26.2** with the Box Seal. For comparison, an unsealed set of back-to-back outlets in a partition **with** sound attenuation will have a **STC-22** and improves to **STC-27.5** with the Box Seal.

FAQs

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Q: What is the STC Box Seal made of?

A: Neoprene, a dense and resilient rubber selected for its ability to isolate vibrations through viscous damping. It is also specially compounded to be Class A fire-rated per ASTM E119.

Q: Will there always be a 7-decibel improvement in sound transmission loss?

A: In high-STC partitions the Box Seal will achieve 7-db improvement of sound transmission loss and will return the partition to its full rated performance. In low-STC partitions sound will transmit effectively through the partition as much as through the outlets, so the effect is less dramatic. Performance is also affected by sound attenuation batts in the partition, and will always be improved with use of the Box Seal.

Q: Does the Box Seal meet National Electric Code (NFPA 70) requirements?

A: Yes. The Box Seal spans the wall opening just like the wall plate so that it occupies no space inside the electrical box. Specifically, the requirements of Section 314.16 are unaffected by use of the Box Seal.

Q: What color is the Box Seal?

A: The standard color is light almond. The edge of the seal is an inconspicuous 1/16-inch thick, and the color blends well with light-colored wall plates. The edge can also be painted once installed.

Q: What configurations and sizes are available?

A: NEMA configurations for one-gang and two-gang arrangements are standard for duplex receptacles, toggle switches, Decora-size openings, and data/TV/phone outlets. Custom configurations are available by special order and pricing. Box Seals are made to fit flush to the edge of standard-size wall plates. Midsize and oversize plates also fit; annular space should not exceed 1/8-inch in fire-rated walls.

Q: Can the Box Seal be used in a fire-rated partition?

A: Yes, the Box Seal can be used for existing outlets in fire-rated partitions under any conditions. For new outlets, comply with the "24-inch Rule" of the International Building Code (714.3.2) for protecting recessed outlets on opposite sides of a fire-rated partition.

Q: Does the Box Seal replace putty pads?

A: The **STC Intumescent Insert** is what provides fire protection for outlets, eliminating the need for putty pads. The **STC Box Seal** provides sound isolation that is superior to that of putty pads. The two can be purchased together for a price comparable to that of putty pads.

ABOUT STC SOUND CONTROL

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OUR START

STC Sound Control was founded by **Paul Battaglia** – an **architect** and **professor** of architectural acoustics – whose passion for and expertise in sound control led to the invention of unique, patented products that address long-standing needs in building markets.

A graduate of the MIT School of Architecture & Planning, Paul's experience spans **40 years** of architectural practice and **30 years** of acoustic education as a professor in the Department of Architecture, University at Buffalo. A member of the American Institute of Architects (AIA) and the Acoustical Society of America (ASA), he has presented multiple cited papers on acoustics.

As an accredited instructor for the ASA, Paul has provided acoustics trainings to some of the top architecture firms in America, including Gensler, OMA, Cooper Carry, Page, GFF, KTGy, Humphreys, and many others.

WHAT WE DO

STC Sound Control designs and manufactures products that easily and inexpensively create **acoustic comfort**.

Whether it's reducing sound from adjoining rooms, absorbing reverberant sound within a room, or minimizing sound from floors above, our products reduce noise-related annoyances in all kinds of settings – from apartments and hotels, to restaurants and office spaces. For architects, developers, contractors, and building owners, we provide solutions that are **easier to install** and more **cost-effective** than leading alternatives, while also exceeding market and building code standards for **acoustic performance**.

Headquartered in Buffalo, New York, STC Sound Control manufactures its products in partnership with TMP Technologies – a multinational market leader in foam, rubber, plastic, and metal fabrication – and currently serves customers across the continental United States.



STC SOUND CONTROL