



Pemko Acoustic Products

CONTENTS:

The Impact of Sound	224
Basic Acoustics	224
Sound and STC Ratings	225
Acoustic Seal Sets	226
Acoustic Thresholds	227
Saddle Thresholds	228
Automatic Door Bottoms: PDB Series	229
Door Shoes	229
Acoustic Adhesive Corner Pads.....	229
Standard Perimeter Gasketing.....	230
SiliconSeal Adhesive-Backed Gasketing.....	230

INDEX:

PRODUCT	PAGE	PRODUCT	PAGE	PRODUCT	PAGE
151	228	2009	227	PDB411	229
154.....	228	2212	229	PDB4131	229
175.....	228	303.....	230	S44.....	230
1546	228	312.....	230	S442	230
1547	228	315.....	230	S773	230
2006STC_	227	3692	229		
2007STC_	227	ACP112_	229		
2008	227	PEMKOSTCSET	226		

The Impact of Sound

Everyday our ears are met with a barrage of sounds. Sounds can be pleasant, like music or laughter. But they can also be disruptive, like construction or traffic, or even just the people in the cubicle next door. At a certain point sound becomes noise and we look for ways to control it. Sound control is especially important in classrooms, hospitals, hotels and offices, as it impacts our ability to learn, heal, sleep and think.

The U.S. Green Building Council recognizes the importance of acoustical control by including LEED Indoor Environment Quality (IEQ) credits for acoustics.

Description of Sound

Sound can be described as vibrations in the air moving in waves. The rate of sound vibrations measured in cycles per second is called frequency and is measured in hertz (Hz). Sound pressure levels are measured in decibels (dB). For a list of common noises and their related decibel level, see the chart on the right.

Sound Level dB

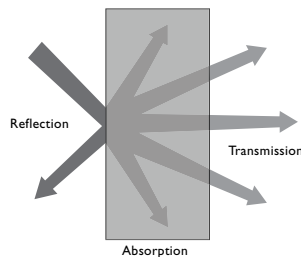
0	Threshold of hearing	Inaudible
20	Very rural environment	Extremely quiet
30	Quiet home	Faint
40	Quiet office	Distant sounds audible
50	Background conversation	Moderate
60	Radio/Television in home	Moderate
70	Highway noise	Moderately loud
80	Background factory noise	Loud
90	Noisy factory	Very loud
105	Elevated train	Deafening
120	Bass drum at 3'	Physical pain
130	Jet aircraft at 100'	Physical pain

Basic Acoustics

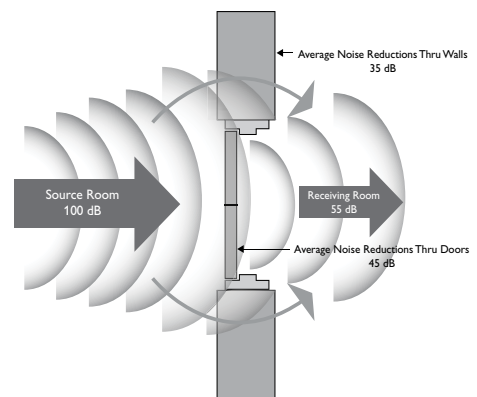
Sound transmission reduction relies on two main principles:

Sound Absorption - Removing sound energy from within a room by using materials such as acoustic tiles or open cell foam to soak up sound.

Sound Insulation - Preventing the transmission of sound waves by introducing a barrier. Examples include brick, concrete, metal, heavy doors, etc.



Sound waves will travel the path of least resistance. A high performing door will not compensate for less performing materials in the walls around it.



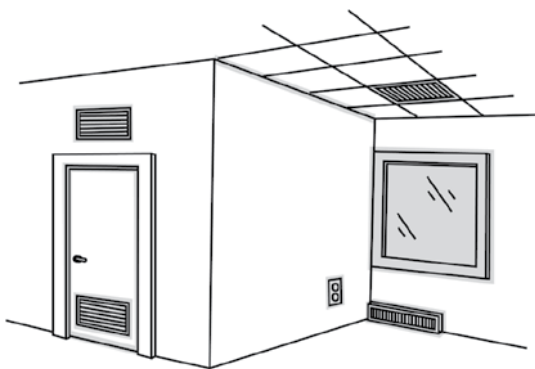
In order to reduce the transmission of sound, materials are added between the source room and the receiving room. The resulting change in decibel level is the sound transmission loss and is given a Sound Transmission Class (STC) rating.

The higher the rating number, the lower the transmission of sound. The STC rating is roughly the decibel reduction a partition can provide. For instance, if a 100 dB noise is reduced to 55 dB, that product roughly has a STC 45 rating.

Sound Flanking

Flanking is the leakage of airborne sound around a door opening through any available gap. Flanking between the door leaf and the surrounding frame is reduced by the use of seals.

Optimum sound attenuation performance is likely achieved using a four sided frame with a sill made to the same detail as the head and the seals set in a single plane. If a full four sided frame is not an option, then alternative threshold sealing options should be made such as automatic door bottoms, door shoes and/or thresholds.



Active STC Rating	Level Of Speech Heard
STC-30	Loud speech understood
STC-35	Loud speech heard but not understood
STC-40	Loud speech audible as a murmur
STC-45	Some loud speech barely audible
STC-48	Hearing strained to hear loud speech
STC-50	Loud speech not audible

STC Ratings

Acoustic Door Testing is done on “sealed-in-place” (fully caulked) doors for door STC ratings, as well as on assemblies (with gasketing and door bottoms) for operable STC ratings. Operable STC ratings are always equal to or lower than the sealed-in-place ratings. The best performance rating on the operable test is a 'zero drop' in the assembly's STC rating. For example, a door with a STC 45 rating can only achieve an operable STC of 45 at its very best; it can never achieve a STC 50.

Also, since sound waves travel the path of least resistance, a high performing door will not compensate for elements like improperly installed seals around doors, the lack of a threshold under the door, a non-insulated frame, louvered doors, or poor seals at the wall/ceiling/floor/mullion connections.

When STC ratings are determined, normal human speech and hearing are used. In most cases the level of reduction does not totally eliminate but rather muffles the sound to an unintelligible level. The chart shown on the left compares the level of speech that would be heard through a door system with the indicated operable STC rating.

Look for Pemko products with this symbol:



Tested To: ASTM E 90-2009

Products indicated by this symbol have been acoustically tested in accordance with ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

Need STC Rated Doors?

Pemko Acoustic Seal Sets are an important part of an overall acoustic solution. ASSA ABLOY Group brands can provide the other elements of the solution including STC Rated Doors, STC Rated Frames and complete STC Rated Assemblies.

For more information please see:

WOOD DOORS: www.assaabloywooddoors.com

Graham | Maiman

CECO DOORS: www.cecodoor.com

CURRIES: www.curries.com

Acoustic Seal Sets

Pemko acoustic components are available in their appropriate sets. These product combinations are lab tested and have known decibel drops when used with sound-rated doors. Each kit includes gasketing, a door bottom or threshold, and a complete set of installation instructions. Installation instructions show the proper installation location for each component for optimal performance.

HOW TO:

1. Locate the Sealed-In-Place (inoperable) rating for your door.
2. Determine the maximum allowable drop for your opening (i.e. -1 db). Note: the numbers are represented as negative numbers as they will decrease your inoperable rating by the number shown (i.e. 45 using a -1 kit will decrease the inoperable rating from 45 to an operable of 44)
3. Find a number in the column below your door's inoperable rating that will keep your opening in the allowable range.
4. Select a kit (or one of the kits given if Alternate Kits are shown), place it on your Purchase Order and add your opening size in inches (i.e. a 3/0 x 7/0 opening will be ordered as a 3684).

Item Number	Sealed-In-Place Door STC Rating				
	58 to 54	53 to 49	48 to 46	45 to 43	<42
PEMKOSTCSET-1A Alternate Kits: 1B, 1C, 1D, 1E		-2	-2	-1	0
PEMKOSTCSET-2C	-3	-2	-2	-1	0
PEMKOSTCSET-2D Alternate Kits: 2A, 2B	-3	-2	-1	-1	0
PEMKOSTCSET-2E	-2	-2	-1	-1	0
PEMKOSTCSET-3A		-2	-1	0	0
PEMKOSTCSET-3D		-2	-1	0	0
PEMKOSTCSET-3E	-2	-2	-1	0	0
PEMKOSTCSET-3B				0	0
PEMKOSTCSET-4A				0	0
PEMKOSTCSET-4B				0	0
PEMKOSTCSET-4D				0	0
PEMKOSTCSET-4E				0	0

NOTE: A seal set cannot increase the sealed-in-place rating; a zero drop is the best performance any seal set can provide.

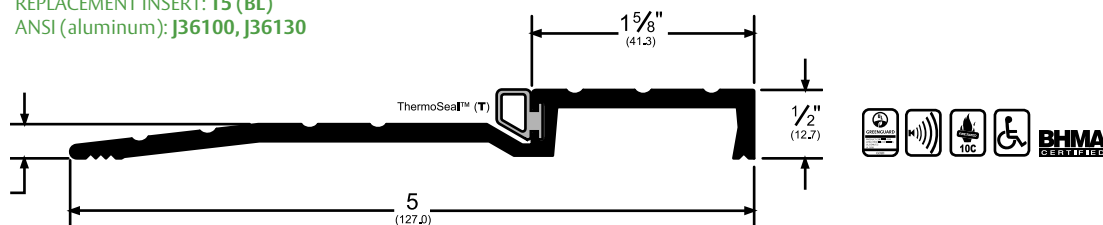
Item Number	Gasketing	Door Bottom	Threshold	Corner Pad
PEMKOSTCSET-1A	S773BL (Single Row) and S44BL (Single Row)	PDB411AE		ACP112BL
PEMKOSTCSET-1B	S44BL (Two Rows)	PDB411AE		ACP112BL
PEMKOSTCSET-1C	S442BL (Single Row) and S44BL (Single Row)	PDB411AE		ACP112BL
PEMKOSTCSET-1D	303AS and S44BL (Single Row)	PDB411AE		ACP112BL
PEMKOSTCSET-1E	312CR and S44BL (Single Row)	PDB411AE		ACP112BL
PEMKOSTCSET-2A	S773BL (Single Row) and S44BL (Single Row)		2008APK	
PEMKOSTCSET-2B	S44BL (Two Rows)		2008APK	
PEMKOSTCSET-2C	S442BL (Single Row) and S44BL (Single Row)		2008APK	
PEMKOSTCSET-2D	303AS and S44BL (Single Row)		2008APK	
PEMKOSTCSET-2E	312CR and S44BL (Single Row)		2008APK	
PEMKOSTCSET-3A	S773BL (Single Row) and S44BL (Single Row)	3692APK773BL		
PEMKOSTCSET-3B	S44BL (Two Rows)	3692APK773BL		
PEMKOSTCSET-3D	303AS and S44BL (Single Row)	3692APK773BL		
PEMKOSTCSET-3E	312CR and S44BL (Single Row)	3692APK773BL		
PEMKOSTCSET-4A	S773BL (Single Row) and S44BL (Single Row)		2009APK	
PEMKOSTCSET-4B	S44BL (Two Rows)		2009APK	
PEMKOSTCSET-4D	303AS and S44BL (Single Row)		2009APK	
PEMKOSTCSET-4E	312CR and S44BL (Single Row)		2009APK	

Acoustic Thresholds

- Pemko Acoustic Thresholds are designed to aid with a door's STC rating.
- Thresholds will not improve a door's "sealed in-place" STC rating
- Visit www.assaabloydooraccessories.us, for more Acoustic products and additional information

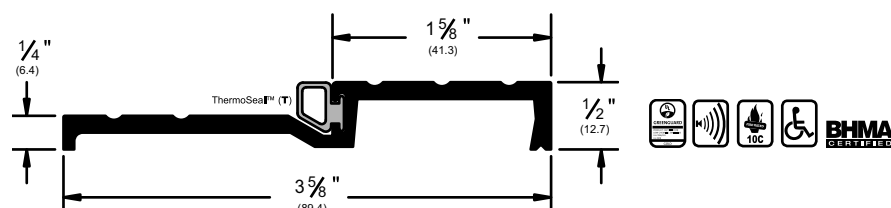
2006STC_

AVAILABLE FINISHES: **A, D**
 REPLACEMENT INSERT: **T5 (BL)**
 ANSI (aluminum): **J36100, J36130**



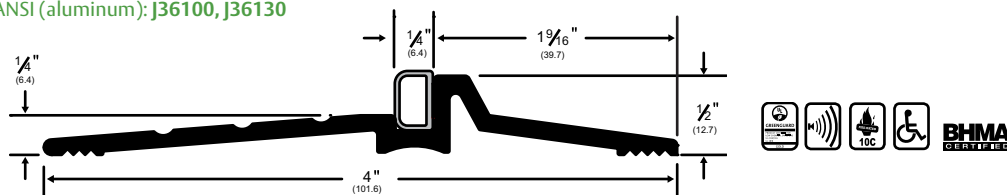
2007STC_

AVAILABLE FINISHES: **A, D**
 REPLACEMENT INSERT: **T5 (BL)**
 ANSI (aluminum): **J36100, J36130**



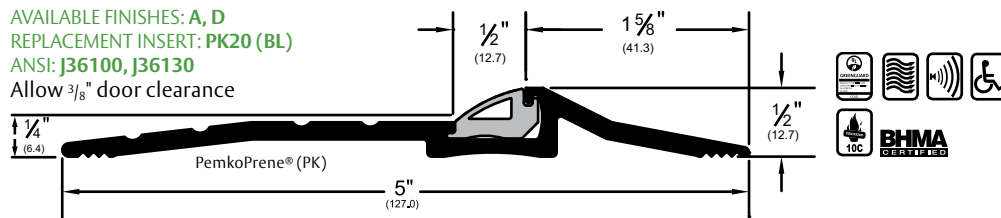
2008_PK

AVAILABLE FINISHES: **A, D**
 REPLACEMENT INSERT: **PK381 (BL)**
 ANSI (aluminum): **J36100, J36130**



2009_PK

AVAILABLE FINISHES: **A, D**
 REPLACEMENT INSERT: **PK20 (BL)**
 ANSI: **J36100, J36130**
 Allow 3/8" door clearance



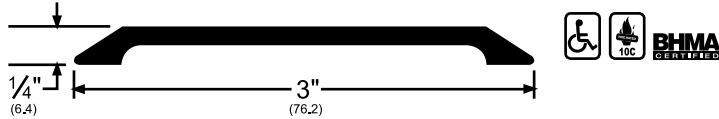
AVAILABLE FINISHES FOR PRODUCTS SHOWN ON THIS PAGE (see General Information section for finish chart)
A (Mill Finish Aluminum) **D** (Dark Bronze Anodized)

Saddle Thresholds

- Use these with Pemko Automatic Door Bottoms to create a smooth, even sealing surface

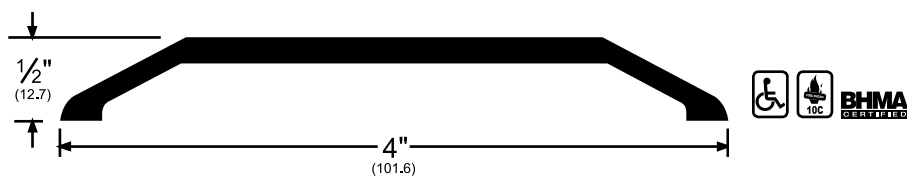
151_

AVAILABLE FINISHES: **A, B, D, G**
ANSI (aluminum): **J32300, J32330**
ANSI (brass): **J12300, J12330**



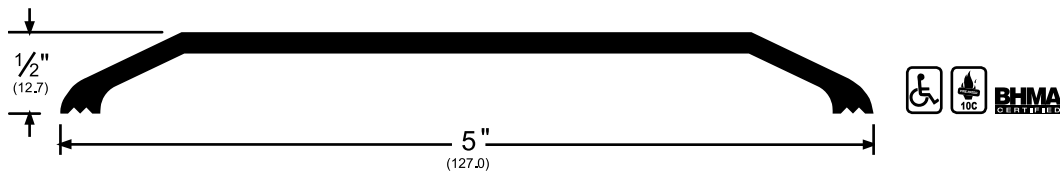
175_

AVAILABLE FINISHES: **A, B, D, G**
ANSI (aluminum): **J32300, J32330**
ANSI (brass): **J12300, J12330**



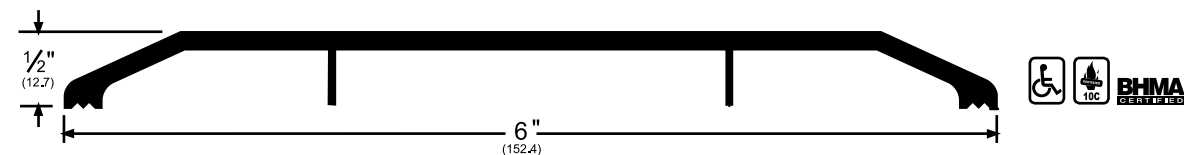
154_

AVAILABLE FINISHES: **A, D, G**
ANSI (aluminum): **J32300, J32330**



1546_

AVAILABLE FINISHES: **A, D, G**
ANSI (aluminum): **J32300, J32330**



1547_

AVAILABLE FINISHES: **A, D, G**
ANSI (aluminum): **J32300, J32330**



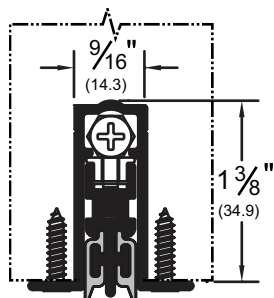
AVAILABLE FINISHES FOR PRODUCTS SHOWN ON THIS PAGE (see General Information section for finish chart)
A (Mill Finish Aluminum) **B** (Mill Finish [Brass] Bronze) **D** (Dark Bronze Anodized) **G** (Gold Anodized)

Automatic Door Bottoms: PDB Series

- Unique patented design creates uniform seal pressure across the entire door bottom, resulting in superior acoustic performance
- Use a flat saddle to create a positive sealing surface that ensures maximum acoustic performance
- United States Patent No. 8,925,250 B2

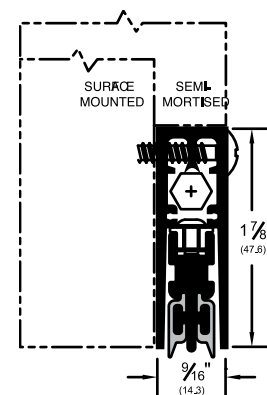
PDB411_E

AVAILABLE FINISHES: **A**
REPLACEMENT INSERT: **PK8 (BL)**
ANSI: **R3G324, R3G325**



PDB4131_E

AVAILABLE FINISHES: **C, D**
REPLACEMENT INSERT: **PK8 (BL)**
ANSI: **R3G334, R3G335, R3G344, R3G345**

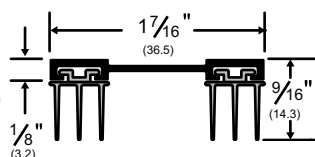


Door Shoes

- Slotted holes for easy adjustment
- Provided with stainless steel fasteners
- Use a flat saddle to create a positive sealing surface that ensures maximum acoustic performance

3692_PK773

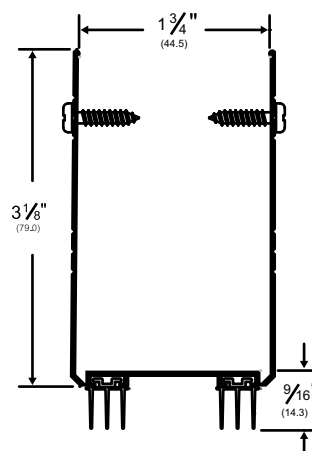
AVAILABLE FINISH: **A**
AVAILABLE LENGTHS: **36\", 48\"**
REPLACEMENT INSERT: **PK773 (BL, GR)**
ANSI: **R3G414, R3G415**



2212_PK773

AVAILABLE FINISHES: **A, D, G**
REPLACEMENT INSERT: **PK773 (BL)**
ANSI: **R3G416**

- Combination door shoe and kick plate
- Excellent Acoustic performance

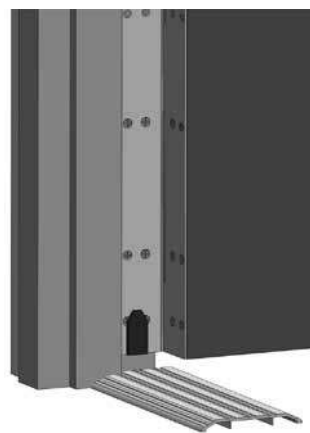
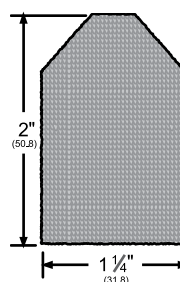


Acoustic Adhesive Corner Pads

- Corner pad with black or white polypropylene pile, with pressure-sensitive adhesive
- Apply to corner of jamb on hinge side to seal against air and light infiltration

ACP112_

AVAILABLE COLORS: **BL, W**



NOTE: Products shown in this section may not be drawn to scale.

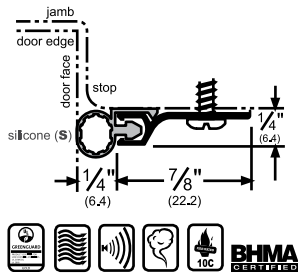
AVAILABLE FINISHES FOR PRODUCTS SHOWN ON THIS PAGE (see General Information section for finish chart)
A (Mill Finish Aluminum) **C** (Clear Anodized) **D** (Dark Bronze Anodized) **G** (Gold Anodized)
Corner Pads: **BL** (Black) **W** (White)

Standard Perimeter Gasketing

- Rigid jamb weatherstrip shown mounted on openings with $\frac{1}{16}$ " gaps; however, each weatherstrip can seal gaps up to the depth of its seal. Seal depth provided on each illustration (example: the **303** has a $\frac{1}{4}$ " seal; therefore, it can seal up to a $\frac{1}{4}$ " gap)
- Punched on 6" centers with slotted holes for adjustment
- Model 303 is available with self-adhesive two-sided tape (TST) and tek screws (3 slotted holes per part) for easy installation. To obtain this option, add "TST" to the end of the part when ordering (example: **303AVTST**)
- Pemko is continually commissioning tests for acoustic assemblies. More profiles may be tested from this category. Please contact Customer Service if the options here don't suit your application.

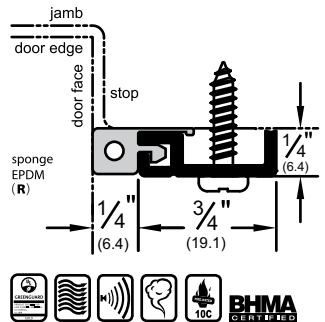
303_S

AVAILABLE FINISHES: **A, BDG, C, D, G, PW, SN**
REPLACEMENT INSERT: **S3 (BL, GR, W)**
ANSI: **R3E164, R3E165**



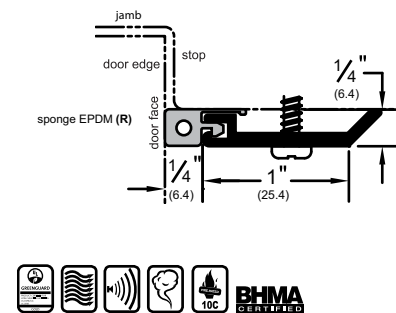
312_R

AVAILABLE FINISHES: **B, C, D, G**
REPLACEMENT INSERT: **ER9BL (BL)**
ANSI (alum): **R3G164, R3G165**
• 312BR is being redesigned. Consult website for current profile.



315_R

AVAILABLE FINISHES: **B, C, D, G**
REPLACEMENT INSERT: **ER9BL (BL)**
ANSI (alum): **R3G164, R3G165**
• 315BR is being redesigned. Consult website for current profile.



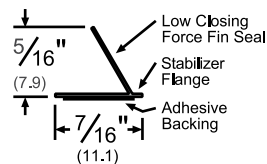
SiliconSeal Adhesive-Backed Gasketing

- SiliconSeal is extruded from high-temperature silicone; effective between -58°F and 450°F
- Self-extinguishing and non-toxic; unaffected by sunlight, ozone, and ultraviolet rays
- Impervious to fungus and mildew; will not deteriorate under normal exposure
- Meets FAR 25.853 Airworthiness Standards for Compartment Interiors

S44_

AVAILABLE FINISHES: **BL, C, D, GR, W**
AVAILABLE LENGTHS: **17', 18' 20', 21', 25', 30', 204', 510'**
ANSI: **R0E154, R0E155**

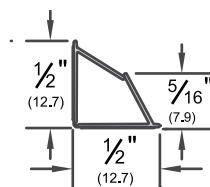
- Designed for tighter frames
- Demonstrates extremely low closing force
- Seal begins compressing at $\frac{5}{16}$ "; compresses to seal up to a $\frac{1}{16}$ " gap



S442_

AVAILABLE FINISHES: **BL, D, GR, W**
AVAILABLE LENGTHS: **17', 18', 20', 21', 25', 30', 510'**
ANSI: **R0E154, R0E155**

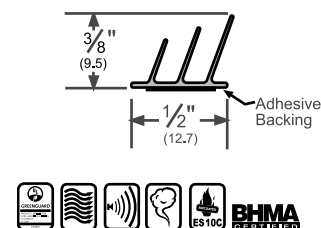
- Fits flush into corner
- Seal begins compressing at $\frac{5}{16}$ "; compresses to seal up to a $\frac{1}{16}$ " gap in either direction



S773_

AVAILABLE FINISHES: **BL, D, GR, W**
AVAILABLE LENGTHS: **17', 18', 20', 21', 25', 30', 250', 500'**
ANSI: **R0E154, R0E155**

- Triple-fin design effectively blocks light and sound from infiltrating a room
- Seal begins compressing at $\frac{3}{8}$ "; compresses to seal up to a $\frac{1}{16}$ " gap



NOTE: Products shown in this section may not be drawn to scale.

AVAILABLE FINISHES FOR PRODUCTS SHOWN ON THIS PAGE (see General Information section for finish chart)

Metal: **A** (Mill Finish Aluminum) **B** (Mill Finish [Brass] Bronze) **BDG** (Bright Dip Gold Anodized)

D (Dark Bronze Anodized) **G** (Gold Anodized) **PW** (Painted White) **SN** (Satin Nickel Anodized)

SiliconSeal: **BL** (Black) **C** (Clear) **D** (Dark) **GR** (Gray) **W** (White)