GENERAL:

Doors are often used to block the passage of sound from one area to another. The sound rating of a door is expressed as Sound Transmission Class (STC). The higher the STC ratings, the better the performance.

STC (Sound Transmission Classification):

The Sound Transmission Class (STC) is a single-number rating of a material's or an assembly's ability to resist airborne sound transfer at the frequencies 50-5000 Hz. In general, a higher STC rating blocks more noise from transmitting through a door opening.

The sound transmission loss performance is measured using ASTM E 90 "Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements" and calculated according to ASTM E 413 "Classification for Rating Sound Insulation."

The ASTM E90 test is conducted on a 3070 door and frame assembly in a laboratory. The assembly is built into a wall, dividing the sound-proof acoustical test room in to two sections. Sound is introduced into the source section of the room at different frequencies and the amount of sound, transmitted through the unit is recorded in decibels.

A door assembly is given an STC rating per ASTM E413 by measuring its Transmission Loss over a range of 21 different frequencies between 50 and 5000 Hz. Measured Transmission Loss (number of blocked dB) at each frequency gets rounded and adjusted with standardized coefficients. The STC rating is than calculated based on formula, when certain conditions of sound deficiencies have been met.

PRODUCTS:

Steelcraft offers different types of door, frame and gaskets for the various STC ratings. The standard Steelcraft door (honeycomb, styrene or steel stiffened core) will provide a STC rating of some type. The gage of the door does not normally affect the STC rating. The core and the gaskets used are the determining factors.

The installation is also a critical factor in the performance. The gaskets must meet the face of the door and sill (floor), making a good seal. In addition any construction that passes from one area to another will also carry sound. As an example, heating and air conditioning ducts will carry sound from one area to another.

STC TESTED DOORS:

The following STC ratings have been achieved with standard Steelcraft door and frame products with the inclusion of gasket seals.

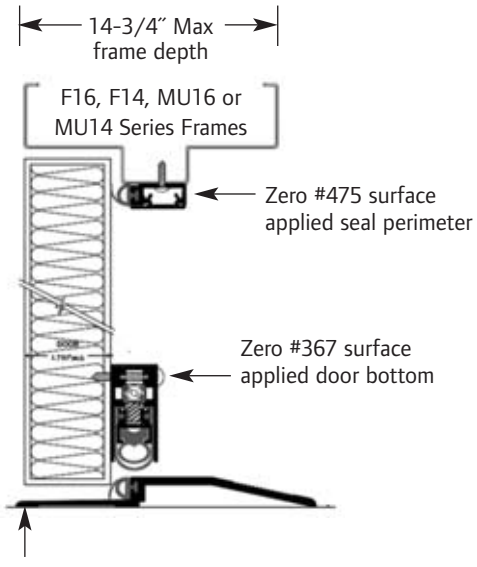
Door Series	Core	STC Rating	Gasket Notes
B-Series B18, 16, 14	Steel Stiffened	40	1, 2, & 3
L-Series L18, 16, 14	Honeycomb	35	1 & 3
	Polystyrene	25	1 & 3
H-Series H18, 16, 14	Honeycomb	36	1 & 3
	Polystyrene	28	1 & 3
CE-Series CE18, 16	Polystyrene	30	1 & 3

Gasket Notes:

1. Perimeter Seals – Zero #475 applies to the stop of the head and jambs.
2. Door bottom – Zero #367, surface applied.
3. Threshold – Zero #560 (non-ADA)
   Zero #566 (ADA compliant)

APPLICATION DETAILS:

The following door, frame and gasket details represent the standard products tested.



Threshold

- Zero #560 for non-ADA applications. Used with standard 3/4" undercut.
- Zero #566 for ADA applications - door requires special undercut.

HARDWARE OPTIONS:

Note – Hardware preps and internal reinforcements will vary due to acoustical requirements.

Hinges:
- Template hinge preparations for 4-1/2″ or 5″ heavy weight butt hinges.
- Continuous hinge preparations available when specified.

Locks:
- Cylindrical 161, 61L and Mortise 86 (sectional or escutcheon trim) lock preps are available for single door and active leaves.

Exit Devices Preps Are Available As Follows:
- Single doors = Rim or Mortise exit devices
- Inactive leaves = Surface Vertical Rods

Closers:
- Surface applied closer reinforcements are available in both doors and frames
- Concealed closer preparations are not available

Strikes:
- Strikes preparations will accommodate specified locking hardware.

Electric Hardware:
- Electric Hinge preparations are available as specified.
- Electric lock preparations with conduit are available as specified.
- EPT (Electric Power Transfer) preps are not available

SOUND TRANSMISSION RATINGS:

Sound transmission classification (STC) ratings are a measurement of the amount of sound passing through a building product. To help understand the STC ratings, the following chart compares the ratings of various building products

Product Description		STC
Doors	Hollow core wood door	19
	Solid core wood door	26
	Solid core wood door (perfect seal)	28
	(2) Solid core wood doors	33
	Steel door with urethane core (perfect seal)	26
	Steelcraft L18 door (perfect seal)	35
	Steelcraft L18 door (PS074 Weatherstrip)	35
Glass (Glazed)	1/4" plate glass	26
	1/8" insulated plate glass, 1/2" air space	32
Wall	6" concrete block	43
	2" x 4" wood stuf with 1/2" gypsum board	34
	2 1/2" steel stud with (2) layers of 1/2" gypsum board each side	46

SOUND MEASUREMENTS:

The following is a quick reference to the decibel ratings and hazardous time exposures of common sounds:

Typical Decibel	Example
1	Lowest sound audible to the human ear
30	Lowest sound audible to the human ear
40	Living room, quiet office, bedroom away from traffic
50	Light traffic at a distance, refrigerator, gentle breeze
60	Air conditioner at 20 feet (6 meters), conversation, sewing machine
70	Busy traffic, office calculator, noisy restaurant **At the 70 decibel level, noise may begin to affect your hearing if you're exposed to it constantly.**

Typical Decibel	Hazardous Zone
80	Subway, heavy city traffic, alarm clock at two feet, factory noise **These noises are dangerous if you are exposed to them for more than eight hours.**
90	Truck traffic, noisy home appliances, shop tools, lawn mower **As loudness increases, the "safe" tim exposure decreased; damage can occur in less than eight hours.**
100	Chain saw, stereo headphone, pneumatic drill **Even two hours of exposure can be dangerous at 100dB; and with each 5 dB increase, the "safe time" is cut in half.**
120	Rock band concert in front of speakers, sandblasting, thunderclap **The danger is immediate; at 120 dB exposure can injure your ears.**
140	Gunshot blast, jet plane **Any length of exposure time is dangerous; noise at 140 dB may cause actual pain in the ear.**
180	Rocket launching pad **Without ear protection, noise at this level causes irreversible damage; hearing loss is inevitable.**