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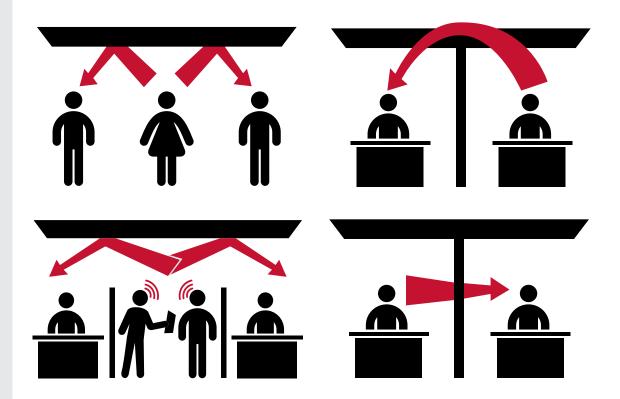
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THE WAY SOUND TRAVELS THROUGH SPACES

Sound travels as a vibratory wave in an elastic medium. At a molecular level, sound is generated when a vibrating object (such as a loudspeaker or human vocal cords) pushes against particles of the medium (such as air) adjacent to it, back and forth, creating an alternate compression and rarefaction of the medium. These disturbances move away from the source in a wave motion, much as a ripple moves along the surface of water when a stone is dropped in.

Airborne sound generally travels in a straight path from its source. However, when sound interacts with other objects and materials, the wave may bounce off partitions, bend around barriers and squeeze through small openings. Air, like water, is adept at sneaking through and around barriers. Consequently, sound traveling through air will exploit the weakest points of a barrier and transfer through even the smallest openings quite efficiently.

The more elastic a substance, the better it can conduct sound. Elasticity is the ability of a material to resist distortion and to return to its original shape after having been subjected to a force. Highly elastic materials, such as steel, are excellent conductors of sound, while inelastic materials, such as gypsum board, can help resist transmission of sound. In the design of sound-rated construction assemblies, the introduction and combination of elastic and inelastic materials can be tailored to meet specific needs of a system.



CONTROLLING AIRBORNE SOUND

The control of airborne sound in any building is determined by the applicable building codes. Among the most important factors used for sound control are:

- Mass: Sound waves must overcome the mass (weight) of a medium before the particles of the medium can be set into motion to transmit sound. Mass may be a factor in the reduction of impact sound transmission. It is most effective—though unpredictable—in the lower frequencies.
- **Isolation:** The retardation of the flow of airborne and structure-borne sound through an assembly or use of special materials, methods of construction and designs. Decoupling is one isolation method, in which the elements of a partition are separated to retard transmission of structure-borne sound.
- **Damping:** When the full capabilities of mass and isolation have been utilized, the next logical step is damping. A method of damping is the process of introducing fibrous sound-absorbing material into the partition to increase the transmission loss. (Damping in floor-ceiling construction has a wider application for impact sound than for airborne sound.) There are several ways to introduce damping beyond just insulation, including limp mass barrier materials.
- **Leaks:** Any leak in a partition that will allow air or light to pass will also leak sound. Small holes in a wall, openings for electrical boxes and plumbing, and cracks around doors are all leaks that will allow sound to pass, destroying the noise reduction effectiveness of the assembly.
- Flanking Paths: Sound waves have sufficient energy to set any construction (assembly) in motion. That means that sound can bypass a sound partition by activating the floor on which the partition rests. Flanking paths are as important to impact sound as to airborne sound.
- Masking Level: Background noise (such as from air conditioning or human activities), also known as masking level, plays an important part in the apparent acoustical performance of a partition. A partition for an apartment located in an area that has considerable amount of outside or "street" noise may prove quite satisfactory, while the same partition in a quiet neighborhood would be unsatisfactory. The difference is the background noise, which "masks" the sound being transmitted through the partition.
- Impact Sound Isolation: Impact sound is also transmitted by vibration, but the energy setting the floor, ceiling or wall into vibration is supplied by a physical act, such as footsteps, a bouncing ball, dropping a toy or a frying pan, moving furniture or slamming a door.

Note:

1. Excerpted with permission from the publisher, Wiley, from *The Gypsum Construction Handbook*—Seventh Edition by USG Corporation. Copyright © 2014.

KEY FACTORS THAT CONTRIBUTE TO SOUND TRANSMISSION CLASS (STC)

SCREW SPACING	Screws spaced closer together will decrease STC and sound isolation.	STC Screw Spacing Fewer Screws More Screws
STUD DEPTH	Greater stud depth allows for more airspace and increased performance.	STC 1-5/8 in. 6 in.
STUD SPACING	Wider stud spacing creates larger air cavities and decreased stiffness for better sound isolation.	STC Stud Spacing 16 in. OC 24 in. OC
STUD TYPE	Steel studs allow greater flexibility and sound isolation without reducing structural integrity.	Steel Wood Stud Type
STUD CONFIGURATION	Separating stud frames adds decoupling and increased air space, increasing sound transmission loss.	STC Stud Configuration Double Staggered Single
STUD GAUGE	Light gauge studs provide better sound isolation than heavy gauge studs.	STC 16 ga. 20 ga. 25 ga. (54 mil) (33 mil) (18 mil)

RESILIENT CHANNELS AND IMPACT ON ACOUSTICAL PERFORMANCE

One of the most effective products for reducing the transmission of airborne sound through wall or floor-ceiling assemblies is the resilient channel. Its fundamental purpose is to decouple the gypsum board from the framing members, thus improving noise isolation by increasing sound transmission loss.

In the 1960s, USG developed the industry's first resilient channel, designated "RC-1." A critical component of its design was the location of the framing member in relation to the slotted (or "dog bone") holes. Specifically, there were 1/8-in.-diameter holes every four inches for screws to attach the channel to the framing members. From an installation standpoint, these slotted holes were always centered on the framing members to ensure maximum acoustical performance. Over the years there have been numerous imitations, and while most use 25-gauge steel, other design variables such as width, shape and hole pattern were always different.

In the early 1990s, USG sold the rights the original RC-1 design. Since then, the USG RC-1 has been rebranded and sold under the name ClarkDeitrich RC Deluxe™, while the RC-1 designation has become a generic descriptor of resilient channels.

Of the resilient channels currently on the market, the ClarkDietrich RC Deluxe™ is the closest to the USG RC-1 design. It retains many of the original design characteristics, such as the "dog bone" slots that are centered on pre-punched screw holes in the flange, as well as an extra-wide 1-1/2 in. flange that simplifies the installation of gypsum board.

From an acoustical perspective, there is ample evidence that the brand of resilient channel can make a significant difference in the overall performance of the assembly. Veneklasen Associates, one of the oldest and most respected acoustical consulting firms in the world, performed controlled laboratory tests on the effects of resilient channel brands and installation methods on airborne sound isolation in single stud wall construction.² For comparison, airborne transmission loss testing was conducted using ASTM E90 for a wood stud assembly that's commonly encountered in multifamily residential projects. Their data shows that the ClarkDietrich RC Deluxe™ achieved STC ratings between 3-7 points higher than the other channels, with differences of up to 10 dB at some third-octave bands.

Due to its superior acoustical performance and relative installation ease, USG has been conducting acoustical laboratory testing using the ClarkDietrich RC Deluxe $^{\text{\tiny M}}$ for several years. It is strongly recommended that before specifying or installing a different resilient channel brand, one should first thoroughly research its acoustical performance data.

Note:

2. Excerpted from LoVerde, John, Dong, Wayland (2009), Quantitative comparisons of resilient channel designs and installation methods, *Inter-Noise* 2009.

STEEL STUD THICKNESS AND IMPACT ON ACOUSTICAL PERFORMANCE

In drywall framing applications, steel studs are selected based on several factors, including structural capacity, which is primarily dictated by the yield strength of the steel and its thickness, or gauge (ga.) Table 1 lists steel gauge values of conventional steel framing with their associated minimum base steel thickness. These gauge and thickness values have become the basis for design nomenclature related to steel framed partitions. However, over the past 15 years the development of equivalent gauge (EQ) studs has added a layer of complexity to the design and specification of steel framed partitions, particularly as it relates to acoustics. Ranges for steel thickness of EQ studs are shown in Table 2, though it's important to note that EQ stud thicknesses vary by manufacturer and continue to change over time, as steel framing manufacturers develop and improve their products.

Table 1: Conventional Gauge Steel Thickness

Conventional Steel Framing		
Steel Gauge	Steel Thickness	
25 ga.	18 mil (0.018 in.)	
22 ga.	27 mil (0.027in.)	
20 ga. ³	30 mil (0.030 in.) ³	
20 ga. ³	33 mil (0.033 in.) ³	
18 ga.	43 mil (0.043 in.)	
16 ga.	54 mil (0.054 in.)	
14 ga.	68 mil (0.068 in.)	

Table 2: Equivalent Gauge Steel Thickness

Equivalent Gauge Steel Framing		
Equivalent Gauge	Steel Thickness ⁴	
EQ25	15 - 16 mil (0.015 in. – 0.016 in.)	
EQ20	18 - 20 mil (0.018 in. – 0.020 in.)	

In terms of acoustical performance, steel thickness of the stud can play a dominant role in the sound transmission class (STC) value of a partition. Generally speaking, a partition constructed with thinner (higher gauge) steel studs will yield higher STC performance than that same partition constructed with thicker (lower gauge) steel studs. As illustrated in Table 3, the difference between conventional 20 ga. (33 mil) studs and 25 ga. (18 mil) studs in the same system configuration can be as much as 6 STC points. Based on extensive testing conducted by USG, STC performance for walls constructed with EQ studs is largely dependent on the steel thickness, reflected in Table 4, which shows equivalent STC values for a wall system constructed with conventional 25 ga. (18 mil) studs and EQ20 (19 mil) studs.

According to the Steel Framing Industry Association, EQ studs account for about 90 percent of all cold-formed steel studs used in the United States.⁵ Because of this, acoustical data for steel framed walls contained in this document are for systems constructed with EQ studs, unless otherwise noted.

STEEL STUD THICKNESS AND IMPACT ON ACOUSTICAL PERFORMANCE (CONTINUED)

Table 3: STC Comparison of Conventional Studs

Comparison of Conventional Studs		
Steel System Description	20 ga. (33 mil)	25 ga. (18 mil)
• (1) Layer 5/8 in. USG Sheetrock* Brand Firecode* X Panels • 3-5/8 in. ClarkDietrich ProSTUD* Drywall Framing System Spaced 24 in. OC • 3-1/2 in. Fiberglass Insulation • (1) Layer 5/8 in. USG Sheetrock* Brand Firecode* X Panels	STC 42 (USG-101001)	STC 48 (RAL-TL11-074)

Table 4: STC Comparison of Conventional and EQ Studs

Steel System Description	25 ga. (18 mil)	EQ20 (19 mil)
• (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X • 3-5/8 in. ClarkDietrich ProSTUD® Drywall Framing System Spaced 24 in. OC • 3-1/2 in. Fiberglass Insulation • (1) Layer 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X	STC 48 (RAL-TL11-068)	STC 48 (USG-150923)

Notes:

- 3. Two thicknesses of 20-gauge studs exist in the market today: the thinner 20 ga./30 mil stud is considered a nonstructural framing member as defined in ASTM C645, while the thicker 20 ga./33 mil stud is a structural framing member as defined in ASTM C955. Steel thickness exceeding 30 mil (0.030 in.) base metal thickness falls into the category of a structural member per ASTM C955.
- 4. Steel thickness of equivalent gauge framing varies by manufacturer and product. It is common practice for USG to utilize ClarkDietrich ProSTUD® products in laboratory acoustical tests referenced in this document.
- 5. Steel Framing Industry Association (sfia.memberclicks.net).

SOUND TRANSMISSION LOSS TESTING **AND BEST PRACTICES**

To ensure the highest performing gypsum panels, sound transmission and impact insulation tests were conducted by accredited laboratories for acoustical performance under laboratory conditions in accordance with ASTM E90, ASTM E413, ASTM E492 and ASTM E989. Additionally, construction of systems listed within reference specific UL Design or GA File Numbers as basis of design.

It is also important to follow best practices for sound control design and installation in order to obtain optimal installed acoustical performance. A basic rule is that sound performance is compromised any place where air can pass. Best practices include but are not limited to:

- All perimeters not covered with joint compound and tape shall be sealed with USG Sheetrock® Brand Acoustical Sealant, including between the floor and the base of the gypsum panels.
- The number and size of penetrations in a partition should be minimized and all openings should be completely sealed.
- Electrical boxes installed on opposite sides of a partition should not be back-to-back or in the same stud cavity. Any unused openings in boxes should be sealed.
- Solid wood or mineral core doors with gasketed frames can help the acoustical performance of the system.
- Use lightweight steel framing instead of wood studs to transmit less sound energy.
- Add fiberglass or mineral wool sound control insulation in the stud cavities.
- Use resilient channels to structurally isolate the gypsum panels from the framing.
- Use sound control underlayment or carpet on pad to reduce impact of sound transmission in floor-ceiling assemblies.

More specific information regarding sound control design and construction can be found in the USG Gypsum Construction Handbook and Gypsum Association's Fire Resistance Design Manual (GA-600).

GENERAL ACOUSTIC PERFORMANCE GUIDELINES

While some differences in Sound Transmission Class (STC) value may be seen in the comparison data for wall assemblies, the differences are minimal and likely due to standard variations⁶ in laboratory testing. Additionally, it has been found that the human ear cannot detect variances in sound levels that are less than 3 dB, as shown in the following chart.

Change in Sound Level	Change in Apparent Loudness
1-2 dB	Indiscernible
3 dB	Just perceptible
5 dB	Clearly noticeable
10 dB	Twice as loud (or quiet)
20 dB	Four times as loud (or quiet)

Note:

^{6.} Based on an interlaboratory comparison, the reproducibility standard deviation for reference specimens tested per ASTM E90, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Element, was found to be 2 dB or less in the test frequency range.

U.S. GREEN BUILDING COUNCIL LEED® V4 **ACOUSTIC PERFORMANCE CREDIT**

Intent: To provide occupied spaces, offices and classrooms that promote occupants' well-being, productivity and communications through effective acoustic design.

Requirements: All occupied spaces in new construction must meet the following requirements, as applicable, for HVAC background noise, sound isolation, reverberation time, and sound reinforcement and masking.

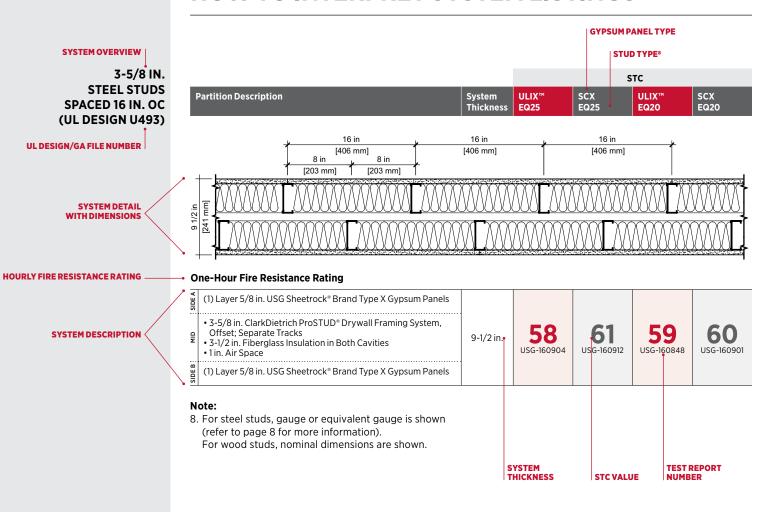
Sound Transmission: Meet the composite sound transmission class (STC) ratings listed in the below table, or local building code, whichever is more stringent.

Minimum STC for Adjacent Spaces		STC Minimum ⁷
Multifamily residence, hotel and motel	Residence, hotel or motel	55
Residence, hotel or motel	Common hallway, stairway	50
Residence, hotel or motel	Retail	60
Standard office	Standard office	45
Executive office	Executive office	50
Conference room	Conference room	50
Office, conference room	Hallway, stairway	50
Mechanical room	Occupied area	60

Note:

^{7.} Excerpted from LEED* v4 Building Design and Construction Rating System Guide by U.S. Green Building Council. Published April 14, 2017.

HOW TO INTERPRET SYSTEM LISTINGS





USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE® X (UL TYPE ULIX™)

- The first lightweight and sustainable 5/8 in. Type X wallboard
- Meet Architecture 2030 Challenge for Products
- Living Building Challenge[™] Red List Free
- · Contains 100% USDA certified biobased content
- Achieved GREENGUARD Gold Certification and qualify as a low-VOC-emitting material (meets CA 01350)
- Underwriters Laboratories Inc. (UL) Classification as to fire resistance, surface-burning characteristics and noncombustibility
- Comply with ASTM C1396, *Standard Specification for Gypsum Board*, for 5/8 in. Type X gypsum wallboard
- Offer comparable strength, sag and impact resistance to standard 5/8 in. Type X
- Listed by UL in the most widely specified wall, column, floor-ceiling and roof-ceiling assemblies (refer to specific UL designs for complete details)

Ideal for use in:

- Commercial or residential applications where 5/8 in. Type X panels are required
- Load-bearing and non-load-bearing wood- or steel-framed fire-rated walls
- Wall, column, floor-ceiling and roof-ceiling assemblies (refer to specific UL designs for complete details)
- Any UL design in which UltraLight Innovation Type X (ULIX™) panels are listed

USG SHEETROCK® BRAND ECOSMART PANELS MOLD TOUGH® FIRECODE® X (UL TYPE ULIX™)

- The first lightweight and sustainable 5/8 in. Type X wallboard with moisture and mold resistance
- Meet Architecture 2030 Challenge for Products
- Living Building Challenge™ Compliant
- Contains 100% USDA certified biobased content
- Achieved GREENGUARD Gold Certification and qualifies as a low-VOC-emitting material (meets CA 01350)
- UL Classification as to fire resistance, surface-burning characteristics and noncombustibility
- Comply with ASTM C1396, *Standard Specification for Gypsum Board*, for 5/8 in. Type X, water-resistant gypsum wallboard and exterior gypsum soffit board
- Listed by UL in the most widely specified wall, column, floor-ceiling and roof-ceiling assemblies (refer to specific UL designs for complete details)

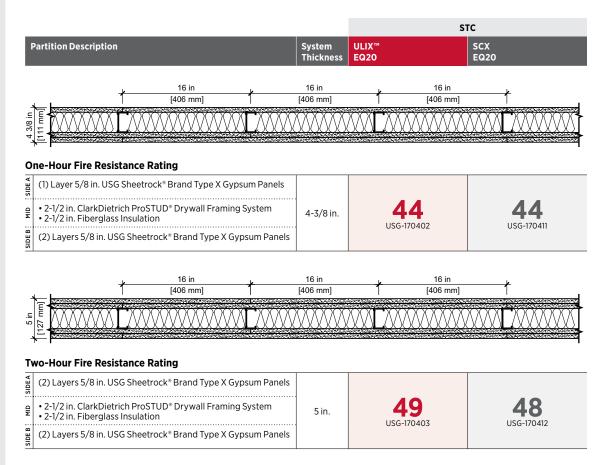
Ideal for use in:

- Commercial or residential applications where 5/8 in. moisture- and mold-resistant Type X panels are required
- Load-bearing and non-load-bearing wood- or steel-framed fire-rated walls
- Interior tile substrate in dry locations or areas with limited water exposure
- Protected exterior soffit and ceiling applications
- · Wall, column, floor-ceiling and roof-ceiling assemblies (refer to specific UL designs for complete details)
- Any UL design in which UltraLight Innovation Type X (ULIX™) panels are listed

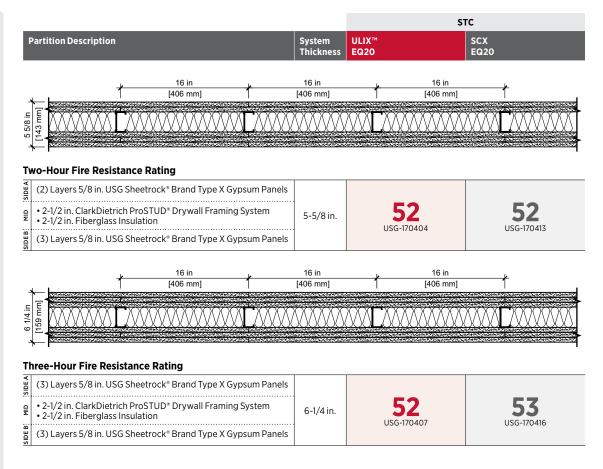
ACOUSTICAL PERFORMANCE

Product	UL Type Designation
5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X	ULIX™
5/8 in. USG Sheetrock® Brand EcoSmart Panels Mold Tough® Firecode® X	ULIX™
5/8 in. USG Sheetrock® Brand Firecode® X Panels (traditional)	SCX

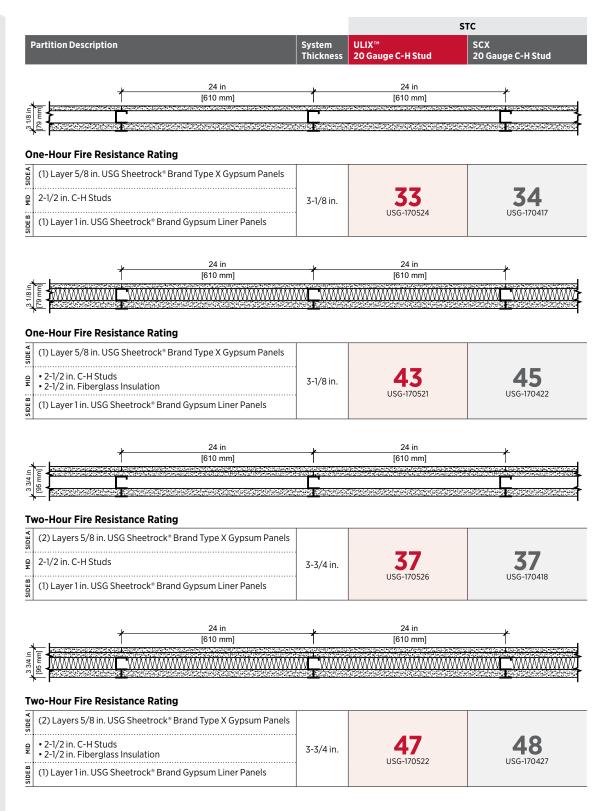
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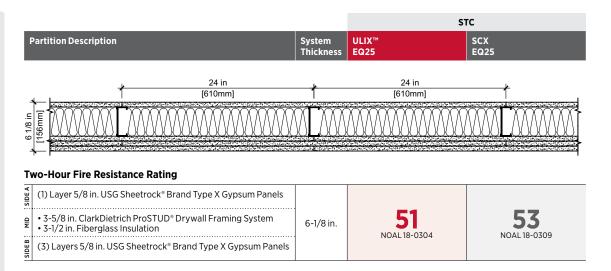
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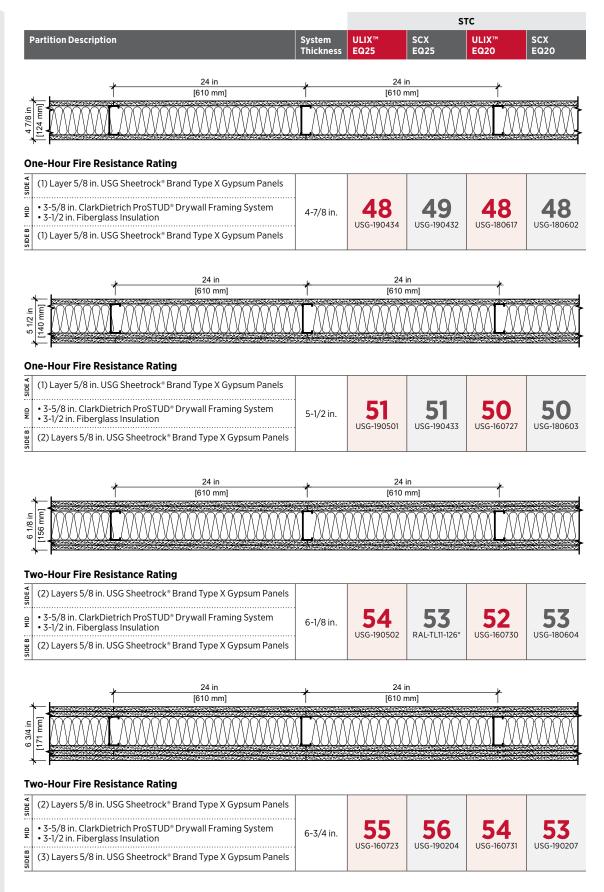
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3-5/8 IN. **STEEL STUDS SPACED 24 IN. OC** (UL DESIGN U408)

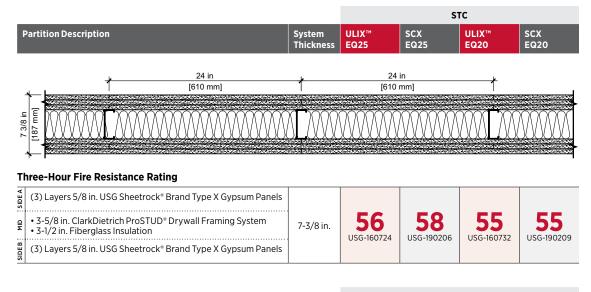


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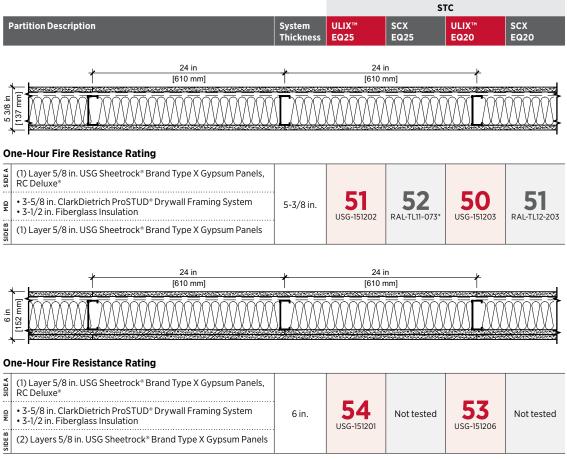


^{*} Sound tests were conducted on traditional gauge studs. Performance on EQ studs will meet or exceed listed STC rating.

3-5/8 IN. **STEEL STUDS SPACED 24 IN. OC** (UL DESIGN U419) CONT.

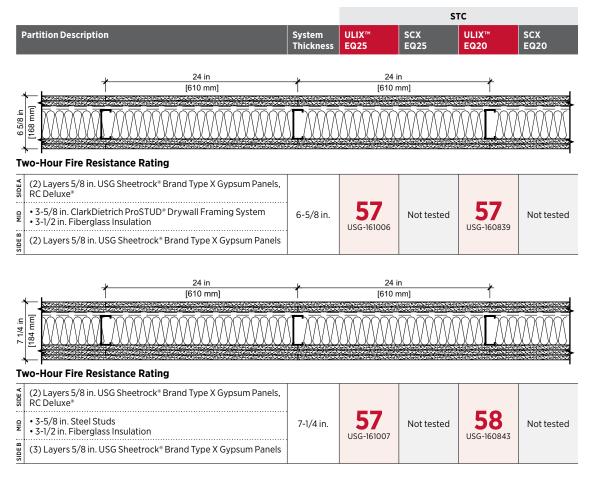


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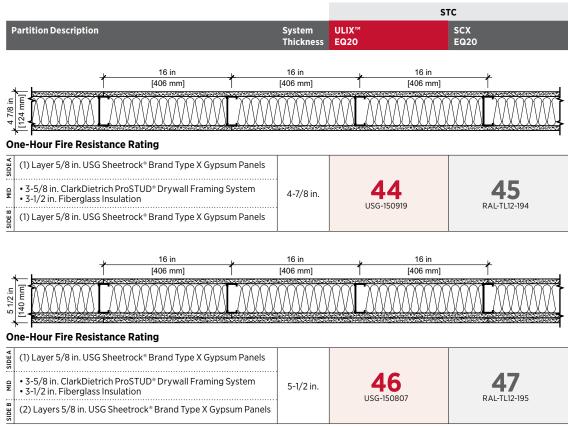


^{*} Sound tests were conducted on traditional gauge studs. Performance on EQ studs will meet or exceed listed STC rating.

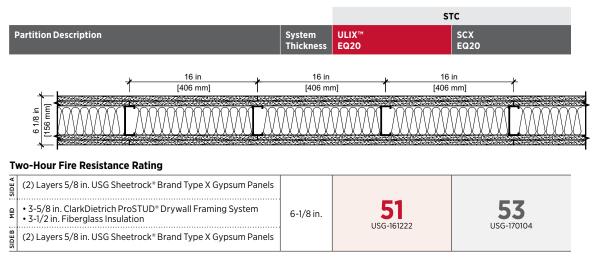
3-5/8 IN.
STEEL STUDS
SPACED 24 IN. OC
AND RESILIENT
CHANNEL
(UL DESIGN U419)
CONT.



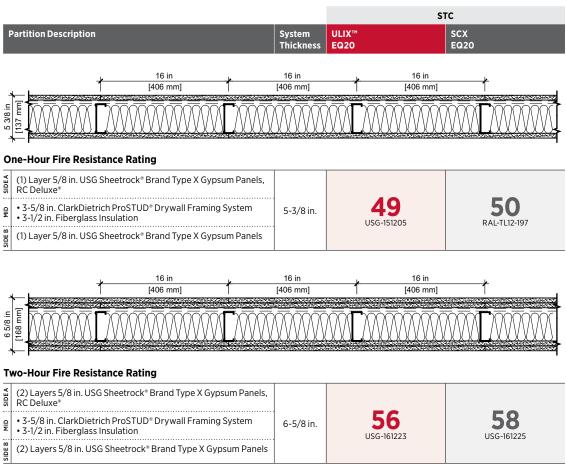
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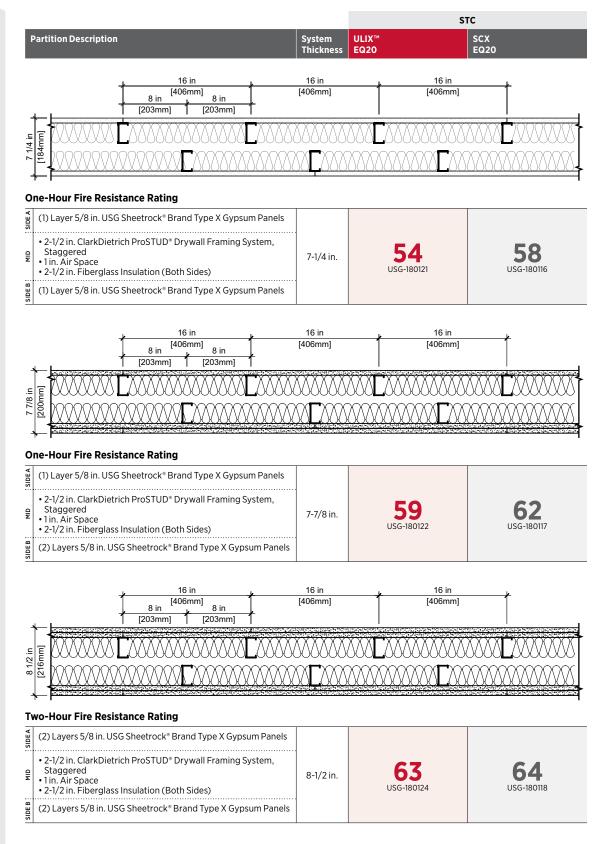
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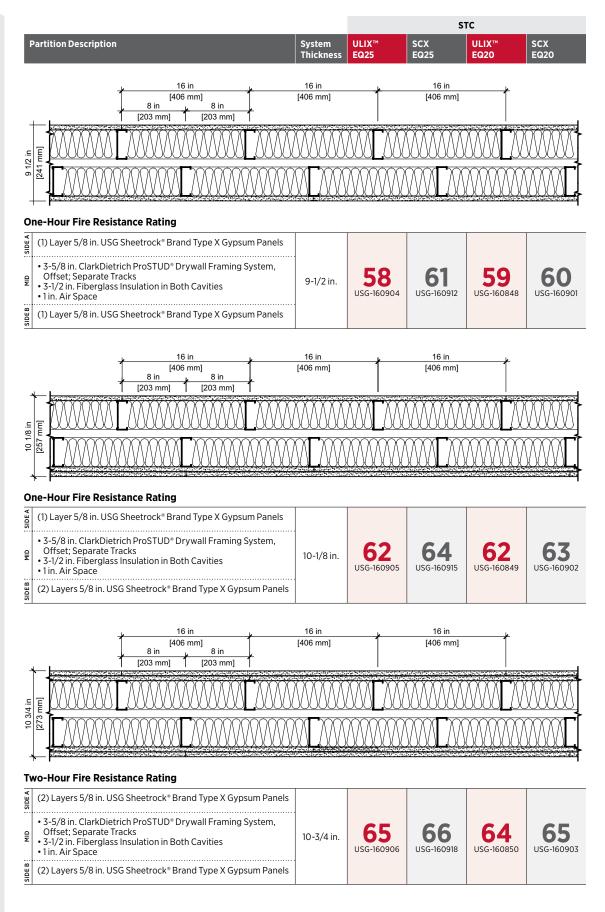
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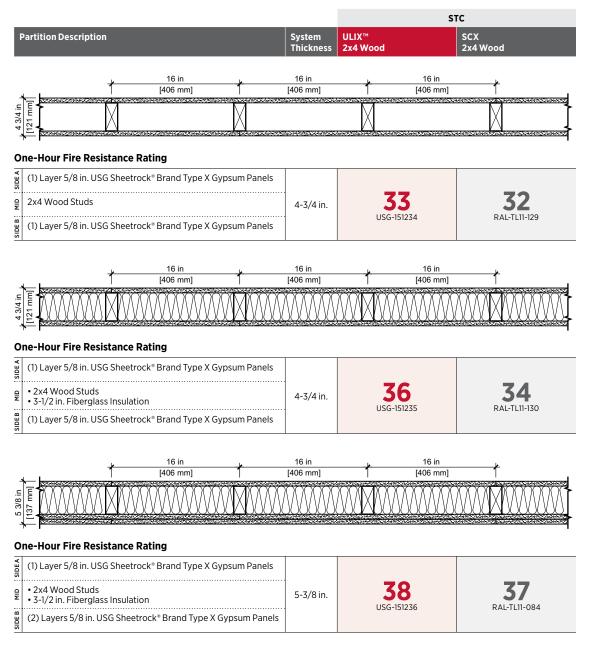
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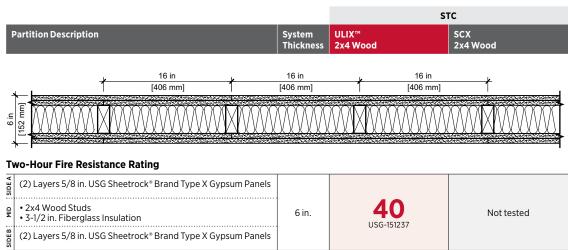
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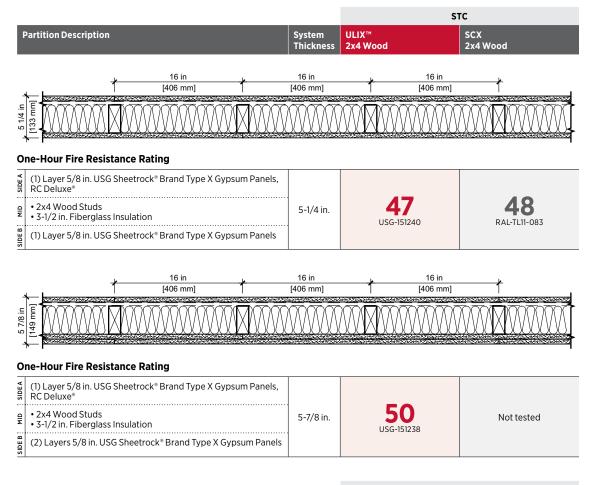
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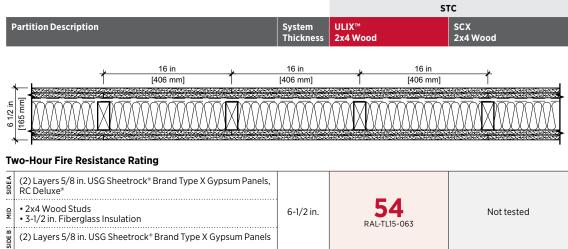
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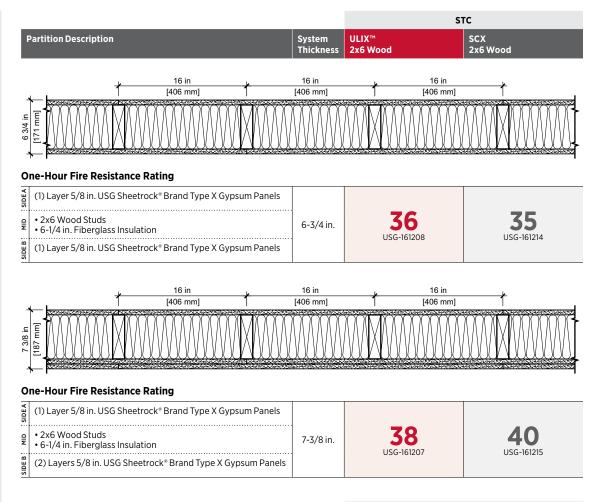
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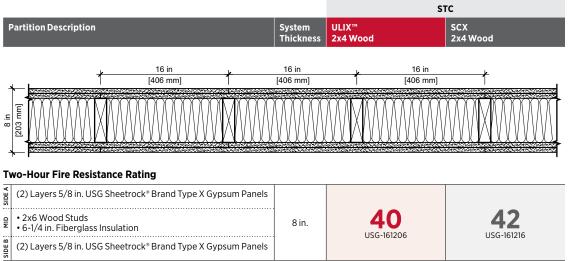
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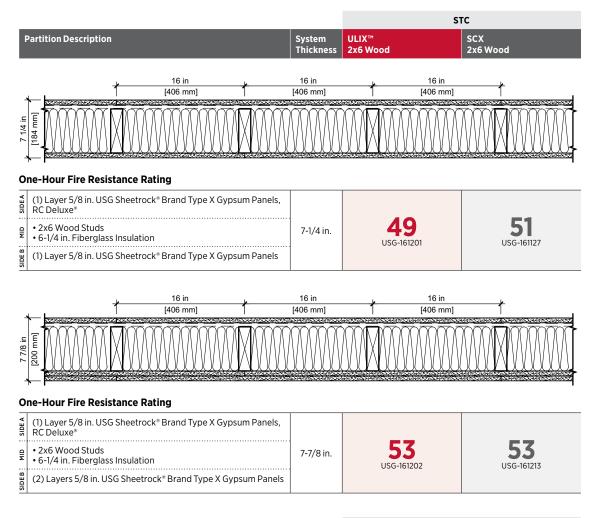
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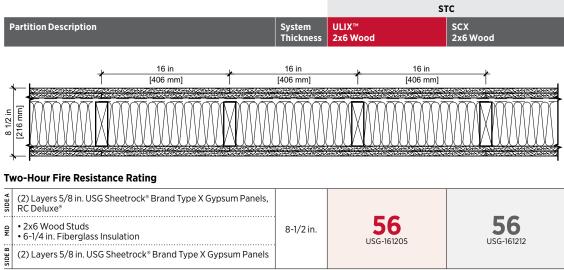
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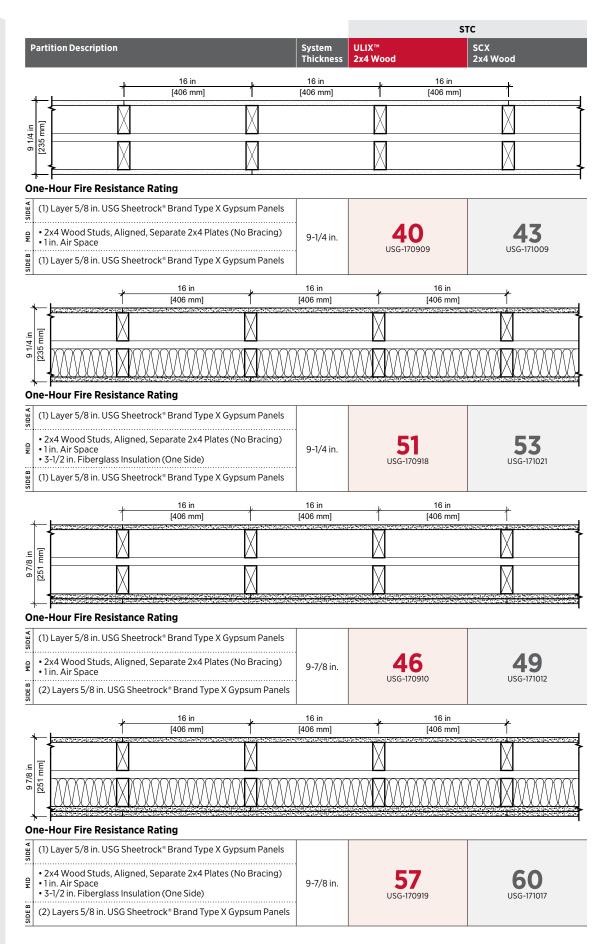
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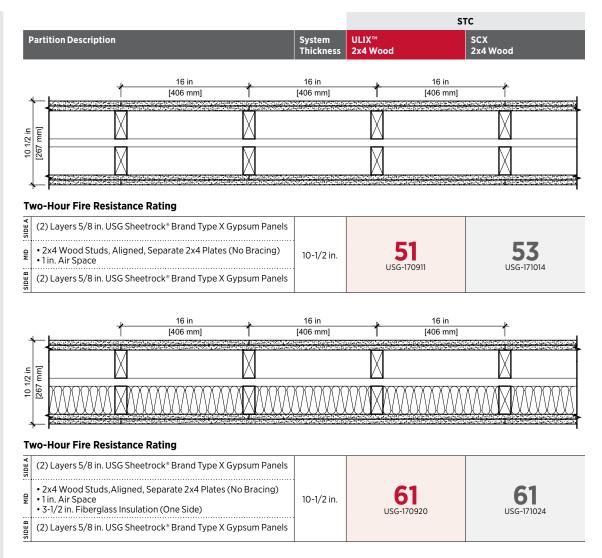
2X6 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U301)



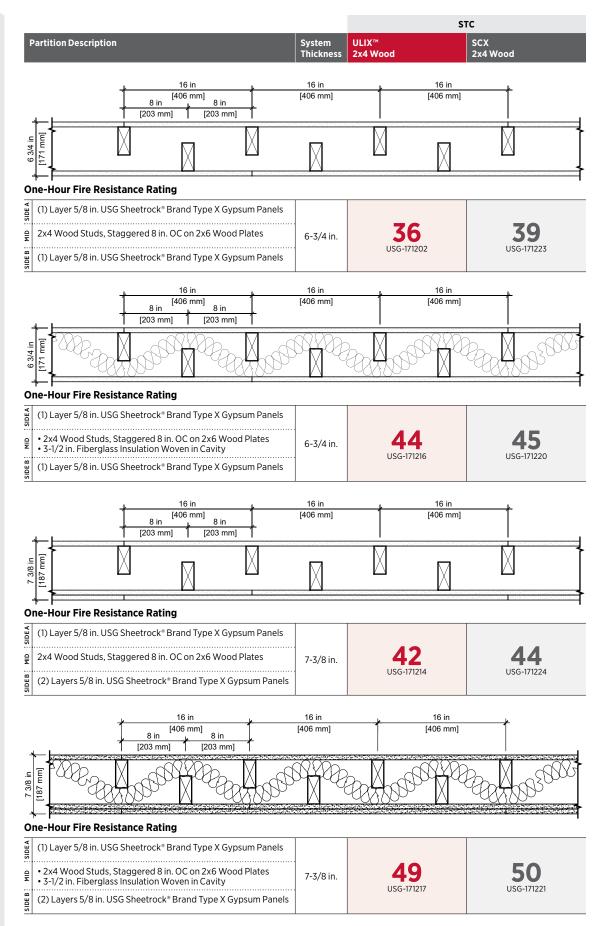
2X4 WOOD STUDS SPACED 16 IN. OC (GA FILE NUMBERS WP 3370, WP 5512)



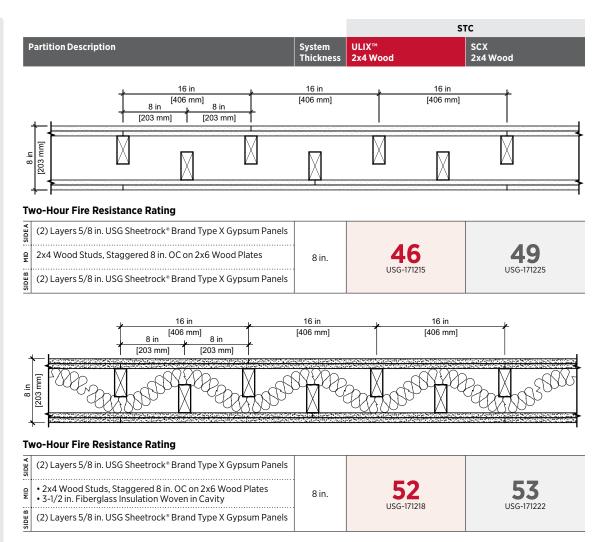
2X4 WOOD STUDS SPACED 16 IN. OC (GA FILE NUMBERS WP 3725, WP 5520)



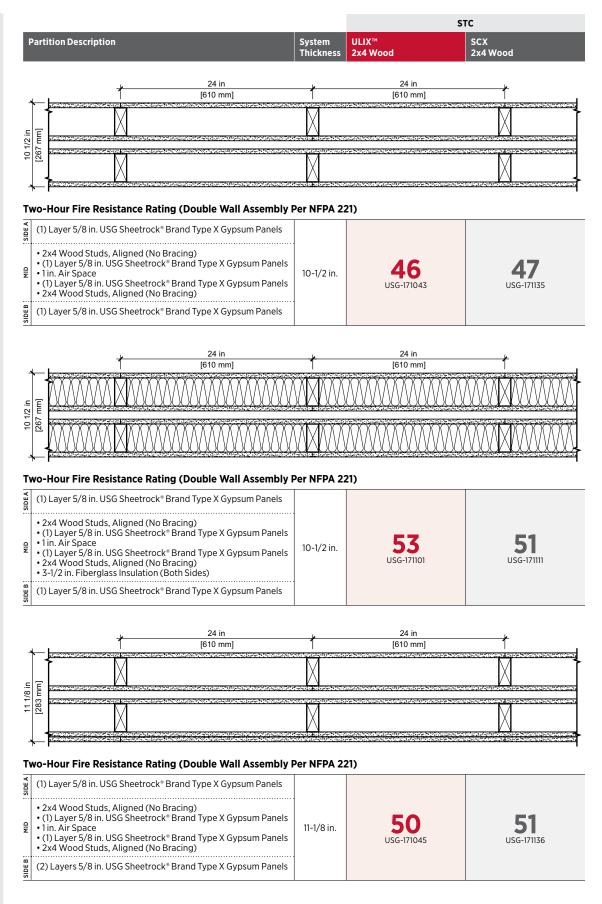
2X4 WOOD STUDS SPACED 16 IN. OC (GA FILE NUMBERS WP 3371, WP 5513)



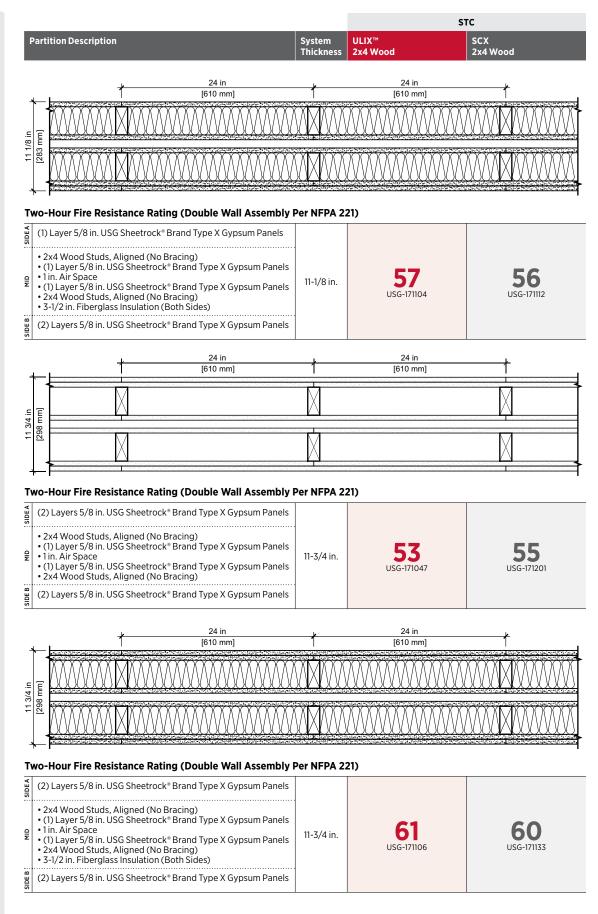
2X4 WOOD STUDS SPACED 16 IN. OC (GA FILE NUMBERS WP 3910, WP 5530)



2X4 WOOD STUDS SPACED 24 IN. OC (UL DESIGN U314)



2X4 WOOD STUDS SPACED 24 IN. OC (UL DESIGN U314) CONT.



FLOOR-CEILING SOUND TRANSMISSION REQUIREMENTS OF THE INTERNATIONAL **BUILDING CODE®**

The International Building Code® (IBC®) is the foundation of the complete Family of International Codes®, which addresses the design and installation of materials that meet or exceed public health and safety goals.

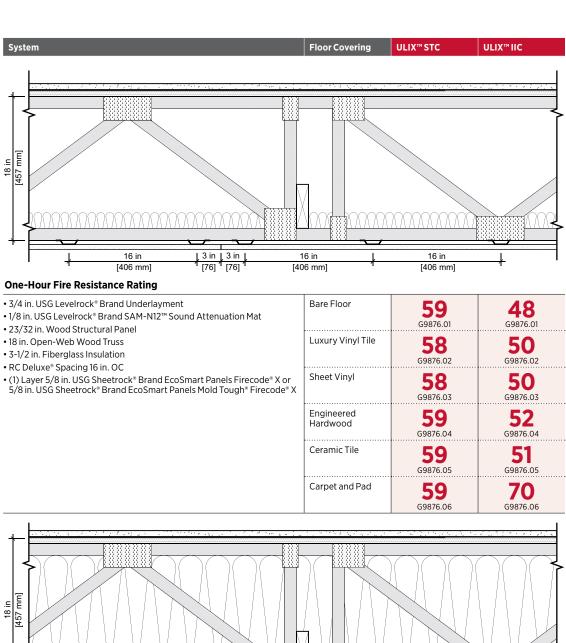
One such component of the IBC® are STC and IIC requirements for floor-ceiling assemblies.

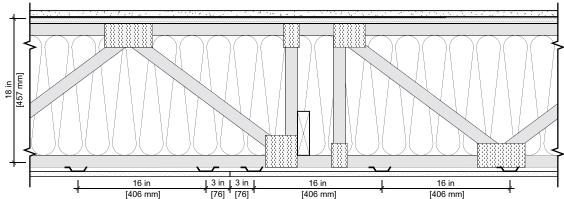
Per section 1207 of the IBC®, airborne sound of floor-ceiling assemblies shall have an STC of not less than 50, or not less than 45 if field tested, when tested in accordance with ASTM E90.

For structure-borne sound, floor-ceiling assemblies shall have an impact insulation class rating of not less than 50, or not less than 45 if field tested, when tested in accordance with ASTM E492.

For more information, visit iccsafe.org.

18 IN. OPEN-WEB **WOOD TRUSS AND RESILIENT CHANNEL** (UL DESIGNS L521, L550, L563)



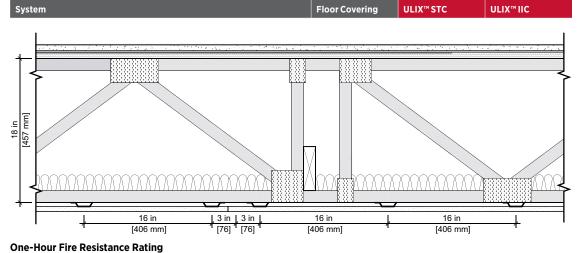


One-Hour Fire Resistance Rating

- 3/4 in. USG Levelrock® Brand Underlayment
- 1/8 in. USG Levelrock® Brand SAM-N12™ Sound Attenuation Mat
- 23/32 in. Wood Structural Panel
- 18 in. Open-Web Wood Truss
- 18 in. Blown-In Fiberglass Insulation
- RC Deluxe® Spaced 16 in. OC
- (1) Layer 5/8 in. USG Sheetrock* Brand EcoSmart Panels Firecode* X or 5/8 in. USG Sheetrock* Brand EcoSmart Panels Mold Tough* Firecode* X

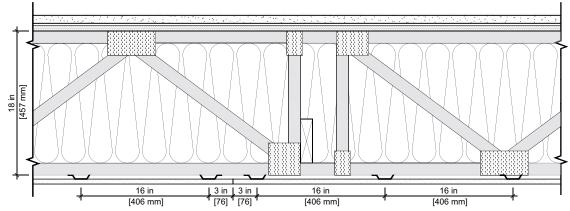
Bare Floor	60 H5048.08	50 H5048.08
Luxury Vinyl Tile	61 H5048.09	54 H5048.09
Sheet Vinyl	60 H5048.10	54 H5048.10
Engineered Hardwood	60 H5048.11	58 H5048.11
Ceramic Tile	61 H5048.12	53 H5048.12
Carpet and Pad	60 H5048.13	81 H5048.13

18 IN. OPEN-WEB **WOOD TRUSS AND RESILIENT CHANNEL** (UL DESIGNS L521, L550, L563) CONT.



- 1 in. USG Levelrock® Brand Underlayment
- 1/4 in. USG Levelrock® Brand SAM-N25™ Sound Attenuation Mat
- 23/32 in. Wood Structural Panel
- 18 in. Open-Web Wood Truss
- 3-1/2 in. Fiberglass Insulation
- RC Deluxe® Spacing 16 in. OC
- (1) Layer 5/8 in. USG Sheetrock* Brand EcoSmart Panels Firecode* X or 5/8 in. USG Sheetrock* Brand EcoSmart Panels Mold Tough* Firecode* X

Bare Floor	58 G9877.01	50 G9877.01
Luxury Vinyl Tile	58 G9877.02	50 G9877.02
Sheet Vinyl	58 69877.03	51 G9877.03
Engineered Hardwood	58 69877.04	51 G9877.04
Ceramic Tile	59 G9877.05	51 G9877.05
Carpet and Pad	58 69877.06	69 _{G9877.06}

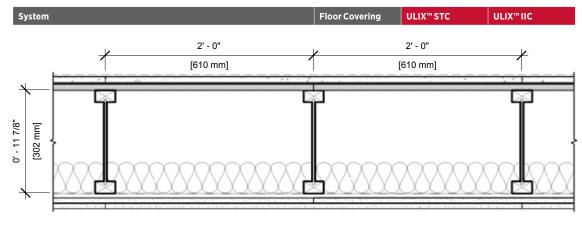


One-Hour Fire Resistance Rating

- 1 in. USG Levelrock® Brand Underlayment
- 1/4 in. USG Levelrock® Brand SAM-N25™ Sound Attenuation Mat
- 23/32 in. Wood Structural Panel
- 18 in. Open-Web Wood Truss
- 18 in. Blown-In Fiberglass Insulation
- RC Deluxe® Spacing 16 in. OC
- (1) Layer 5/8 in. USG Sheetrock* Brand EcoSmart Panels Firecode* X or 5/8 in. USG Sheetrock* Brand EcoSmart Panels Mold Tough* Firecode* X

Bare Floor	61 G9878.01	54 G9878.01
Luxury Vinyl Tile	60 G9878.02	56 G9878.02
Sheet Vinyl	60 G9878.03	56 G9878.03
Engineered Hardwood	61 69878.04	57 G9878.04
Ceramic Tile	61 G9878.05	57 G9878.05
Carpet and Pad	60 69878.06	79 69878.06

11-7/8 IN. TJI (UL DESIGNS L570, M532)

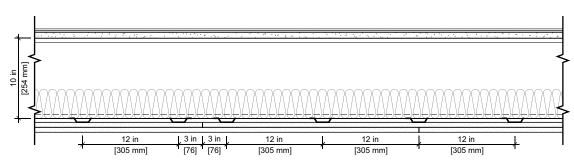


One-Hour Fire Resistance Rating

- 3/4 in. USG Levelrock® Brand Underlayment
- 1/8 in. USG Levelrock® Brand SAM-N12™ Sound Attenuation Mat
- 23/32 in. Wood Structural Panel
- 11-7/8 in. "I"-Shaped Wood Joist
- 3-1/2 in. Fiberglass Insulation
- RC Deluxe® Spaced 16 in. OC
- (2) Layers 5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode® X or 5/8 in. USG Sheetrock® Brand EcoSmart Panels Mold Tough® Firecode® X

Bare Floor	59 H5048.01	47 H5048.01
Luxury Vinyl Tile	59 H5048.02	53 H5048.02
Sheet Vinyl	58 H5048.03	51 H5048.03
Engineered Hardwood	59 H5048.04	57 H5048.04
Ceramic Tile	59 H5048.05	51 H5048.05
Carpet and Pad	59 H5048.06	78 H5048.06
Laminate	59 H5048.07	56 H5048.07

10 IN. DEEP STEEL JOIST AND RESILIENT CHANNEL (UL DESIGN G557)



Two-Hour Fire Resistance Rating

- 1/4 in. USG Fiberock® Brand Tile Backerboard
- Pliteq GenieMat® RST line of flat, resilient, reduced sound transmission mats
- 3/4 in. USG Structural Panels
- 10 in. Deep Steel Joist
- 3-1/2 in. Fiberglass Insulation
- RC Deluxe® Spacing 12 in. OC
- (2) Layers 5/8 in. USG Sheetrock* Brand EcoSmart Panels Firecode * X or 5/8 in. USG Sheetrock* Brand EcoSmart Panels Mold Tough* Firecode * X

	Sheet Vinyl	57	50
	(with RST02)	H0466.14-113-11	H0466.14-113-11
	Luxury Vinyl Tile	58	50
	(with RST05)	H0466.10-113-11	H0466.10-113-11
r	Cushioned Sheet	57	50
〈	Vinyl (with RST02)	H0466.12-113-11	H0466.12-113-11
	Engineered Hardwood (with RST05)	59 H0466.08-113-11	50 H0466.08-113-11



USG SHEETROCK® BRAND ECOSMART PANELS FIRECODE 30° (UL TYPE FC30)

- Meet Architecture 2030 Challenge for Products
- Living Building Challenge™ Red List Free
- Contains 100% USDA certified biobased content
- Achieved GREENGUARD Gold Certification and qualify as a low-VOC-emitting material (meets CA 01350)
- UL Classification as to fire resistance—30-minute and 1-hour fire-rated walls
- Meet or exceed ASTM C1396, Standard Specification for Gypsum Board, for 5/8 in. non-Type X
- Offer comparable strength, sag and impact resistance to standard 5/8 in. Type X

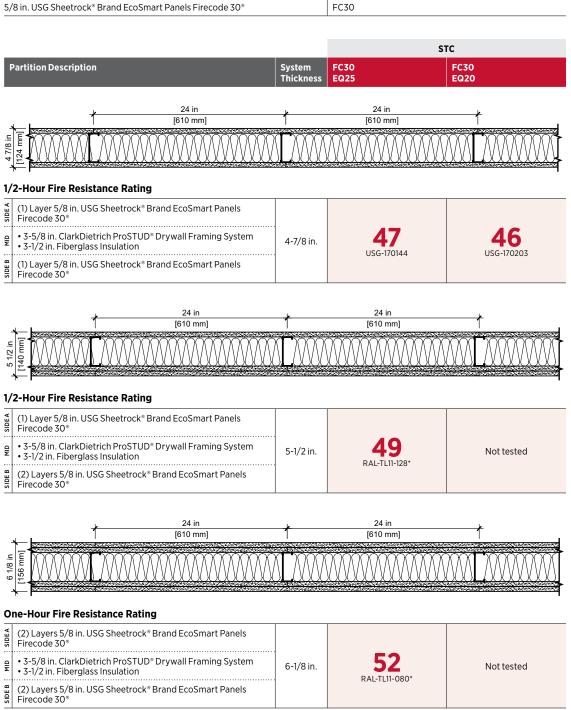
Ideal for use in:

- Commercial or residential applications where 5/8 in. Type X panels are not required
- Non-fired-rated steel- or wood-framed wall and ceiling assemblies
- Single-layer wood- or steel-framed 30-minute fire-rated wall assemblies
- Double-layer gypsum panel steel-framed 1-hour fire-rated wall assemblies
- Any UL design in which UL Type FC30 panels are listed

ACOUSTICAL PERFORMANCE

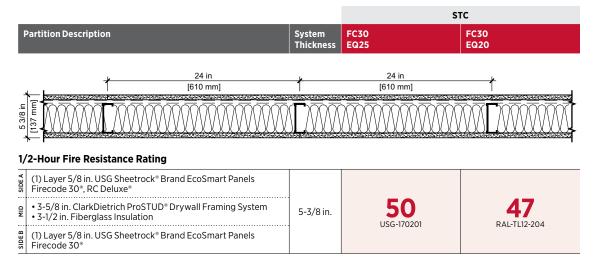
Product	UL Type Designation
5/8 in. USG Sheetrock® Brand EcoSmart Panels Firecode 30®	FC30

3-5/8 IN. **STEEL STUDS** SPACED 24 IN. OC (UL DESIGN U407)

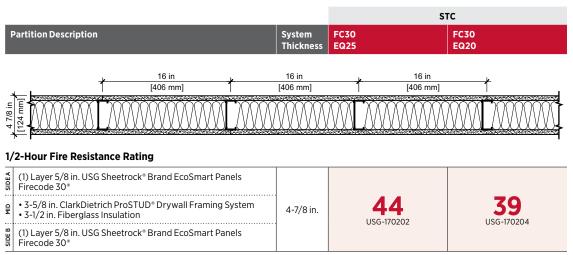


^{*} Sound tests were conducted on traditional gauge studs. Performance on EQ studs will meet or exceed listed STC rating.

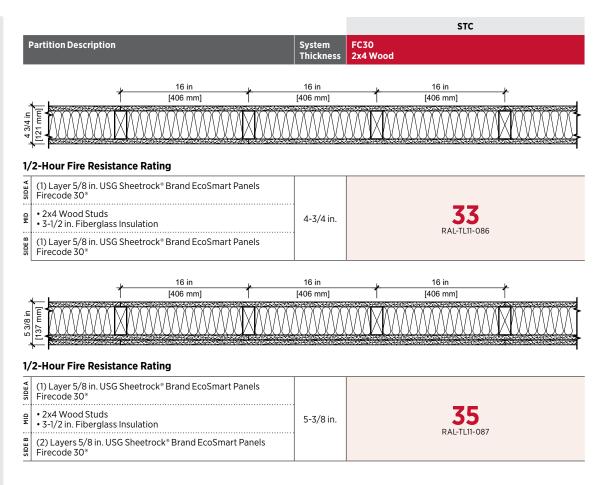
3-5/8 IN. STEEL STUDS SPACED 24 IN. OC AND RESILIENT CHANNEL (UL DESIGN U407)



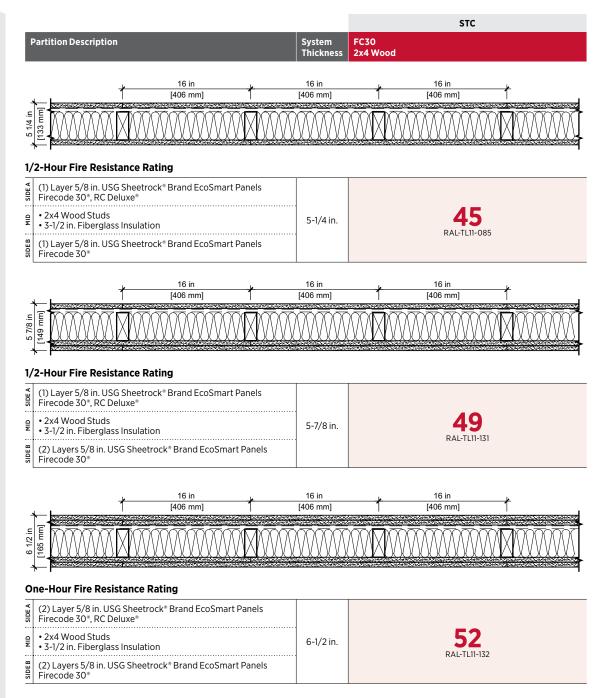
3-5/8 IN. STEEL STUDS SPACED 16 IN. OC (UL DESIGN U407)



2X4 WOOD STUDS SPACED 16 IN. OC (UL DESIGN U407)



2X4 WOOD STUDS SPACED 16 IN. OC AND RESILIENT CHANNEL (UL DESIGN U407)



CONTACT INFORMATION

Manufactured by United States Gypsum Company 550 West Adams Street Chicago, IL 60661

PRODUCT INFORMATION

See usg.com for the most up-to-date product information.

GREENGUARD Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.

Products described here may not be available in all geographic markets. The information in this document is subject to change without notice. USG Corporation assumes no responsibility for any errors that may inadvertently appear in this document. Consult your USG Company sales office or representative for information.

We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

SAFETY FIRST!Follow good safety and industrial hygiene practices during handling and installation of all products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read Safety Data Sheets and related literature on products before specification and/or installation.

