

Sound & Fire Assemblies Handbook





Overview

This handbook is intended to provide general information regarding assemblies that have been evaluated for fire-resistance and/or for acoustical attenuation performance. The assemblies presented in this handbook feature EXACOR[®] panels installed as part of an assembly of materials and tested and evaluated in accordance with the following standards:

Fire-Resistance Testing

 ASTM E119 Standard Test Methods for Fire Tests of Building Construction and Materials / ANSI UL 263 Fire Tests of Building Construction and Materials

Sound Assembly Testing

- ASTM E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
- ASTM E413 Classification for Rating Sound Insulation
- ASTM E492 Standard Test Method for Laboratory Measurement of Impact Sound Transmission Through Floor-Ceiling Assemblies Using the Tapping Machine
- ASTM E989 Classification for Determination of Impact Insulation Class
- ASTM E2235 Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods
- ASTM E3222 Standard Classification for Determination of High-Frequency Impact Sound Ratings

The information contained in this handbook is for guidance and reference only. Please refer to the applicable fire-resistance rated assembly published by the Underwriter's Laboratory (UL) or ICC-ES for full assembly details, requirements, and options. Some fire-resistance rated assemblies contain multiple material and installation options that may impact sound performance. Not all options in each fire-resistance rated design listing have been tested for STC/IIC ratings. Please refer to the individual acoustical test report for more information.

Sound transmission testing is conducted on an assembly of materials intended to represent field construction. However, due to factors beyond the control of Huber Engineered Woods LLC—such as material selections and substitutions, the quality of installation, variability within the manufacture and performance of other building materials, flanking paths, etc.—the information published in this resource is not a guarantee of performance, but rather a representation of what sound performance results are achievable. As such, this information is intended to be used for design evaluation and comparison only. Additionally, each assembly was tested on the date indicated in the test report. Any change in third-party manufactured products occurring after the date of testing may impact the rating and will not be reflected in the test report or this publication. Huber Engineered Woods LLC is not responsible for the performance of any third-party products.

Please note that this handbook may also include sound assemblies that have NOT been evaluated for fire-resistance. The level of fire-resistance (if any) for each assembly is presented at the top of the page for each assembly configuration. Follow all local building code requirements for fire-resistance and sound transmission.

Each assembly presents information for the assembly without a floor covering. This information is meant to represent the base level of performance for the given assembly. EXACOR® panels should always be covered by an appropriate finished floor covering. Please see the EXACOR® Sheathing Installation Manual and EXACOR® Underlayment Installation Manual available at www.exacor.com for more information.



Table of Contents

)verview	2
ire-Besistance Testing	2
Sound Assembly Testing	2
-loor/Ceiling Assemblies	4
ire-Resistance & Sound Ratings	4
ire-Resistance Rated Floor/Ceiling Designs	4
EXACOR [®] Underlayment	
Wood Truss	5
UL L528 - System No. 22	5
UL L546 - System No. 14	5
UL M500 - Śystem No. 9	7
Wood I-Joist	8
UL L570 - System No. 20	8
UL L602 - System No. 2	8
2x10 Joist	9
UL L502 - System No. 24	9
UL L501 - Svstem No. 23	10
UL L511 - Svstem No. 25	10
UL L525 - System No. 16	11

Fire-Resistance Rated Wall Assemblies

Fire-Resistance Ratings
Applications and Uses
Exterior Walls
Townhome Unit Separation
ICC Design No. MOS-1290-03
ICC Design No. MOS-1290-04
ICC Design No. MOS-1290-06
ICC Design No. MOS-1290-08
ICC Design No. MOS-1290-07A
ICC Design No. MOS-1290-07B 17

12



Floor/Ceiling Assemblies

This section contains STC and IIC ratings for floor/ceiling assemblies that are based on designs that have been assessed for fire-resistance in accordance with ASTM E119/ANSI UL 263. See specific fire-resistance rated Design Listing from UL for full assembly details and requirements. Follow all local building code requirements for fireresistance and sound transmission.

Fire-Resistance Rated Floor/Ceiling Designs				
EXACOR [®] Underlayment:				
-UL L501 (System No. 23) - 1hr	-UL L546 (System No. 14) - 1hr			
-UL L502 (System No. 24) - 1hr	-UL L570 (System No. 20) - 1hr			
-UL L511 (System No. 25) - 2hr	-UL L602 (System No. 2) - 1hr			
-UL L525 (System No. 16) - 1hr	-UL M500 (System No. 9) - 2hr			
-UL L528 (System No. 22) - 1hr				

Wood Truss

UL L528 - System No. 22 UL L546 - System No. 14 1hr Fire-Resistance



20

*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR [®] Underlayment						
Floor Covering	None*	2mm Luxury Vinyl	2mm Luxury Vinyl	5.5mm Luxury Vinyl (Floated)		
Sound Attenuation Mat		None	1.4mm Sound Mat	None		
		Ceiling Option 1				
Furring Type	F	Resilient Channel (RC-1)) Spaced 16" On Cente	r		
Gypsum Panel		5/8 ULIX™	™Gypsum			
STC/IIC	57/50	58/52	58/53	59/54		
HIIC	51	54 63		59		
Report No.	L9005.01-113-11-R0	I-R0 L9005.02-113-11-R0 L9005.03-113-11-		L9005.04-113-11-R0		
		Ceiling Option 2				
Furring Type	Resilient Channel (RC-1) Spaced 16" On Center					
Gypsum Panel	5/8" Туре	C Gypsum (Type AG-C	required for fire-resista	nce rating)		
STC/IIC	58/51	59/54	59/55	60/56		
HIIC	52	59	68	61		
Report No.	L6141.26-113-11-R0	L6141.27-113-11-R0	L6141.28-113-11-R0	L6141.29-113-11-R0		
Ceiling Option 3						
Furring Type	Furring Type Resilient Channel (RC-1) Spaced 12" On Center					
Gypsum Panel	5/8" Type C Gypsum					
STC/IIC	59/47	59/50	59/51	60/52		
HIIC	49	55	64	57		
Report No.	L9602.01-113-11-R0	L9602.02-113-11-R0	L9602.03-113-11-R0	L9602.04-113-11-R0		

*Assembly shown without floor covering for information purposes only. EXACOR® panels must be covered by a finish flooring material.

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Wood Truss (Continued) UL L528 - System No. 22

UL L528 - System No. 22 UL L546 - System No. 14 1hr Fire-Resistance



10

*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR [®] Underlayment					
Floor Covering	None ¹	2mm Luxury Vinyl	5.5mm Luxury Vinyl (Floated)		
Sound Attenuation Mat		None	None		
Ceiling Option 4					
Furring Type	Keene Building Products Cylent Assurance™ Clip ^{2,3} & Resilient Channel (RC-1)				
Gypsum Panel	5/8 Type C Gypsum				
STC/IIC	61/54	61/60			
HIIC	56	62	66		
Report No.	FC23-0851	FC23-0852	FC23-0853		

1. Assembly shown without floor covering for information purposes only. EXACOR® panels must be covered by a finish flooring material

2. Consult with manufacturer for installation details and requirements.

3. Sound assembly performance in the field may vary. Each assembly was tested on the date indicated in the test report. Any change in third-party manufactured products occurring after the date of testing may impact the rating and will not be reflected in the test report. Huber Engineered Woods LLC is not responsible for the performance of any third-party products.

Wood Truss

UL M500 - System No. 9 2hr Fire-Resistance



*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR[®] Underlayment

YC

No Data

Wood I-Joist

UL L570 - System No. 20 UL L602 - System No. 2 1hr Fire-Resistance



YO

*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR [®] Underlayment						
Floor Covering	None*	2mm Luxury Vinyl	5.5mm Luxury Vinyl (Floated)	3/8" Engineered Wood Flooring	Carpet Tile	
Sound Attenuation Mat		None	None	None	None	
Wood I-Joists Spaced 19.2" OC						
STC/IIC**	58/47	58/51	59/53	59/51	56/56	
HIIC	47	52	55	59	80	
Report No. R9255.01-113-11-R0		R9255.02-113-11-R0	R9255.03-113-11-R0	R9255.04-113-11-R0	R9255.05-113-11-R0	
	Wood I-Joists Spaced 24" OC					
STC/IIC**	58/50	58/55	59/57	59/57	58/58	
HIIC	49	56	59	62	74	
Report No.	M2981.01-113-11-R1	M2981.02-113-11-R1	M2981.03-113-11-R1	M2981.04-113-11-R1	M2981.05-113-11-R1	

*Assembly shown without floor covering for information purposes only. EXACOR® panels must be covered by a finish flooring material. **Based on Type C Gypsum Panels



2x10 Joist UL L502 - System No. 24 1hr Fire-Resistance



*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR [®] Underlayment						
Floor Covering	None*	2mm Luxury Vinyl	6.8mm Luxury Vinyl with Attached Pad	3/8" Engineered Wood Flooring	Carpet Tile	
Sound Attenuation Mat		None	None	None	None	
Ceiling Option 1						
Furring Type		Resilient Chann	el (RC-1) Spaced a	t 12" On Center		
STC/IIC	52/42	53/47	54/48	53/47	52/50	
HIIC	43	49	58	53	66	
Report No.	Q7353.01-113-11-R0	Q7353.02-113-11-R0	Q7353.05-113-11-R0	Q7353.06-113-11-R0	Q7353.07-113-11-R0	
		Ceiling Opti	ion 2**			
Furring Type	Furring Type Resilient Channel (RC-1) Spaced at 16" On Center**					
STC/IIC	54/45		54/51		54/54	
HIIC	45	No Data	60	No Data	67	
Report No.	Q7353.12-113-11-R0		Q7353.13-113-11-R0		Q7353.10-113-11-R0	

*Assembly shown without floor covering for information purposes only. EXACOR® panels must be covered by a finish flooring material. **Design is not rated for fire-resistance. For comparative purposes to standard industry reported values or use in non-fire-resistance rated designs

only.

2x10 Joist

UL L501 - System No. 23 1hr Fire-Resistance



*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR® Underlayment

YC

No Data



*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR[®] Underlayment No Data

2x10 Joist

UL L525 - System No. 16 1hr Fire-Resistance



YO

*See applicable UL Design for full assembly details and requirements.

Acoustical Performance - EXACOR [®] Underlayment						
Floor Covering	None*	ne* 2mm Luxury 5.5mm Luxury Vinyl Vinyl (Floated)		3/8" Engineered Wood Flooring	Carpet Tile	
STC/IIC	60/55	61/59	61/59	61/59	61/60	
HIIC	57	62	65	66	76	
Report No.	R9571.01-113-11-R0	R9571.02-113-11-R0	R9571.03-113-11-R0	R9571.04-113-11-R0	R9571.05-113-11-R0	

*Assembly shown without floor covering for information purposes only. EXACOR® panels must be covered by a finish flooring material.



Fire-Resistance Rated Wall Assemblies

Fire-Resistance Ratings

This section contains descriptions of wall assemblies that have been tested in accordance with ASTM E119/ANSI UL 263 for fire-resistance or in accordance with NFPA 285 Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components. Load calculations for fire-resistance rated load-bearing walls are based on the 2018 National Design Specification for Wood Construction® (NDS®) design procedures and in accordance with ASTM D6513 Standard Practice for Calculating the Superimposed Load on Wood-Frame Walls for Standard Fire-Endurance Tests. Unless otherwise noted, all superimposed wall loads were calculated assuming walls were braced by sheathing.

Applications and Uses

Code-compliance for EXACOR[®] sheathing is provided in ICC-ES ESR-4635 as an exterior sheathing material suitable for use in Construction Types III and V as defined by the International Building Code (IBC). Fire-resistance rated wall assemblies evaluated for use with EXACOR[®] sheathing can be found in ICC-ES <u>ESL-1290</u>. Typical applications include load-bearing exterior walls and use as part of an assembly to meet townhome unit separation requirements under the International Residential Code (IRC).

Interior Walls

EXACOR is not intended to be used as a finish or decorative element like gypsum wallboard. If EXACOR is used for wall construction of interior walls in areas where a decorative finish is required, the panels should be covered with a gypsum wall panel or other suitable product.

Typical Applications for EXACOR Fire-Resistance Rated Wall Designs

ICC Design No	Typical Application &	Fire-Resistance Rating			
ICC Design No.	Construction Type	Interior Face	Exterior Face		
MOS-1290-03	Exterior Walls - Type III	2hr	2hr		
MOS-1290-04	Exterior Walls - Type V & IRC	1hr	1hr		
MOS-1290-05	NFPA 285 Compliance Table (Typ				
MOS-1290-06	MOS-1290-06 Exterior Walls - Type III		1hr		
MOS-1290-07A/B	Townhome Separation Walls	2hr			
MOS-1290-08	Townhome Separation Walls	2hr			

Exterior Walls

EXACOR[®] panels can be used as an exterior sheathing panel in load-bearing exterior wall assemblies that are required to be fire-resistance rated. Due to its fire-resistive nature, EXACOR[®] sheathing is well suited for applications in fire-rated exterior walls that are near or adjacent to property lines and therefore require additional fire-resistance. Fire-resistance rated exterior wall assemblies with EXACOR[®] sheathing feature fire-resistance ratings applied to both sides of the wall to simplify meeting code requirements related to Fire Separation Distance (FSD).

In Construction Type III under the IBC, exterior wall assemblies greater than 40ft in height above grade plane trigger requirements to comply with NFPA 285. Select exterior wall assemblies with EXACOR[®] sheathing have been evaluated for compliance with NFPA 285. Please refer to ESL-1290, ICC Design No. MOS-1290-05, for NFPA 285 compliant assemblies with EXACOR[®] sheathing.

Townhome Unit Separation

EXACOR[®] sheathing can be used as part of an assembly to meet the requirements of the IRC for townhome separation by constructing two 1-hour rated walls as detailed in ICC Design No. MOS-1290-04 or by constructing a double wall in accordance with ICC Design No. MOS-1290-07A/B. Always follow local code requirements for fire-resistance rated construction and townhouse separation. For more information on the use of EXACOR in townhomes, please see our <u>Technical Tip Townhome Separation Walls with EXACOR[®]</u> Sheathing.

EXACOR[®] sheathing is not a direct replacement for gypsum shaft liner products. The use of EXACOR in townhome separation walls is limited to double walls as described in IRC R302.2.1 or as described in ICC Design No. MOS-1290-07A/B and MOS-1290-08.



ICC Design No. MOS-1290-03 Load-Bearing - 90% Design Load

Load-Bearing - 90% Design Load 2hr Fire-Resistance (From Both Sides)

Interior



Exterior

*See applicable ICC-ES Design for full assembly details and requirements.

ICC Design No. MOS-1290-04

Load-Bearing - 90% Design Load 1hr Fire-Resistance (From Both Sides)



*See applicable ICC-ES Design for full assembly details and requirements.

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ICC Design No. MOS-1290-06 Load-Bearing - 80% Design Load

2hr Fire-Resistance From Interior (1hr from Exterior)

Interior



2 Layers 5/8" Type X Gypsum 2x4 Wood Studs Spaced Max. 16" OC Glass Fiber Insulation Batt (R-13) 1/2" (12mm) EXACOR[®] Sheathing [Optional] Exterior Insulation Siding: Wood, Fiber Cement, Stucco or Brick. See ESL-1290 for more information.

*See applicable ICC-ES Design for full assembly details and requirements.

ICC Design No. MOS-1290-08

Non-Load Bearing

2hr Fire-Resistance (From Both Sides)



5/8" Type X Gypsum Flat-wise 2x4 Wood Stud Spaced Max. 24" OC 1/2" (12mm) EXACOR® Sheathing Minimum 1" Air Space 1/2" (12mm) EXACOR® Sheathing Flat-wise 2x4 Wood Stud Spaced Max. 24" OC 5/8" Type X Gypsum

*See applicable ICC-ES Design for full assembly details and requirements.

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ICC Design No. MOS-1290-07A Load-Bearing - 90% Design Load

2hr Fire-Resistance (From Both Sides)



5/8" Type X Gypsum 2x4 Wood Stud Spaced Max. 24" OC Batt Insulation (Glass Fiber or Mineral Wool) 1/2" (12mm) EXACOR® Sheathing 1/2" (12mm) EXACOR® Sheathing Batt Insulation (Glass Fiber or Mineral Wool) 2x4 Wood Stud Spaced Max. 24" OC 5/8" Type X Gypsum

Coo	ampliaghte		Decian	forfull	o o o o oo lo lu i	dataila	and	re cu jire co o c	+-
See	applicable	IUU-EO	Design	IOF IUI	assembly	uetails	and	requiremen	πs.

Acoustical Performance - EXACOR Sheathing						
Air Cavity Size	Insulation Type	Resilient Channel*	STC	Report No.		
		None	44	TL22-223		
1"	Glass Fiber Batt	Single Side	49	TL22-224		
		Both Sides	60	TL22-225		
	Glass Fiber Batt	None	45	TL22-228		
0"		Single Side	53	TL22-227		
2		Both Sides	58	TL22-226		
	Mineral Wool Batt	None	43	TL22-229		
3"	Glass Fiber Batt	None	48	TL22-230		
4"	Glass Fiber Batt	None	48	TL22-232		
	Mineral Wool Batt	None	48	TL22-233		

*Resilient channel attached to studs on occupant side(s) of wall. Gypsum wallboard attached to resilient channel.



ICC Design No. MOS-1290-07B Load-Bearing - 90% Design Load

2hr Fire-Resistance (From Both Sides)



5/8" Type X Gypsum 1/2" (12mm) EXACOR® Sheathing 2x4 Wood Stud Spaced Max. 24" OC Batt Insulation (Glass Fiber or Mineral Wool) Minimum 1" Air Space Batt Insulation (Glass Fiber or Mineral Wool) 2x4 Wood Stud Spaced Max. 24" OC 1/2" (12mm) EXACOR® Sheathing 5/8" Type X Gypsum

*See applicable ICC-ES Design for full assembly details and requirements.

Acoustical Performance - EXACOR [®] Sheathing					
Air Cavity Size	Report No.				
1"	Glass Fiber Batt	None	65	TL22-234	



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