

Fire Resistance

Look for this icon identifying product pages with Fire Guard™ items. Use only Fire Guard™ products for fire-rated assemblies.



Local building codes for safe construction rely on two fire ratings to evaluate compliance: (1) Material Flame Spread/Smoke Developed Index Rating, and (2) Fire Resistance Assembly Rating. These ratings are based on ASTM standards, and compliance is determined by several independent, non-governmental testing services such as Underwriters Laboratories, Inc.

SELECTING THE RIGHT UL FIRE-RATED ASSEMBLY

Flame Spread Index (FSI)/ Smoke Developed Index (SDI) ASTM E84; UL 723; CAN/ULC - S102M

This is a standard method of testing for surface-burning characteristics of building products.

FSI is the relative rate at which a flame will spread over the surface of the material. This index is compared against a rating of 0 for inorganic reinforced cement board, and an index of 100 for red oak. Class A (ASTM E1264) building products require a flame spread index of 25 or less – the required standard for most commercial applications. Class A building products require a smoke developed index of 50 or less.

Continuous Versus Open Plenum Ceilings

A continuous ceiling may allow sprinklers and smoke detectors to activate faster, providing added escape time for occupant evacuation. In buildings where a ceiling is not in place, the height of the space is normally greater and could delay the operation of the fire sprinkler or smoke detector systems.

Fire Resistance Rating of a Ceiling Assembly (ANSI/UL 263 – ASTM E119 and NFPA 251) (CAN/ULC - S101M)

The degree to which the entire assembly (measured in hours), not individual components, withstands fire and high temperatures.

Specifically, it is an assembly's ability to prevent the spread of fire between spaces while retaining structural integrity.

The resulting fire resistance rating relates to the assembly in its entirety and is published or classified in the UL Fire Resistance Directory.

Selecting the Right UL Fire-Rated Assembly

1. Establish the hourly rating needed to meet code requirements.
2. Determine the existing or planned building elements, including structural, mechanical, electrical, and finish materials, in the fire-rated assembly.
3. Refer to the Fire Resistance Rating Summary (armstrongceilings.com/ulfire) to determine the UL design numbers and ceiling system products that correspond to the fire-rated assemblies that meet your needs.
4. Refer to the Fire Resistance Selector information on our web site armstrongceilings.com/commercial.

Two types of fire-rated construction assemblies pertain to acoustical ceiling systems:

Roof/Ceiling Assemblies

Ceiling system, lighting, HVAC outlets, and other penetrants through the ceiling, the plenum, roof support structure, and roof assembly including deck, insulation, and roofing system.

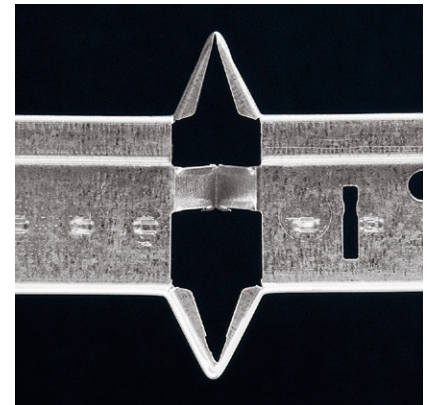
Floor/Ceiling Assemblies

Ceiling system, lighting, HVAC outlets, and other penetrants through the ceiling, the plenum, structural system, subfloor, and finished floor.



Armstrong® panels are UL listed and outperform requirements for ceilings.

Armstrong® Fire Guard™ ceilings are specially formulated to provide enhanced resistance against structural failure. Fire Guard suspension systems have expansion relief to help maintain structural integrity of the ceiling.



Main beam expansion relief

Fire Guard™ products in this catalog are listed under the following ceiling product families:

Ceramaguard®

Ceramaguard® Fine Fissured™

Cirrus®

Clean Room™ VL

Cortega®

Cortega® Second Look®

Dune™

Fine Fissured™

Fine Fissured™ Second Look

Fissured™

School Zone® Fine Fissured™

Ultima®

VL

Fire Resistance Assemblies

Deck Construction Type	UL Design Number	Concrete Thickness	Panel or Tile Size and Type	Minimum Panel or Tile Thickness	Maximum Fixture Penetration (in ² /100 SF)	Maximum Duct Penetration (in ² /100 SF)	Suspension Systems
CONCRETE FLOOR/CEILING ASSEMBLIES							
Concrete on Flat Cellular, Fluted, or Blend Deck							
3-Hour – Exposed Grid	A212	2-1/2"	48" x 48"; PC 36" x 60"; PC 30" x 60"; PC	5/8"	24	158	1, 2
	D216	3-1/4"	24" x 24" to 30" x 60"; P 24" x 24" to 36" x 60" or 48" x 48"; PC	5/8" (P or PC)	24	144	1, 2
2-Hour – Exposed Grid	D216	2-1/2"	24" x 24" to 30" x 60"; P 24" x 24" to 36" x 60" or 48" x 48"; PC	5/8" (P or PC)	24	144	1, 2, 3
Concrete on Ribbed or Corrugated Deck							
3-Hour – Exposed Grid	G256	3-1/2"	24" x 24"; P 24" x 48"; P or PC	5/8" (P or PC)	24	255	1, 2
2-Hour – Exposed Grid	G256	2-1/2"	24" x 24"; P 24" x 48"; P or PC	5/8" (P or PC)	24	576	1, 2, 3
	G258	2-1/2"	24" x 24"; P 24" x 48"; P	5/8"	24	113	1, 2
	G214	2-3/4"	24" x 48"; P 20" x 60"; P	5/8"	17	57	1, 2
Concrete on Metal Lath, Ribbed, or Corrugated Deck							
3-Hour – Exposed Grid	G229	3-1/4"	24" x 48"; P or PC	5/8"	20	576	1, 2
2-Hour – Concealed Grid	G022	2-1/2"	12" x 24"; P	3/4"	16	57	4
2-Hour – Exposed Grid	G209	3"	24" x 48"; P or PC 24" x 24"; P or PC	5/8"	8	None	1, 2
	G244*	3"	24" x 48"; P or PC 24" x 24"; P or PC 20" x 60"; P or PC	5/8"	24*	160	1, 2, 3
	G210	2-1/2"	24" x 24"; P	3/4"	24	113	1, 2
	G216	2-1/2"	24" x 48"; P or PC 24" x 24"; P	5/8"	8	None	1, 2
	G217	2-1/2"	24" x 48"; P or PC 24" x 24"; P or PC 20" x 60"; P or PC	5/8"	8	57	1, 2
	G229	2-1/2"	24" x 48"; P or PC 24" x 24"; P or PC 20" x 60"; P or PC	5/8"	20	576	1, 2, 3
	G242	2-1/2"	24" x 48"; P or PC	5/8"	8	None	1, 2
2-Hour – Exposed Grid	G243*	2-1/2"	24" x 48"; P 24" x 24"; P 20" x 60"; P	5/8"	16	576	1, 2, 3
	G236	2-1/2"	24" x 48"; P 24" x 24"; P	5/8"	None	None	1, 2
	G250	2-1/2"	30" x 60"; P or PC 20" x 60"; P or PC 24" x 48"; P or PC 24" x 24"; P	5/8"	20	113	1, 2
1-Hour – Exposed Grid	G241	2"	24" x 48"; P 24" x 24"; P	5/8"	None	None	1, 2
WOOD DECK/CEILING ASSEMBLIES							
Double-Plywood (or Plywood), 2' X 10' Wood Joists							
1-Hour – Exposed Grid	L209	NA	24" x 48"; P	5/8"	16	113	1, 2
	L210	NA	24" x 48"; P 24" x 24"; P	5/8"	24	227	1, 2, 3
Double-Plywood (or Plywood), 3' X 8' Wood Joists							
1-1/2-Hour – Exposed Grid	L208	NA	24" x 48"; P or PC 24" x 24"; P	5/8"	None	None	1, 2

NOTE: Numbers in parentheses are original UL design numbers.

Some unit sizes are no longer available as standard items; some designs include additional sizes.

* Allows flat-board fixture protection

WHAT YOU NEED TO KNOW TO USE THIS CHART

If you are unfamiliar with UL Fire Resistance Ratings, begin with a review of meeting Code Requirements listed on previous page.

As explained there, these ratings are applied to certain types of roof/ceiling and floor/ceiling construction assemblies, which are tested and assigned hourly ratings mandated by building codes or other building safety requirements.

Reminders:

- UL tests rate an entire assembly. No ceiling or suspension system product alone constitutes a fire-rated assembly.
- You can use only the specific type, size, and minimum thickness of Fire Guard™ ceilings or suspension system identified in each assembly.
- This table is a guide.

(See UL Fire Resistance Directory for complete design details). To purchase a copy of the UL Directory:

TechLine 877 276-7876

armstrongceilings.com/fireguard

Underwriters Laboratories, Inc.
Publications Stock
333 Pfingsten Rd.
Northbrook, IL 60062
(Tel.) 847-272-8800,
ext. 42612 or 42622

Key to Panel and Tile Types

PC = Ceramaguard®

P = All other products designated Fire Guard™ in this catalog

Key to Grid System Types

1 = AFG and FST 6000 – Prelude® Fire Guard™ and Prelude® XL® Fire Guard™ with steel cap

2 = AFG-A and FST 6000A – Prelude® Plus XL® Fire Guard™

and XL Fire Guard with aluminum cap
3 = FSLK – Suprafine® Fire Guard™ with steel cap

Fire Resistance Assemblies

Deck Construction Type	UL Design Number	Concrete Thickness	Panel or Tile Size and Type	Minimum Panel or Tile Thickness	Maximum Fixture Penetration (ft²/100 SF)	Maximum Duct Penetration (in²/100 SF)	Suspension Systems
ROOF/CEILING ASSEMBLIES							
Standing Seam Exposed Metal Roof							
1-1/2 + 1-Hour – Exposed Grid	P265***	See Design Details	24" x 48"; P or PC 24" x 24"; P or PC	3/4" (P) 5/8" (PC)	24	576	1
Lightweight Insulating Concrete on Ribbed or Corrugated Deck							
2-Hour – Exposed Grid	P215	2"	24" x 48"; PC plus 24" x 48"; Gypsum Bd.	5/8" (PC) plus 1/2" Gypsum Bd.	16	113	1, 2
	P219	2"	24" x 48"; PC plus 24" x 24"; Gypsum Bd.	5/8" (PC) plus 1/2" Gypsum Bd.	16	113	1, 2
	P251	2-3/4" Min. to 6-3/4"	24" x 48"; P or PC 24" x 24"; P or PC 20" x 60"; P or PC	5/8" (P or PC)	24	113	1, 2, 3
1-1/2 Hour – Exposed Grid	P231	3-3/8"	24" x 48"; 24" x 24"; P 24" x 48"; Gypsum Bd.	5/8"	24	255	1, 2
1-Hour – Exposed Grid	P216*	2"	24" x 48"; P	5/8"	16	57	1, 2
Mineral-Fiber, Glass-Fiber, or Composite Roof Insulation on Fluted Metal Roof Deck							
INSULATION THICKNESS							
1-1/2 Hour – Exposed Grid	P225	1" min. to unlimited max.	24" x 48"; P or PC 20" x 60"; P or PC	5/8"	24	255	1, 2
	P227	1" min. to unlimited max.	24" x 48"; P or PC	3/4" (P)	24	255	1, 2
	P250***	1" min. to unlimited max.	24" x 48"; P or PC 24" x 24"; P or PC	3/4" (P) 5/8" (PC)	24	113	1
1-Hour – Exposed Grid	P206	1" min. and max.	24" x 48"; P	5/8"	16	113	1, 2
	P210	1" min. and max.	24" x 48"; PC	5/8"	16	113	1, 2
	P211	1" min. to 2" max.	24" x 48"; PC	5/8"	16	113	1, 2
	P225	1" min. to unlimited max.	24" x 48"; P or PC 24" x 24"; P or PC 20" x 60"; P or PC	5/8" (P or PC)	24	255	1, 2, 3
	P227	1" min. to unlimited max.	24" x 48"; P or PC 24" x 24"; P or PC	5/8"	24	255	1, 2
	P250***	1" min. to unlimited max.	24" x 48"; P or PC 24" x 24"; P or PC	3/4" (P) 5/8" (PC)	24	113	1
Poured Gypsum Concrete Over 1/2" Gypsum Formboard							
1-1/2-Hour – Exposed Grid	P217	1-1/2"	24" x 60"; P	5/8"	16	288	1, 2
IRMA (Inverted Roof Membrane Assembly)							
1-Hour – Exposed Grid	R217 (UL Canada)	2" min. to unlimited max.	24" x 48"; P or PC	5/8"	24	279	1, 2

Deck Construction Type	UL Design Number	Concrete Thickness	Minimum No. of Layers	Minimum Panel or Tile Thickness	Maximum Fixture Penetration (ft²/100 SF)	Maximum Duct Penetration (in²/100 SF)	Suspension Systems
FLOOR/CEILING DRYWALL ASSEMBLIES							
Concrete on Composite Flat Cellular, Fluted, or Blend Deck							
2-Hour	D501	2-1/2"	1	5/8"	None	None	DFR8000 DFR8000SS
	D502**	2-1/2"	1	5/8"	24	144	DFR8000 DFR8000SS
Concrete on Metal Lath, Corrugated, and Ribbed Deck							
3-Hour	G523	3"	1	5/8"	24	144	DFR8000
	G524	3-1/2"	1	1/2"	None	144	DFR8000
	G529	3-1/4"	1	1/2"	24	57	DFR8000
	G529	3-3/4"	1	5/8"	24	57	DFR8000
	G561	2-1/2"	–	–	20	144	DFR8000
	G523	2-1/2"	1	1/2"	24	144	DFR8000 DFR8000SS
2-Hour	G524	2-1/2"	1	1/2"	None	144	DFR8000 DFR8000SS
	G526	2-1/2"	1	1/2"	25	56.5	DFR8000 DFR8000SS
	G527	2-1/2"	1	1/2"	None	None	DFR8000 DFR8000SS
	G527	2-1/2"	1	1/2"	None	None	DFR8000 DFR8000SS
	G561	2-1/2"	–	–	20	50.3	DFR8000
	G527	2-1/2"	1	1/2"	None	None	DFR8000 DFR8000SS
1 1/2-Hour	G527	2-1/2"	1	1/2"	None	None	DFR8000 DFR8000SS
1 Hour	G561	2-1/2"	–	–	20	50.3	DFR8000
Concrete on Steel Deck							
2-Hour	G-553	1"	1	5/8"	None	None	DFR8000
1-Hour	G-553	1"	1	5/8"	None	None	DFR8000 DFR8000SS

* Allows flat-board fixture protection ** Concrete plus insulation *** Square-edge ceiling panels only

Fire Resistance Assemblies

Deck Construction Type	UL Design Number	Concrete Thickness	Minimum Number of Layers	Minimum Panel or Tile Thickness	Maximum Fixture Penetration (ft ² /100 SF)	Maximum Duct Penetration (in ² /100 SF)	Suspension Systems
FLOOR/CEILING DRYWALL ASSEMBLIES (CONT.)							
Concrete on Composite Steel Joist							
2-Hour	G-531	3"	1	5/8"	20	144	DFR8000 DFR8000SS
1-1/2-Hour	G-531	3"	1	5/8"	20	144	DFR8000 DFR8000SS
1-Hour	G-531	3"	1	5/8"	20	144	DFR8000 DFR8000SS
Clark Dietrich C-Channel System							
2-Hour	G-553	1"	1	5/8"	None	None	DFR8000 DFR8000SS
	G-560	1"	1	5/8"	None	None	DFR8000
	G-566	2"	1	5/8"	None	None	DFR8000 DFR8000SS
	G-579	1"	1	5/8"	None	None	DFR8000 DFR8000SS
	G-594	1"	1	5/8"	None	None	DFR8000
1-Hour	G-553	1"	1	5/8"	None	None	DFR8000 DFR8000SS
	G-560	1"	1	5/8"	None	None	DFR8000
	G-566	2"	1	5/8"	None	None	DFR8000 DFR8000SS
	G-579	1"	1	5/8"	None	None	DFR8000 DFR8000SS
	G-591	1"	1	5/8"	None	None	DFR8000
Concrete on Steel Deck and Steel Joists							
3-Hour	G-561	2-1/2"	1	5/8"	20	50.3	DFR8000
2-Hour	G-561	2-1/2"	1	5/8"	20	50.3	DFR8000
1-1/2-Hour	G-561	2-1/2"	1	5/8"	20	50.3	DFR8000
1-Hour	G-561	2-1/2"	1	5/8"	20	50.3	DFR8000
WOOD DECK/CEILING DRYWALL ASSEMBLIES							
1-Hour	L502	NA	1	1/2"	None	None	DFR8000 DFR8000SS
	L513	NA	1	5/8"	None	None	DFR8000 DFR8000SS
	L515	NA	1	1/2"	None	None	DFR8000 DFR8000SS
	L525	NA	1	1/2"	24	57	DFR8000 DFR8000SS
	L526*	NA	1	5/8"	24	114	DFR8000 DFR8000SS
Plywood (2), 2 × 10 or (1) 4 × 10 Wood Joists							
1-Hour	L508	NA		5/8"	None	None	DFR8000 DFR8000SS
Plywood with Wood Trusses							
1-Hour	L529	NA		5/8"	24	113	DFR8000 DFR8000SS
Structural Cement – Fiber Units Over Steel Joists							
1-Hour	L-564	3/4"	1	5/8"	None	None	DFR8000 DFR8000SS
Wood Joist							
1-Hour	L-570	NA	2	1/2"	None	None	DFR8000 DFR8000SS
ROOF/CEILING DRYWALL ASSEMBLIES							
Standing Seam exposed Metal Roof with Batts/Blankets							
1-Hour	P516	NA	2	5/8"	None	None	DFR8000
Mineral Fiber Foam on Cellular, Fluted, Corrugated Metal Deck							
2-Hour	P514	NA	1	5/8"	24	255	DFR8000 DFR8000SS
1-1/2-Hour	P507	NA	1	5/8"	24	113	DFR8000 DFR8000SS
	P510	NA	1	5/8"	24	113	DFR8000 DFR8000SS
	P513*	NA	1	5/8"	24	144	DFR8000 DFR8000SS
1-Hour	P508*	NA	1	5/8"	24	144	DFR8000 DFR8000SS
	P509*	NA	1	5/8"	24	144	DFR8000 DFR8000SS
	P510	NA	1	1/2"	24	114	DFR8000 DFR8000SS
Mineral Fiber/Laminated Gypsum Planks							
1-1/2-Hour	P506	2"	1	5/8"	24	57	DFR8000 DFR8000SS
Wood Roofing System							
1-1/2-Hour	P533	NA	1	5/8"	None	324	DFR8000 DFR8000SS

NOTE: Numbers in parentheses are original UL design numbers. Some unit sizes are no longer available as standard items; some designs include additional sizes.

* Optional acoustical tile may be glue-applied to gypboard.
DFR8000 – UL designation, Fire Guard™ drywall grid system
DFR8000SS – UL designation, Fire Guard™ ShortSpan® drywall grid system