Meet Code Requirements
With Fire Resistive Ceiling Assemblies

Look For This Icon identifying Fire Guard ceilings throughout this catalog.

Armstrong Fire Guard Products:

- Include specially formulated ceilings in a variety of textures
- Are the only Armstrong products approved for UL assemblies
- Even include specially designed suspension systems

Local building codes, which require fire-safe construction for many building applications, rely on two ratings to evaluate compliance:

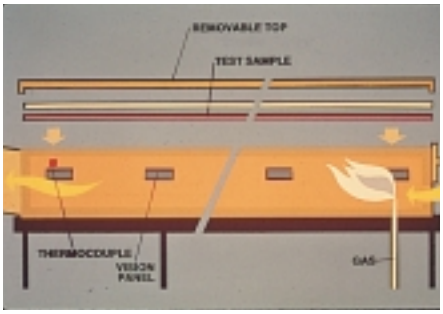
- Flame spread rating of a material
- Fire-resistance rating of a construction assembly

These ratings are based on ASTM standards, and compliance is determined by several independent, nongovernmental testing services such as Underwriters Laboratories, Inc.

Flame spread and fire-resistance ratings are two separate issues, and they must be addressed independently in selection and specification.

Flame Spread Rating of a Ceiling Material (ASTM E 84)

The relative rate at which a flame will spread over the surface of the material. This rate is compared against a rating of 0 for inorganic reinforced cement board and a rating of 100 for red oak. Class A ceilings have flame spread ratings of 25 or less – the required standard for most commercial applications.



ASTM E 84 Tunnel Test yields flame spread and smoke-developed indices

Fire-Resistance Rating of a Ceiling Assembly (ANSI/UL 263 – ASTM E 119 and NFPA 251)

The degree to which (measured in hours) the entire assembly, 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.

For Canada

Flame Spread Rating of a Ceiling Material (CAN/ULC - S102M)

The relative rate at which a flame will spread over the surface of the material. This rate is compared against a rating of 0 for inorganic reinforced cement board and a rating of 100 for red oak. The required standard for most commercial applications.

Fire-Resistance Rating of a Ceiling Assembly (CAN/ULC - S101M) and ANSI/UL 263 - ASTM E 119 and NFPA 251

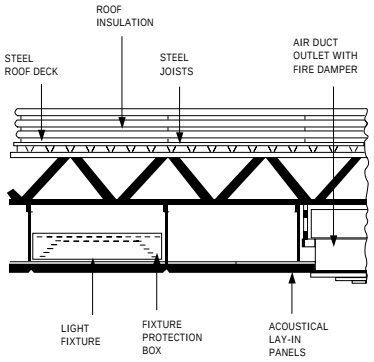
The degree to which (measured in hours) the entire assembly, not individual components, withstands fire and high temperatures. Specifically, it is an assembly's ability to prevent the spread of fire between spaces while retaining structual integrity.

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

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

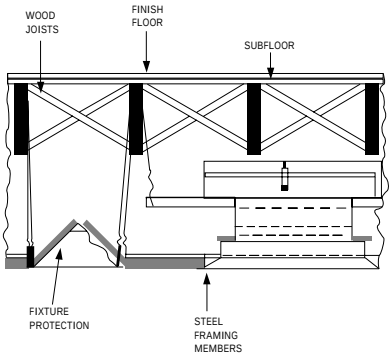
Roof/Ceiling Assemblies

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 finish floor.

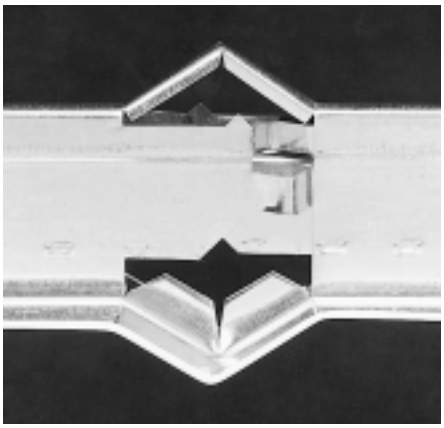


Use Only Fire Guard Products for Fire-Rated Assemblies

Armstrong ceiling panels and suspension systems listed in fire-rated assemblies are designated as **Fire Guard** products and are identified with the Fire Guard icon throughout this catalog.

Fire Guard Ceilings are specially formulated to provide enhanced resistance against flame spread, smoke generation and/or structural failure.

Fire Guard Suspension Systems have a patented prenotched expansion relief to help maintain structural integrity of the ceiling:



Expansion relief

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 on pages 190-191 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 on page 19 for a list of Fire Guard fire resistive ceilings.
5. Review performance data for specific Fire Guard ceilings and suspension systems throughout this catalog that meet your design criteria for final selection.

Troubleshooting Tips

- UL listed designs designate minimum ceiling panel thickness. For example, if a 5/8″ “Type P” product is specified in the assembly, a 3/4″ “Type P” product may also be used. However, scored Fire Guard ceiling panels are considered 5/8″ thick, not 3/4″.
- All penetrations through the ceiling, such as light fixtures and HVAC outlets, must be taken into account in determining fire-rated assemblies. For applicable assemblies, Armstrong Fire Protection Board (Item #850), nominal 2′ x 4′ x 5/8″ or thicker Type “P” board with nondescript surface pattern and containing a U.L. Label providing both Surface Burning Characteristics and Fire Resistance Classification Ratings is available for light fixture and air duct outlet protection.
- Any deviation from the listed assembly, such as the addition of thermal insulation, substitution of a specified product or field painting of ceiling panels, must be approved by local authorities.
- Certain types of building assemblies, such as wood truss construction, are not currently rated with acoustical ceilings. However, a relatively new design (P265) provides for acoustical ceiling assemblies in metal buildings.

Ceiling Resources Available to You:

• Summary listing, Fire Guard ceilings – page 19
• Summary listing, UL Rated Ceiling Assemblies – pages 190-191
• Solutions Newsletter, “Fire-Rated Assemblies” – CS-3115
• TechLine assistance – 1-877-ARMSTRONG (Option 3)

www.ceilings.com

UL Fire Resistive Ceiling Assemblies

DECK CONSTRUCTION TYPE	UL DESIGN NUMBER	CONCRETE THICKNESS	PANEL OR TILE SIZE & TYPE*	MINIMUM PANEL OR TILE THICKNESS	†MAXIMUM FIXTURE PENETRATION (ft^2/100 ft^2)	†MAXIMUM DUCT PENETRATION ($in.^2$/100 ft^2)	GRID SYSTEM(S)
CONCRETE FLOOR/CEILING ASSEMBLIES							
CONCRETE ON FULL CELLULAR DECK							
4-Hour—Concealed Grid	**A011 (21-4)**	2-1/2″	12″ x 12″; **P**	5/8″	None	None	**5**
3-Hour—Concealed Grid	**A012 (31-4)**	2-1/2″	12″ x 12″; **P**	5/8″	25	576	**5**
CONCRETE ON FLAT CELLULAR, FLUTED OR BLEND DECK							
4-Hour—Concealed Grid	**A011 (21-4)**	2-1/2″	12″ x 12″; **P**	5/8″	None	None	**5**
3-Hour—Concealed Grid	**A012 (31-4)**	2-1/2″	12″ x 12″; **P**	5/8″	25	576	**5**
3-Hour—Exposed Grid	**A211 (95-3)**	3″	24″ x 48″; **P** or **PC**	5/8″	24	576	**1, 2**
	A212 (200-3)	2-1/2″	48″ x 48″; **PC** 36″ x 60″; **PC** 30″ x 60″; **PC**	5/8″	25	158	**1, 2**
	D216	3-1/4″	24″ x 24″; **BF** 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**) 3/4″ (**BF**)	24	576	**1, 2**
2-Hour—Exposed Grid	**A202 (246-2)**	2-1/2″	48″ x 48″; **PC** 36″ x 60″; **PC** 36″ x 36″; **PC** 30″ x 60″; **P** or **PC** 30″ x 30″; **P** or **PC** 24″ x 60″; **P** or **PC** 24″ x 48″; **P** or **PC** 24″ x 36″; **P** or **PC** 24″ x 24″; **P** or **PC** 20″ x 60″; **P** or **PC**	5/8″	24	576	**1, 2, 4** **3 (1 hr only)**
	D216	2-1/2″	24″ x 24″; **BF** 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**) 3/4″ (**BF**)	24	576	**1, 2, 4** **3 (1 hr only)**
	A210 (220-2)	2-1/2″	24″ x 48″; **P** or **PC** 24″ x 24″; **P** or **PC**	5/8″	24	576	**1, 2**
CONCRETE ON RIBBED OR CORRUGATED DECK							
3-Hour—Concealed Grid	**G033 (218-3)**	3-1/2″	12″ x 12″ to 12″ x 36″ or 12″ x 12″ to 24″ x 24″; **BF**, **P**, or **PC**	3/4″ (**BF** or **P**) or 5/8″ (**PC**)	25	288	**5**
3-Hour—Exposed Grid	**G256**	3-1/2″	24″ x 24″; **BF** or **P** 24″ x 48″; **P** or **PC**	5/8″ (**P** or **PC**) or 3/4″ (**BF**)	24	255	**1, 2**
2-Hour—Concealed Grid	**G028 (92-2)**	2-1/2″	24″ x 24″; **BF** or **P**	3/4″ (**BF**) or 5/8″ (**P**)	25	576	**5**
	G031 (287-2)	2-1/2″	12″ x 12″ to 12″ x 36″ or 12″ x 12″ to 24″ x 24″; **BF**, **P**, or **PC**	3/4″ (**BF**) or 5/8″ (**P** or **PC**)	25	288	**5**
	G023 (322-2)	2-1/2″	12″ x 12″; **BF** or **P** 24″ x 24″; **BF** or **P**	3/4″	24	288	**5**
2-Hour—Exposed Grid	**G256**	2-1/2″	24″ x 24″; **BF** or **P** 24″ x 48″; **P** or **PC**	5/8″ (**P** or **PC**) or 3/4″ (**BF**)	24	576	**1, 2, 4**
	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—Concealed Grid	**G036**	3-1/4″	12″ x 12″; **P** 12″ x 24″; **P**	5/8″	14	81	**5**
	G030 (57-3)	3″	12″ x 12″ to 12″ x 36″ or 12″ x 12″ to 24″ x 24″; **BF** or **P**	3/4″	None	None	**5**
3-Hour—Exposed Grid	**G229 (232-3)**	3-1/4″	24″ x 48″; **P** or **PC**	5/8″	20	576	**1, 2**
2-Hour—Concealed Grid	**G022 (285-2)**	2-1/2″	12″ x 24″; **BF** or **P**	3/4″	16	57	**5**
	G028 (92-2)	2-1/2″	24″ x 24″; **BF** or **P**	3/4″ (BF) or 5/8″ (P)	25	576	5
	G036	2-1/2″	12″ x 12″; **P** 12″ x 24″; **P**	5/8″	14	81	**5**
	G032 (8-2)	2″	12″ x 12″; **P**	5/8″	None	None	**5**
2-Hour—Exposed Grid	**G209 (46-2)**	3″	24″ x 48″; **P** or **PC** 24″ x 24″; **P** or **PC**	5/8″	8	None	**1, 2**
	G244 (240-2)*	3″	24″ x 48″; **P** or **PC** 24″ x 24″; **P** or **PC** 20″ x 60″; **P** or **PC**	5/8″	24*	576	**1, 2, 4**
	G210 (253-2)	2-1/2″	24″ x 24″; **BF** or **P**	3/4″	24	113	**1, 2**
	G216 (74-2)	2-1/2″	24″ x 48″; **P** or **PC** 24″ x 24″; **P**	5/8″	8	None	**1, 2**
	G217 (53-2)	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 (324-2)	2-1/2″	24″ x 48″; **P** or **PC** 24″ x 24″; **P** 20″ x 60″; **P** or **PC**	5/8″	20	576	**1, 2, 4**
	G242 (210-2)	2-1/2″	24″ x 48″; **P** or **PC**	5/8″	8	None	**1, 2**

Numbers in parentheses are original ULI design numbers. Some unit sizes are no longer available; some designs include additional sizes.
† See design details in UL Directory

DECK CONSTRUCTION TYPE	UL DESIGN NUMBER	CONCRETE THICKNESS	PANEL OR TILE SIZE & TYPE*	MINIMUM PANEL OR TILE THICKNESS	†MAXIMUM FIXTURE PENETRATION (ft^2/100 ft^2)	†MAXIMUM DUCT PENETRATION ($in.^2$/100 ft^2)	GRID SYSTEM(S)
CONCRETE ON METAL LATH, RIBBED OR CORRUGATED DECK (CONT.)							
2-Hour—Exposed Grid	**G243 (230-2)***	2-1⁄2″	24″ x 48″; **P**	5⁄8″	16* 20″ x 60″; **P**	576	**1, 2, 4**
	G236 (21-2)	2-1⁄2″	24″ x 48″; **P**	5⁄8″	None 24″ x 24″; **P**	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**
1-1⁄2-Hour—Concealed Grid	**G027 (7-11⁄2)**	2″	12″ x 12″; **BF** or **P**	3⁄4″ (**BF**) or	21⁄3	576 5⁄8″ (**P**)	**5**
	G029 (21-11⁄2)	2″	24″ x 24″; **BF** or **P**	3⁄4″ (**BF**) or 5⁄8″ (**P**)	25	576	**5**
1-Hour—Exposed Grid	**G241 (32-1)**	2″	24″ x 48″; **P** 24″ x 24″; **P**	5⁄8″	None	None	**1, 2**
WOOD DECK/CEILING ASSEMBLIES							
DOUBLE-PLY WOOD (OR PLYWOOD), 2 x 10 WOOD JOISTS							
1-Hour—Concealed Grid	**L004 (9-1)**	NA	12″ x 12″; **P**	3⁄4″ or 5⁄8″	None	None	**5**
	L005	NA	12″ x 12″; **BF** or **P** 12″ x 24″; **BF** or **P**	3⁄4″ (**BF**) 5⁄8″ (**P**)	14	81	**5**
1-Hour—Exposed Grid	**L209 (30-1)**	NA	24″ x 48″; **P**	5⁄8″	16	110	**1, 2**
	L210 (51-1)	NA	24″ x 48″; **P** 24″ x 24″; **P**	5⁄8″	24	227	**1, 2, 4**
DOUBLE-PLY WOOD (OR PLYWOOD), 3 x 8 WOOD JOISTS							
1-1⁄2-Hour—Exposed Grid	**L208 (8-11⁄2)**	NA	24″ x 48″; **P** or **PC** 24″ x 24″; **P**	5⁄8″	None	None	**1, 2**
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**
PRECAST CONCRETE PLANK							
2-Hour—Concealed Grid	**P001 (RC14-2)**	2″	12″ x 12″; **BF** or **P**	3⁄4″ (**BF**) or 5⁄8″ (**P**)	12	126	**5**
	P004 (RC4-2)	2″	12″ x 12″; **BF** or **P**	3⁄4″	None	None	**5**
LIGHTWEIGHT INSULATING CONCRETE ON RIBBED OR CORRUGATED DECK							
2-Hour—Exposed Grid	**P215 (RC24-2)**	2″ **PC** *plus*	24″ x 48″; 24″ x 48″; Gypsum Bd.	5⁄8″ **PC** *plus* 1⁄2″ Gypsum Bd.	16	57	**1, 2**
	P219	2″	24″ x 48″; **PC** *plus* 24″ x 48″; Gypsum Bd.	5⁄8″ **PC** *plus* 1⁄2″ Gypsum Bd.	16	57	**1, 2**
	P251	2-3⁄4″ Min to 6 3⁄4″**	24″ x 48″; **P** or **PC** 24″ x 24″; **BF**, **P**, or **PC** 20″ x 60″; **P** or **PC**	5⁄8″ (**P** or **PC**) 3⁄4″ (**BF**)	24	576	**1, 2, 4**
1-1⁄2-Hour—Exposed Grid	**P231**	3-3⁄8″**	24″ x 48″; **P**	5⁄8″	24	255	**1, 2**
1-Hour—Exposed Grid	**P216 (RC8-1)**	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 (RC16-1)**	1″ Min & Max	24″ x 48″; **P**	5⁄8″	16	113	**1, 2**
	P210 (RC4-1)	1″ Min & Max	24″ x 48″; **PC**	5⁄8″	16	57	**1, 2**
	P211 (RC3-1)	1″ Min to 2″ Max	24″ x 48″; **PC**	5⁄8″	16	57	**1, 2**
	P225	1″ Min to Unlimited Max	24″ x 48″; **P** or **PC** 24″ x 24″; **BF**, **P** or **PC** 20″ x 60″; **P** or **PC**	5⁄8″ (**P** or **PC**) or 3⁄4″ (**BF**)	24	576	**1, 2, 3, 4**
	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	576	**1**
STRUCTURAL CEMENT/WOOD-FIBER PLANK		**PLANK THICKNESS**					
1-1⁄2-Hour—Exposed Grid	**P253**	2-1⁄2″ Min to Unlimited Max***	24″ x 48″; **P** 24″ x 24″; **BF** 20″ x 60″; **P**	5⁄8″ (**P**) 3⁄4″ (**BF**)	24	254	**1, 2, 4**
1-Hour—Exposed Grid	**P253**	2-1⁄2″ Min to Unlimited Max****	24″ x 48″; **P** or **PC** 24″ x 24″; **BF**, **P** or **PC** 20″ x 60″; **P** or **PC**	5⁄8″ (**P** or **PC**) 3⁄4″ (**BF**)	24	576	**1, 2, 4**
POURED GYPSUM CONCRETE OVER 1/2″ GYPSUM FORMBOARD		**CONCRETE THICKNESS**					
1-1⁄2-Hour—Exposed Grid	**P217 (RC6-11⁄2)**	1-1⁄2″	24″ x 60″; **P**	5⁄8″	16	288	**1, 2**
IRMA (INVERTED ROOF MEMBRANE ASSEMBLY)		**INSULATION THICKNESS**					
1-Hour—Exposed Grid	**R217 (UL Canada)**	2″ Min to Unlimited Max	24″ x 48″; **P** or **PC** 24″ x 24″; **BF**	5⁄8″ 3⁄4″	24	255	**1, 2**

Numbers in parentheses are original ULI design numbers. Some unit sizes are no longer available; some designs include additional sizes.
† See design details in UL Directory

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, pgs. 188 & 189.

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:

1. UL tests rate an entire assembly. No ceiling or grid product alone constitutes a fire rated assembly.
2. You can use only the specific type, size and minimum thickness of Fire Guard ceilings or grid identified in each assembly.
3. This table is a guide. To purchase a copy of the UL Directory:

   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 = FINE FISSURED Ceramaguard #605, 607 & 608
BF = CIRRUS #579
P = All other products designated Fire Guard in this catalog
* Allows flat-board fixture protection
** Concrete plus insulation thickness
*** Plank plus insulation thickness
**** Square edge ceiling panels only

KEY TO GRID SYSTEM TYPES

1 = AFG and FST 6000 – PRELUDE Fire Guard and XL Fire Guard with steel cap
2 = AFG-A and FST 6000A – PRELUDE PLUS Fire Guard and XL Fire Guard with aluminum cap
3 = FSL – SILHOUETTE Fire Guard Bolt-Slot
4 = FSLK – SUPRAFINE Fire Guard with steel cap
5 = Concealed Suspension System (see Design Details in UL Directory)