

# **USG STRUCTURAL PANELS**

# MID-RISE APPLICATION

- 3 easy steps: lay, fasten, finish
- No pouring, no setting, no curing
- A noncombustible alternative to poured concrete slabs, meeting latest active ASTM standard E136
- A complete dry application
- Mold-, moisture- and termite-resistant
- Easily transported into building/fits in an elevator
- Fast installation/dimensionally stable



# A NEW LEVEL OF PERFORMANCE.

USG Structural Panels are high-strength reinforced concrete panels for use in noncombustible construction. Lighter than precast or poured concrete, USG Structural Panels install like wood sheathing and provide a new, faster, easier and more efficient way to build floors, roofs and walls.

#### SUBFLOOR SYSTEMS

The USG Structural floor system consists of steel joists, trusses or framing members and USG Structural Panel Concrete Subfloor applied with mechanical fasteners. The result is a noncombustible, mold-, moisture-, termite-resistant and dimensionally stable floor assembly, suitable for a variety of floor finishes. Build a lighter, faster floor system.

#### **TEST DATA**

Physical and Mechanical Properties	Test Standard	Approximate Values Standard (Metric)
Concentrated load	ASTM E661	550 lb. (2.45 kN) static 0.108 in. (2.7 mm) max. deflection @ 200 lb. (0.89 kN)
Mold resistance	ASTM D3273, ASTM G21	10, 0
Water absorption <sup>a</sup>	ASTM C1185, Sec. 5.2.3.1	<15.0%
Weight [3/4 in. (19 mm) thickness]	ASTM D1037	5.3 lb./ft. <sup>2</sup> (26 kg/m <sup>2</sup> )
Linear variation with change in moisture (25% to 90% relative humidity)	ASTM C1185, Sec. 8	<0.10 %
Noncombustibility	ASTM E136 (unmodified) CAN/ULC-S114	Passed Passed
Surface-burning characteristics (flame spread/smoke developed)	ASTM E84, CAN/ULC S102	0/0
Termite resistance	AWPA Standard E1-13	9.8
Low VOC emissions	CDPH/EHLB/Standard Method V1.1-2010 <sup>b</sup>	Compliant

(a) Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours.
(b) Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (Emission testing method for CA Specification 01350).

### SYSTEM PERFORMANCE

Description	Reference		
Code Reports	ICC ESR-1792; PER-13067 <sup>b</sup>		
City Code Approvals Los Angeles	LARR #25682		
UL 1-, 1.5-, 2-Hour Fire Resistance Designs <sup>a</sup>	G535, G536, <b>G556</b> , G557, G558, G560, G562, L521, L541, L550, L569, L570, M502, M506, M515, M521, M527, M531		
ULC 1-, 1.5-, 2-Hour Fire Resistance Designs <sup>a</sup>	I526, I527, I528, I529, M520, M521		
(a) For the most un-to-date III /III C Designations, visit www.IISGStructuralIII.com			

(b) For the most up-to-date Product Evaluation Report, visit www.PER13067.com

### **TYPICAL APPLICATIONS**



# **ACOUSTICAL PERFORMANCE**

UL Design (Hour Rating)	Floor Finish	Underlayment	USG Structural Panel	Joist	RC-1/DWSS	USG Sheetrock* Brand Firecode* C Core	STC/FSTC <sup>®</sup>	IIC/FIICª
G556 (1 hour)	Carpet & Pad	-	Concrete Subfloor	C-joist (9.25 in.)	RC-1	5/8 in. – 1 layer	56	65
G557 (2 hours)	Carpet & Pad	-	Concrete Subfloor	C-joist (9.25 in.)	RC-1	5/8 in. – 2 layers	57ª	68-69ª
G556 (2 hours)	Carpet & Pad	USG Levelrock*	Concrete Subfloor	C-joist (9.25 in.)	DWSS	5/8 in. – 1 layer	60ª	79ª
G556 (2 hours)	Engineered Wood	USG Fiberock*	Concrete Subfloor	C-joist (9.25 in.)	DWSS	5/8 in. – 1 layer	62ª	53-56ª
G556 (2 hours)	Ceramic Tile	USG Fiberock®b	Concrete Subfloor	C-joist (9.25 in.)	DWSS	5/8 in. – 1 layer	56-61ª	52-59ª

(a) FSTC/FIIC are field acoustical tests in accordance with ASTM E419 and ASTM E1004.

(b) USG Durock™ Brand Tile Membrane and an acoustical mat are to be used to as part of the underlayment system.

### **ROOF SYSTEMS**

The USG Structural roof system consists of steel joists, trusses or framing members and USG Structural Panel Concrete Roof Deck applied with mechanical fasteners; to serve as a structural substrate for direct-, mechanically-, or adhesive-applied roof systems. The result is a noncombustible, mold-, moisture-, termite-resistant and dimensionally stable roof deck, suitable for low-slope or steep-slope roof systems. Build a lighter, faster roof system.

# **TEST DATA** (Concrete Roof Deck)

Physical and Mechanical Properties	Test Standard	Approximate Values Standard (Metric)
Concentrated load	ASTM E661	550 lb. (2.45 kN) static 0.108 in. (2.7 mm) max. deflection @ 200 lb. (0.89 kN)
Mold resistance	ASTM D3273, ASTM G21	10, 0
Water absorption <sup>a</sup>	ASTM C1185, Sec. 5.2.3.1	<15.0%
Weight [3/4 in. (19 mm) thickness]	ASTM D1037	5.3 lb./ft. <sup>2</sup> (26 kg/m <sup>2</sup> )
Linear variation with change in moisture (25% to 90% relative humidity)	ASTM C1185, Sec. 8	<0.10 %
Noncombustibility	ASTM E136 (unmodified) CAN/ULC-S114	Passed Passed
Surface-burning characteristics (flame spread/smoke developed)	ASTM E84, CAN/ULC S102	0/0
Termite resistance	AWPA Standard E1-13	9.8
Low VOC emissions	CDPH/EHLB/Standard Method V1.1-2010 <sup>b</sup>	Compliant

(a) Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours.
(b) Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (Emission testing method for CA Specification 01350).

#### SYSTEM PERFORMANCE

Description	Reference	
Code Reports	PER-14076 <sup>b</sup>	
UL 1-, 1.5-, 2-Hour Fire Resistance Designs <sup>a</sup>	P561, P562, P573	
(a) For the most up-to-date UL/ULC Designations, visit www.USGStructuralUL.com		

(b) For the most up-to-date Product Evaluation Report, visit www.PER14076.com

#### LOW-SLOPE APPLICATIONS



# **STEEP-SLOPE & EXTERIOR APPLICATIONS**

USG Structural Panel Concrete Roof D	eck			
Cement or Clay Tile	Shingles	Standing Seam	Balconies	Canopies

#### WALL SYSTEMS

The USG Structural wall system consists of **USG Structural Panel Concrete Subfloor** (for wall application) screw attached to load bearing steel studs. The result is a noncombustible, mold-, moisture-, termite-resistant and dimensionally stable, shear- and axial-load-bearing, fire-rated wall system. **Build a lighter, faster shear-wall system.** 

#### **TEST DATA** (Concrete Subfloor for Wall Application)

Physical and Mechanical Properties	Test Standard	Approximate Values Standard (Metric)		
Mold resistance	ASTM D3273, ASTM G21	10, 0		
Water absorption <sup>a</sup>	ASTM C1185, Sec. 5.2.3.1	<15.0%		
Linear variation with change in moisture (25% to 90% relative humidity)	ASTM C1185, Sec. 8	<0.10 %		
Noncombustibility	ASTM E136-12 (unmodified) CAN/ULC-S114	Passed Passed		
Surface-burning characteristics (flame spread/smoke developed)	ASTM E84, CAN/ULC S102	0/0		
Termite resistance	AWPA Standard E1-13	9.8		
Low VOC emissions	CDPH/EHLB/Standard Method V1.1-2010 <sup>b</sup>	Compliant		
(a) Absorption measured from equilibrium conditioning followed by immersion in water for 48 hours				

(b) Reference Standard: California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010 (Emission testing method for CA Specification 01350).

#### SYSTEM PERFORMANCE

Description	Reference	
Code Reports	PER-13067 <sup>b</sup>	
UL 1-, 2-, and 3-Hour Fire Resistance Designs <sup>a</sup>	V465, V471	
(a) For the most up-to-date UL/ULC Designations, visit www.USGStructuralUL.com (b) For the most up-to-date Product Evaluation Report, visit www.PER13067.com		

#### SHEAR-WALL LOAD TABLE

The following table represents the shear-load capacity of USG Structural Panel Concrete Subfloors (for wall application). For the most up-to-date load tables, see the Progressive Engineering Inc. report PER-13067. For technical questions, email usgstructural@usg.com. A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

Panel Sheathing	Panel Orientation	Joint Strapping	Stud Spacing <sup>b</sup>	Fastener Spacing		Ultimate Load <sup>a</sup>
				Perimeter	Field	
Single Side	Vertical	no	16 in. (406.4 mm)	8 in. (203.2 mm)	12 in. (304.8 mm)	914 plf (13.3 kN/m)
				4 in. (101.6 mm)	12 in. (304.8 mm)	1,726 plf (25.2 kN/m)
			24 in. (609.6 mm)	8 in. (203.2 mm)	12 in. (304.8 mm)	819 plf (11.9 kN/m)
				4 in. (101.6 mm)	12 in. (304.8 mm)	1,584 plf (23.1 kN/m)
Horizon	Horizontal	yes	16 in. (406.4 mm)	8 in. (203.2 mm)	12 in. (304.8 mm)	984 plf (14.4 kN/m)
				4 in. (101.6 mm)	12 in. (304.8 mm)	1,821 plf (26.6 kN/m)
			24 in. (609.6 mm)	8 in. (203.2 mm)	12 in. (304.8 mm)	906 plf (13.2 kN/m)
				4 in. (101.6 mm)	12 in. (304.8 mm)	1,679 plf (24.5 kN/m)
Double Side	Side Horizontal yes 16	16 in. (406.4 mm)	8 in. (203.2 mm)	12 in. (304.8 mm)	1,901 plf (27.7 kN/m)	
				4 in. (101.6 mm)	12 in. (304.8 mm)	3,349 plf (48.9 kN/m)
			24 in. (609.6 mm)	8 in. (203.2 mm)	12 in. (304.8 mm)	1,730 plf (25.2 kN/m)
				4 in. (101.6 mm)	12 in. (304.8 mm)	3,135 plf (45.7 kN/m)

(a) Values are Ultimate Load, no safety factor included.

(b) Stud description: 3-5/8 in. deep, 16 gauge Steel Stud. For the most up-to-date Product Evaluation Report, visit www.PER13067.com

#### STRUCTURAL FASTENERS

Reference USG Structural Panel Recommended Fasteners (SCP95) for current fastener information. Visit www.usgscp95.com.

General Note: In accordance with PER-13067 for Subfloor or PER-14076 for Roof Deck, the minimum screw pattern is 6 in. (153 mm) o.c. along the perimeter of the panels and 12 in. (305 mm) o.c. in the field of the panels. Do not use a larger size screw unless specified by the structural engineer.

A qualified architect or engineer should review and approve calculations, framing and fastener spacing for all projects.

#### MSRP based upon full truckload delivered to jobsite: Subfloor: \$4.50/sf Roof deck: \$5.40/sf

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#### PRODUCT INFORMATION

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#### SAFETY FIRST!

Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.

