



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 ASTM E136-12
- 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 ^a	ASTM C1185, Sec. 5.2.3.1	<15.0%
Weight [3/4 in. (19 mm) thickness]	ASTM D1037	5.3 lb./ft. ² (26 kg/m ²)
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 ^b	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).

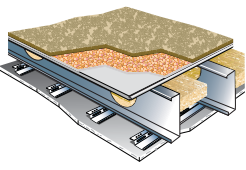
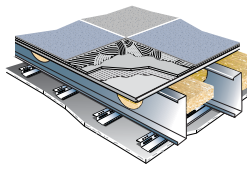
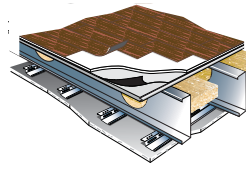
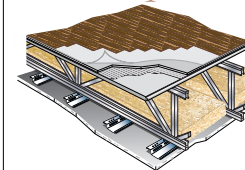
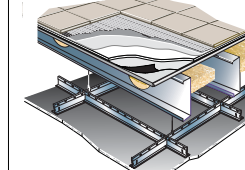
SYSTEM PERFORMANCE

Description	Reference
Code Reports	ICC ESR-1792; PER-13067 ^b
City Code Approvals Los Angeles	LARR #25682
UL 1-, 1.5-, 2-Hour Fire Resistance Designs ^a	G535, G536, G556 , G557, G558, G560, G562, L521, L541, L550, L569, L570, M502, M506, M515, M521, M527, M531
ULC 1-, 1.5-, 2-Hour Fire Resistance Designs ^a	I526, I527, I528, I529, M520, M521

(a) For the most up-to-date UL/ULC Designations, visit usg.com/structural

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

TYPICAL APPLICATIONS

USG Structural Panel Concrete Subfloor				
Carpet & Pad	Carpet Tile	Vinyl Plank	Engineered Wood	Ceramic Tile
				

ACOUSTICAL PERFORMANCE

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

(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 ^a	ASTM C1185, Sec. 5.2.3.1	<15.0%
Weight [3/4 in. (19 mm) thickness]	ASTM D1037	5.3 lb./ft. ² (26 kg/m ²)
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 ^b	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).

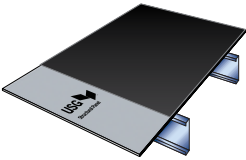
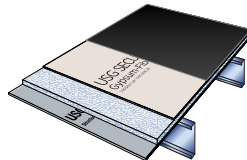

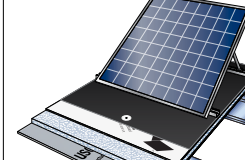
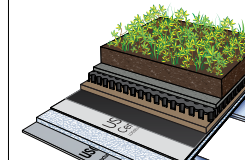
SYSTEM PERFORMANCE

Description	Reference
Code Reports	PER-14076 ^a
UL 1-, 1.5-, 2-Hour Fire Resistance Designs ^a	P561, P562, P573

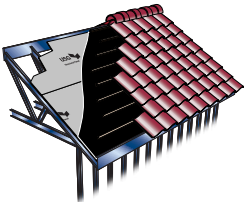
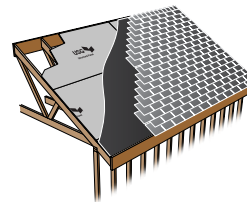
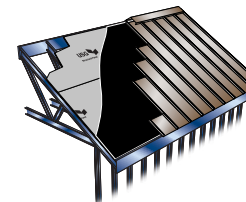
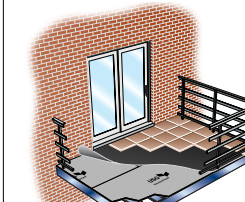
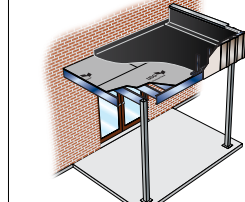
(a) For the most up-to-date UL/ULC Designations, visit usg.com/structural

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

LOW-SLOPE APPLICATIONS

USG Structural Panel Concrete Roof Deck				
Direct Applied	Adhered	Mechanically Attached	Solar	Vegetative
				

STEEP-SLOPE & EXTERIOR APPLICATIONS

USG Structural Panel Concrete Roof Deck				
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 ^a	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 ^b	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 ^b
UL 1-, 2-, and 3-Hour Fire Resistance Designs ^a	V465, V471

(a) For the most up-to-date UL/ULC Designations, visit usg.com/structural
(b) For the most up-to-date Product Evaluation Report, visit 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 ^a	Fastener Spacing		Ultimate Load ^a
				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)
	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	Horizontal	yes	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 PER13067.com

STRUCTURAL FASTENERS

USG recommends the following fasteners for the installation of USG Structural Panels to structural framing:

Manufacturer	16 ga. Cold-Formed Steel [1/2" (13 mm) Min. Edge Distance]		SPF Lumber [5/8" (16 mm) Min. Edge Distance]		1/4" (6.5 mm) A36 Hot-Rolled Steel [3/4" (19 mm) Min. Edge Distance]	
	Part #	Fastener Pull-Through ¹	Part #	Fastener Pull-Through ¹	Part #	Fastener Pull-Through ¹
Grabber Construction Products, Inc.	CGH8158LG	581 lb. (264 kg)	C8200L2M	581 lb. (264 kg)	—	—
Simpson Strong-Tie Company Inc.	CBSDQ158S	581 lb. (264 kg)	WSNTLG2S	581 lb. (264 kg)	TBG1260S	581 lb. (264 kg)
SENCO ²	—	—	GL24AABF ³	581 lb. (264 kg)	—	—

(1) Fastener pull-through capacities are based upon the minimum average **ultimate tested capacity** for all tabulated fasteners. The engineer or designer of record shall apply an appropriate safety factor (ASD) or resistance factor (LRFD).
(2) SENCO 8d ring shank nails are manufactured with a length of 2-3/8", head diameter of 0.266", and a shank diameter of 0.113". Equivalent 8d ring shank nails meeting these dimensional requirements may be utilized when approved by the engineer or designer of record.
(3) Minimum edge distance for nails is 1/2".

General Notes: In accordance with **PER-13076**, 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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SAFETY FIRST!
Follow good safety/industrial hygiene practices during installation. Wear appropriate personal protective equipment. Read SDS and literature before specification and installation.

