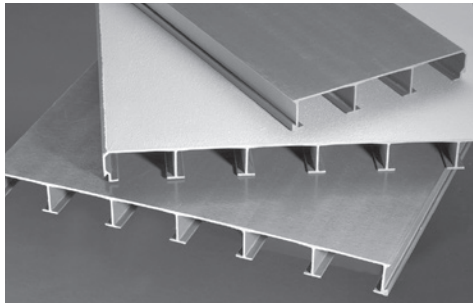


SECTION 16

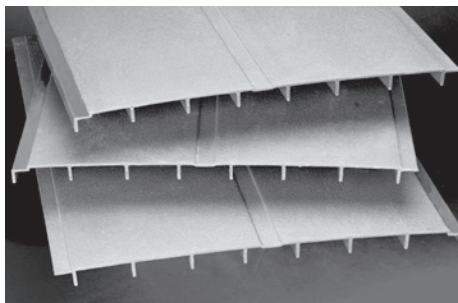
FIBERGLASS FLOORING AND DECKING SYSTEMS



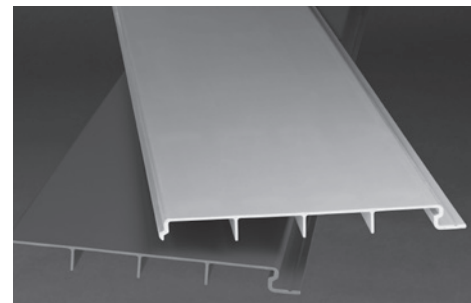
SAFPLANK®
FIBERGLASS PLANK SYSTEM



SAFPLANK HD®
HEAVY DUTY DECKING SYSTEM



SAFDECK®
FIBERGLASS DECKING SYSTEM



STRONGDEK™
FIBERGLASS DECKING SYSTEM

Look for this blue line in the left margin of the Design Manual documents. This line indicates where the latest update has been made.

SAFPLANK® FIBERGLASS PLANK SYSTEM

INTRODUCTION

SAFPLANK® is a high strength plank system of fiberglass panels designed to interconnect for a continuous solid surface. **SAFPLANK®** is intended to replace wood, aluminum or steel planks in environments where corrosion or rotting creates costly maintenance problems or unsafe conditions. Non-conductive and non-sparking, **SAFPLANK®** provides safe walkways in electrical applications.

FEATURES

The **SAFPLANK®** fiberglass plank system is comprised of pultruded FRP panels. The system provides these features:

- Corrosion Resistant
- Strong
- Lightweight
- Easy to Install
- Easy to Maintain
- Non-Sparking
- Easily Transported
- Low Conductivity

SIZES

SAFPLANK® is available in 50mm deep planks in both 300mm and 600mm widths to offer flexibility in design. Stock panels are available in 3.05m and 7.32m lengths. Other lengths are available upon request. **SAFPLANK®** may be ordered with a grit surface or with a smooth surface for non-pedestrian applications.

MATERIALS OF CONSTRUCTION

SAFPLANK® is a composite of fiberglass reinforcements (glass and mat) and a thermoset resin system. The panels are produced by the pultrusion process. Planks will be manufactured using polyester resin to ANSI/NSF standard 61 certified for potable water applications, if required.

The standard resin system is a slate gray fire retardant polyester resin meeting the requirements of Class 1 flame spread rating of 25 or less per ASTM E-84 and the self-extinguishing requirements of ASTM D-635. The resin is UV inhibited and the composite includes a surface veil on all exposed surfaces for enhanced corrosion and UV protection. Other resins and colors are available upon request.

The standard grit system for **SAFPLANK®** is a polyurethane based medium grit. This grit system is recommended for light pedestrian traffic only. Other grit systems available include epoxy medium and epoxy coarse and may be more appropriate for applications with heavier traffic.

APPLICATIONS

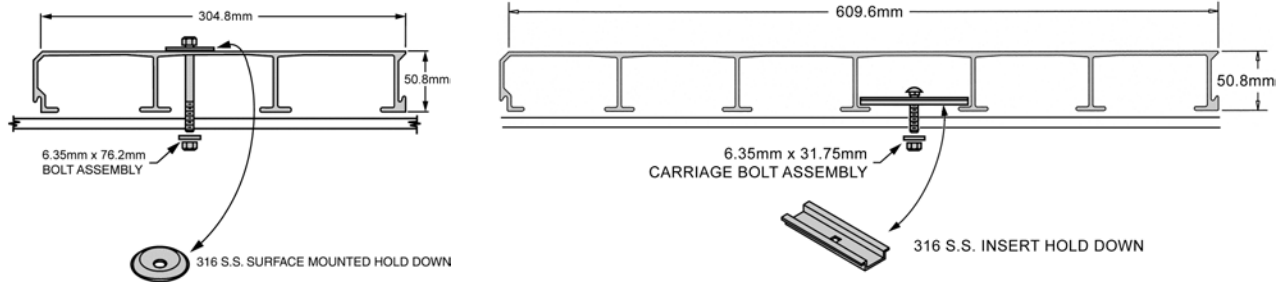
SAFPLANK® is designed to be used for flooring and covers. Typical applications include:

- Cooling Tower Decking
- Odor Control Covers
- Roofing Walkways
- Temporary Flooring
- Access Walkways
- Cellular Wall Panels

SAFPLANK®, when turned upside down, serves as an excellent stay-in-place concrete forming system in applications where corrosion and weight are construction concerns. Polyester resin is acceptable when pultruded FRP shapes are used as a stay in place (SIP) form. For concrete installations where long-term structural integrity is required, vinyl ester resin should be used.

SAFPLANK® FIBERGLASS PLANK SYSTEM

Two hold-down connections are available for installing SAFPLANK®. Both hold-downs can be used with either 304.8mm or 609.6mm wide SAFPLANK®.



UNIFORM LOAD (Deflection in mm)

LOAD in KG / SQUARE METER (KG/M²)

SPAN (mm)	PLANK ORIENTATION	305mm SAFPLANK® $I_{12} = 7.03 \times 10^6 \text{ mm}^4$, wt = 3.9 kg / lin. m (gritted)						610mm SAFPLANK® $I_{24} = 1.25 \times 10^6 \text{ mm}^4$, wt = 7.6 kg / lin. m (gritted)				
		244	488	976	1465	2441	4882	488	976	1465	2441	4882
610	REGULAR	0.152	0.279	0.584	0.864	1.448	2.870	0.381	0.762	1.143	1.905	3.835
	INVERTED	0.178	0.356	0.660	1.016	1.575		0.432	0.762	1.372	2.184	4.089
914	REGULAR	0.559	1.092	2.210	3.302	5.512		1.168	2.337	3.505	5.867	
	INVERTED	0.610	1.168	2.261	3.073			1.295	2.769	4.089	6.629	
1219	REGULAR	1.575	3.124	6.274	9.398			3.378	6.731	10.109		
	INVERTED	1.626	3.048	6.020				3.302	7.290	10.516		
1524	REGULAR	3.556	7.137	14.275				7.671	15.367			
	INVERTED	3.525	6.756					7.264	16.104			
1829	REGULAR	7.391	14.808					15.926				
	INVERTED	6.807						15.799				

CONCENTRATED LOAD (Deflection in mm)

LOAD in KG / METER of WIDTH

SPAN (mm)	PLANK ORIENTATION	305mm SAFPLANK® $I_{12} = 7.03 \times 10^6 \text{ mm}^4$, wt = 3.9 kg / lin. m (gritted)						610mm SAFPLANK® $I_{24} = 1.25 \times 10^6 \text{ mm}^4$, wt = 7.6 kg / lin. m (gritted)				
		74	149	298	446	744	1488	149	298	446	744	1488
610	REGULAR	< 0.127	0.229	0.457	0.686	1.143	2.311	0.305	0.610	0.914	1.524	3.073
	INVERTED	0.152	0.279	0.584	0.838	1.346	2.515	0.356	0.660	0.991	1.448	3.505
914	REGULAR	0.305	0.584	1.168	1.778	2.946	5.893	0.610	1.245	1.870	3.124	6.248
	INVERTED	0.330	0.660	1.270	1.880	2.997	5.918	0.762	1.397	2.032	3.302	7.292
1219	REGULAR	0.635	1.245	2.515	3.759	6.274	12.548	1.346	2.692	4.039	6.731	
	INVERTED	0.737	1.346	2.591	3.759	6.071	11.913	1.397	2.692	3.988	6.579	
1524	REGULAR	1.143	2.286	4.572	6.858	11.430		2.464	4.902	7.417	12.294	
	INVERTED	1.194	2.235	4.445	6.553	10.820		2.413	4.724	7.061	11.608	
1829	REGULAR	1.981	3.937	7.899	11.836			4.242	8.611	12.725		
	INVERTED	2.007	3.810	7.341	10.922			3.810	7.569	11.227	18.796	

Maximum deflections shown are based on a deflection of approximately L/100. To calculate the maximum deflection for a simply supported continuous beam spanning two equal lengths with the uniform or concentrated load on one span only, multiply the above deflections by 0.71. For ventilated SAFPLANK®, divide deflection values by .95.

Polyester resin is acceptable when pultruded FRP shapes are used as a stay in place (SIP) form. For concrete installations where long-term structural integrity is required, vinyl ester resin should be used. SAFPLANK® joints have been tested for 136 kg concentrated point load applied over 2581mm² area (See ASCE 7 - Minimum Design Loads for Buildings and other Structures). For 610mm span, a 136 kg concentrated load has a factor of safety (FS) of 6, a 914mm span has an FS of 4 and a 1219mm span has an FS of 3. Spans should be limited to 1219mm for this type of loading.

SAFPLANK HD® HEAVY DUTY DECKING SYSTEM

INTRODUCTION

SAFPLANK HD® is a high strength system of fiberglass planks designed to form a continuous solid surface. **SAFPLANK HD®** is intended to replace wood, aluminum or steel planks in environments where corrosion or rotting creates costly maintenance problems or unsafe conditions.

FEATURES

The **SAFPLANK HD®** fiberglass plank system is comprised of pultruded FRP panels. The system provides these features:

- Corrosion Resistant
- Strong
- Lightweight
- Easy to Install
- Easy to Maintain
- Non-Sparking
- Low Conductivity

SIZES

SAFPLANK HD® is available in 152.4mm deep panels in 914.4mm width. Stock panels are available in 6.1m and 7.32m lengths. Other lengths are available upon request. **SAFPLANK HD®** may be ordered with a grit surface or with a smooth surface for non-pedestrian applications.

MATERIALS OF CONSTRUCTION

SAFPLANK HD® is a composite of fiberglass reinforcements (glass roving and continuous filament mat) and a thermoset resin system. The pultrusion process is used to produce the panels. Planks can be manufactured using polyester resin to ANSI/NSF standard 61 certified for potable water applications, if required.

The standard resin system is a slate gray fire retardant polyester resin meeting the requirements of Class 1 flame spread rating of 25 or less per ASTM E-84 and the self-extinguishing requirements of ASTM D-635. The resin is UV inhibited and the composite incorporates a surface veil on all exposed surfaces for enhanced corrosion and UV protection. Other resins and colors are available upon request.

The standard grit system for **SAFPLANK HD®** is a polyurethane based medium grit. This grit system is recommended for light pedestrian traffic only. Other grit systems available include epoxy medium and epoxy coarse and may be more appropriate for applications with heavier traffic.

APPLICATIONS

SAFPLANK HD® is designed to be used for numerous applications including:

- Temporary Flooring
- Windwalls
- Roofing Walkways
- Concrete Forming Systems
- Odor Control Covers
- Dock Surfacing
- Cellular Wall Panels

SAFPLANK HD® HEAVY DUTY DECKING SYSTEM

SAFPLANK HD® MECHANICAL PROPERTIES

UNIFORM LOAD (Deflection in mm)

LOAD in KG / SQUARE METER (KG/M²)

I = 5.4 x 10⁷ mm⁴, A = 16,129 mm², wt = 31.32 kg / lin. m

	195		293		391		488	
SPAN (m)	Deflection	L/Ratio	Deflection	L/Ratio	Deflection	L/Ratio	Deflection	L/Ratio
3.05	1.78	1731	2.54	1154	3.56	865	4.32	692
3.66	3.56	1002	5.59	668	7.37	501	9.14	401
4.27	6.86	631	10.16	420	13.46	315	17.02	252
4.88	11.43	423	17.27	282	23.11	211	28.96	169
5.49	18.54	297	27.69	198	37.08	148		
6.10	28.19	216						
6.71	41.15	163						

CONCENTRATED LINE LOAD (Deflection in mm)

LOAD in KG / METER of WIDTH

I = 5.4 x 10⁷ mm⁴, A = 16,129 mm², 31.32 kg / lin. m

	149		446		893	
SPAN (m)	Deflection	L/Ratio	Deflection	L/Ratio	Deflection	L/Ratio
3.05	0.76	4327	2.03	1442	4.32	721
3.66	1.27	3005	3.56	1002	7.37	501
4.27	2.03	2207	5.84	736	11.68	368
4.88	2.79	1690	8.64	563	17.27	282
5.49	4.06	1335	12.44	445	24.64	223
6.10	5.59	1082	17.02	361	33.78	180
6.71	7.62	894	22.61	298		

Notes:

Contact Strongwell for higher load conditions than what is tabulated.

Values are limited to deflection ratios less than L/150 or a maximum span of 6.71 meters.

Material Property Data:

Full Section Modulus of Elasticity = 20.6 x 10³ N/mm²

Coefficient of Thermal Expansion (LW) = 8.5 x 10⁻⁶ mm/mm/°C

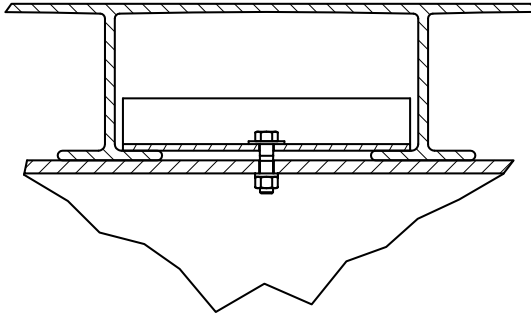
Coefficient of Thermal Expansion (CW) = 2.4 x 10⁻⁵ mm/mm/°C

EXTREN® Minimum Material Strength Properties for Lengthwise and Crosswise Directions

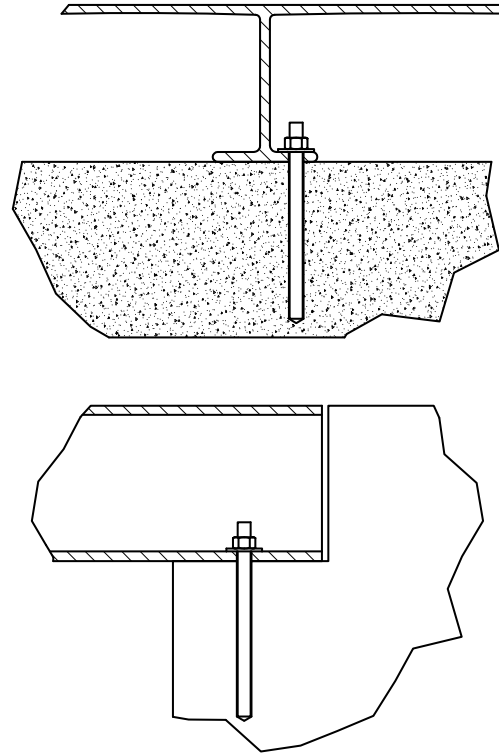
SAFPLANK HD® HEAVY DUTY DECKING SYSTEM

Two hold-down connections are available for installing SAFPLANK HD®.

ANCHOR & ANGLE



ANCHOR BOLT ONLY



SAFDECK® FIBERGLASS DECKING SYSTEM

INTRODUCTION

SAFDECK® is a system of 609.6mm wide fiberglass panels designed to overlap for a continuous solid surface. **SAFDECK®** is intended to replace wood, aluminum or steel decking in environments where corrosion or rotting creates costly maintenance problems or unsafe conditions. Non-conductive and non-sparking, **SAFDECK®** provides safe walkways in electrical applications.

FEATURES

The **SAFDECK®** fiberglass decking system is comprised of pultruded FRP panels. The system provides these features:

- Corrosion Resistant
- Strong
- Lightweight
- Easy to Install
- Easy to Maintain
- Non-Sparking
- Easily Transported
- Low Conductivity

SIZES

SAFDECK® is available in 28.575mm deep planks in 609.6mm widths. The decking system is designed to be a one-for-one replacement for plywood and has a 2.87 kN/m² rating at 0.914 m spans with less than L/180 deflection. All panels are gritted and are available in 7.315m lengths. Other lengths are available upon request. **SAFDECK®** may be ordered with a smooth surface for non-pedestrian applications.

MATERIALS OF CONSTRUCTION

SAFDECK® is a high strength, one-piece, overlapping panel system. Manufactured of pultruded fiberglass reinforced polymer (FRP), **SAFDECK®** is particularly well suited to corrosive environments.

The standard resin system is a slate gray fire retardant polyester resin meeting the requirements of Class 1 flame spread rating of 25 or less per ASTM E-84 and the self-extinguishing requirements of ASTM D-635. The resin is UV inhibited and the composite includes a surface veil on all exposed surfaces for enhanced corrosion and UV protection. Other resins and colors are available upon request.

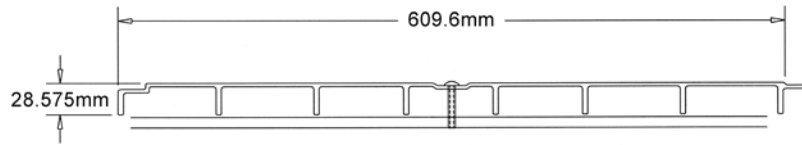
The standard grit system for **SAFDECK®** is a polyurethane based medium grit. This grit system is recommended for light pedestrian traffic only. Other grit systems available include epoxy medium and epoxy coarse and may be more appropriate for applications with heavier traffic.

APPLICATIONS

SAFDECK® is designed to be used for flooring and covers. Typical applications include:

- Cooling Tower Decking
- Odor Control Covers
- Roofing Walkways
- Temporary Flooring
- Wind Walls
- Cellular Wall Panels

SAFDECK® FIBERGLASS DECKING SYSTEM



SAFDECK® LOAD / DEFLECTION DATA

UNIFORM LOAD (Deflection in mm)

LOAD in KG / SQUARE METER (KG/M²)

$I_{12} = 1.83 \times 10^5 \text{ mm}^4$, wt = 6.1 kg / lin. m

SPAN (mm)	122	244	293	366	488	976	1465
610	0.38	0.76	0.91	1.12	1.50	3.02	4.55
914	1.60	3.20	3.84	4.80	6.40		
1219	5.46	10.92					

CONCENTRATED LOAD (Deflection in mm)

LOAD in KG / METER of WIDTH

$I_{12} = 1.83 \times 10^5 \text{ mm}^4$, wt = 6.1 kg / lin. m

SPAN (mm)	37	74	89	112	149	298	446
610	0.30	0.58	0.74	0.91	1.22	2.44	3.63
914	0.81	1.63	2.06	2.57	3.40	6.83	
1219	1.85	3.73	5.23	6.53	8.71		

Maximum deflections shown are based on a deflection of approximately L/100. To calculate the maximum deflection for a simply supported continuous beam spanning two equal lengths with the uniform or concentrated load on one span only, multiply the above deflections by 0.71.

STRONGDEK™ FIBERGLASS DECKING SYSTEM

INTRODUCTION

STRONGDEK™ is a system of 304.8mm wide architectural fiberglass decking panels designed to overlap and interlock for a continuous solid surface. **STRONGDEK™** is intended to replace wood, aluminum or steel decking in environments where the environment or use conditions create costly maintenance problems. **STRONGDEK™** panels will not rot, rust, chip or mildew, which make them ideal for high-moisture environments, including saltwater.

FEATURES

The **STRONGDEK™** fiberglass decking system is comprised of pultruded FRP panels. The system provides these features:

- Easy to Install
- Strong
- Low Conductivity
- Lightweight
- Easy to Maintain
- Hidden Fastening System
- Slip Resistant when Gritted

SIZES

STRONGDEK™ is available in 28.575mm deep panels that are 304.8mm wide and standard 7.315m long panels are available in stock. Panels can also be produced in any length that is practical. Standard colors are light gray or beige. Panels can be produced with an optional grit surface.

MATERIALS OF CONSTRUCTION

STRONGDEK™ is a high strength, planking panel system. Manufactured of pultruded fiberglass reinforced polymer (FRP). **STRONGDEK™** panels have intermediate ribs on each panel that help provide extra stiffness and strength, allowing the deck to perform ideally in areas with pedestrian traffic. An optional grit surface can be added to provide a non-skid surface. Standard colors are light gray and beige.

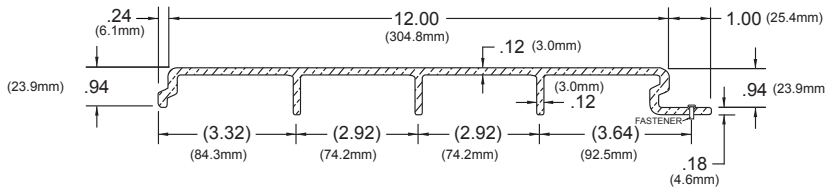
The standard resin system is a fire retardant polyester resin meeting the requirements of Class 1 flame spread rating of 25 or less per ASTM E-84 and the self-extinguishing requirements of ASTM D-635. The resin is UV inhibited and the composite includes a surface veil on all exposed surfaces for enhanced corrosion and UV protection. Other resins and colors are available upon request.

APPLICATIONS

STRONGDEK™ is designed to be used for architectural flooring/decking. Typical applications include:

- Hotel Recreation Areas
- Homes and Condominiums
- Buildings in Coastal Areas
- Marinas and Docks

STRONGDEK™ MECHANICAL PROPERTIES



UNIFORM LOAD (Deflection in mm)

LOAD in KG / SQUARE METER (KG/M²)
I₁₂ = 1.29 x 10⁵ mm⁴, wt = 3.3 kg / lin. m

SPAN (mm)	244	488	732	976	1221	1465	1709	1953	2197	2441	2685	2929	3174
610	0.488	0.671	0.853	1.036	1.219	1.372	1.859	2.042	2.195	2.377	2.530	2.713	2.865
762	0.800	1.029	1.410	1.753	2.057	2.438	2.972	3.315	3.658	3.924	4.191	4.534	
914	1.189	1.646	2.286	2.926	3.566	4.298	5.258	5.761	6.401				
1067	1.707	2.560	3.680	4.854	6.081	7.308	8.641	9.281					
1220	2.438	4.023	5.913	7.864	9.936	11.765							
1372	3.498	6.241	9.395	12.619	15.911								

CONCENTRATED LOAD (Deflection in mm)

LOAD in KG / METER of WIDTH
I₁₂ = 1.29 x 10⁵ mm⁴, wt = 3.3 kg / lin. m

SPAN (mm)	74	149	223	298	372	446	521	595	670	744	818	893	967
610	0.406	0.559	0.711	0.864	1.016	1.143	1.549	1.702	1.829	1.981	2.108	2.261	2.388
762	0.533	0.686	0.940	1.168	1.372	1.626	1.981	2.210	2.438	2.616	2.794	3.023	
914	0.660	0.914	1.270	1.626	1.981	2.388	2.921	3.200	3.556				
1067	0.813	1.219	1.753	2.311	2.896	3.480	4.115	4.420					
1220	1.016	1.676	2.464	3.277	4.140	4.902							
1372	1.295	2.311	3.480	4.674	5.893								

STRONGDEK™ panels were attached to beams with Tek screws and tested in a multi-panel configuration. This data was used to create the STRONGDEK™ load table above for a single panel.

OPTIONAL ACCESSORIES

Strongwell manufactures accessories to provide a fully-finished look to STRONGDEK™ installations:

- Custom Starter Channel - For use on lengthwise edges to attach decking to support members
- Standard Equal Leg Angles - For end closures or cantilever supports

