



Specifications for Fiberglass Bridge Hangers with Hot Dipped Galvanized Hardware

1. This specification details the requirements for hangers (suspension supports) used to support fiberglass conduit from bridge structures.
2. The hangers shall be shipped fully assembled with all necessary components. All nuts shall be tightened to “snug fit.”
3. The fiberglass components shall be manufactured using isophthalic polyester resin and contain UV inhibitors. They shall contain a fire retardant and exhibit low smoke generation. The fiberglass components shall be gray in color and shall meet or exceed the following.

Fiberglass Square Tube, Fiberglass Flat Bar and Fiberglass Round Spacer Tube

| | | English | | Metric | |
|----------------------------------|-------------|-----------------------|---------------------------|---------------|---------------------------|
| | | Value | Units | Value | Units |
| Mechanical Properties | ASTM | | | | |
| Tensile Strength | D638 | 30,000 | psi | 206.8 | MPa |
| Tensile Modulus | D638 | 2.5 x10 ⁶ | psi | 17.2 | GPa |
| Compressive Strength | D695 | 30,000 | psi | 206.8 | MPa |
| Compressive Modulus | D695 | 2.5 x10 ⁶ | psi | 17.2 | GPa |
| Flexural Strength | D790 | 30,000 | psi | 206.8 | MPa |
| Flexural Modulus | D790 | 1.8 x10 ⁶ | psi | 12.4 | GPa |
| Modulus of Elasticity | | 2.8 x10 ⁶ | psi | 19.3 | GPa |
| Shear Modulus | | 0.45 x10 ⁶ | psi | 3.1 | GPa |
| Short Beam Shear | D234 | 4,500 | psi | 31.0 | MPa |
| | 4 | | | | |
| Punch Shear | D256 | 10,000 | psi | 68.9 | MPa |
| Impact Strength | D256 | 25 | ft-lbs/in | 1.33 | J/mm |
| Physical Properties | ASTM | Value | Units | Value | Units |
| Barcol Hardness | D258 | 45 | | | |
| | 3 | | | | |
| 24-Hour Water Absorption | D570 | 0.45% | max | | |
| Density | D792 | .062- .070 | lbs/in ³ | 1.72- 1.94 | g/cc |
| Coefficient of Thermal Expansion | D696 | 4.4 | 10 ⁻⁶ in/in/°F | 8 | 10 ⁻⁶ cm/cm/°C |
| Electrical Properties | ASTM | Value | Units | Value | Units |
| Arc Resistance | D495 | 120 | seconds | | |
| Dielectric Strength | D149 | 35 | kv/in | 1.37 | kv/mm |
| Flammability Properties | ASTM | Value | Units | | |
| Tunnel Test | E84 | 25 | max | | |
| Flammability | D635 | Nonburning | | | |
| UL | 94 | VO | | | |
| Smoke Chamber | E662 | 600-700 | | | |

Hangers shall be designed and fabricated in such a manner as to eliminate the possibility of crushing the square tube by tightening the nuts on the suspension or intermediate rods (the spacer tube shall rest on the bottom part of the square tube).

4. The support rods, intermediate rods, and all metallic hardware shall be hot dipped galvanized steel and shall meet or exceed the following:
 - Threaded Rod ASTM A307 with ASTM 153 Galvanizing Tensile Strength 74,000 psi
 - Hex nut ASTM A307 with ASTM 153 Galvanizing
 - Flat washer ASTM A307 with ASTM 153 Galvanizing
 - Lock washer ASTM A307 with ASTM 153 Galvanizing

Metal components that are custom fabricated shall have a hot dipped galvanizing applied in accordance with ASTM specification a-123/123m2 dated 2002 with a minimum coating thickness of 2.0 oz/sq ft. The zinc used in this process shall be a high grade zinc conforming to ASTM B6-00 with less than .03% lead used in this process.

5. The components of the hangers may include:
 - 2" x 1/2" (50.8mm x 12.7mm) Fiberglass flat bar, all holes on centerline, holes for support rods, 1" (25mm) from each end of plate. Length as required.

 - 2" x 2" x 1/4" (50.8mm x 50.8mm x 6.4mm) Fiberglass square tubing, all holes on centerline, holes for support rods, 1" (25mm) from each end of plate. Length as required.

 - 1" OD x 0.755" ID (25.4mm OD x 19.2mm ID) Fiberglass spacer tube. Length as required.

 - 3/4" (19mm) All thread rod with 2 nuts, 2 lock washers and 2 flat washers. All material shall be hot dipped galvanized. Length as required.