

# FIBERBOND<sup>®</sup> Fiberglass Piping Systems

## Series 20HV(FDA)

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### Description:

The FIBERBOND<sup>®</sup> 20HV(FDA) Fiberglass Piping Series is fiberglass reinforced pipe product manufactured by filament winding utilizing isophthalic polyester and epoxy vinyl ester resins and a 20-mil (0.50mm) liner, suitable for design pressures up to 200 psig (13.8 bar) and temperatures up to 150F (65c). The 20HV(FDA) series uses materials that comply with 21CFR 177.2420. The 20HV(FDA) standard product is available in 1" to 60" (25mm - 1524mm) nominal inside diameters.

### Applications:

- Design Range: 200 psig (13.8 bar) up to 12in. and 150F (65c) (with standard fittings)  
150psig (10.3 bar) up to 24in.  
100psig (6.9 bar) up to 36in.  
50psig (3.5 bar) up to 60in.
- Applications: Freshwater systems

### Piping Specifications:

- Manufacture: Contact molded and filament wound 1" - 2" (25mm - 51mm)  
Filament wound 3" - 60" (76mm - 1524mm)
- Construction: Isophthalic polyester and epoxy vinyl ester resins  
20 mil (0.02in./0.50mm) C-Veil reinforced resin rich liner  
55degree wind pattern
- Delivery: Random lengths or part of a shop-fabricated system

### Fittings Specifications:

- Manufacture: Contact molded 1" - 60" (25mm - 1524mm)
- Dimensions: Per FIBERBOND<sup>®</sup> Fittings Guide
- Delivery: Loose or part of a shop pre-fabricated system

### Joining System Specifications:

- Fabrication: Plain End Butt and Strap 1" - 60" (25mm - 1524mm)

### Applicable Standards:

- Testing: ASTM D635, D638/D2105, D1599, D2412, IMO A.753(18) (L0 Fire Endurance)
- QA: ASTM D2563 Level I and Level II Visual Acceptance, D3567  
EU Pressure Equipment Directive for Group 2 Liquids (Category 1, Module A - Internal Production Control); SEP may also be used for the sizes and ratings listed herein

**FIBERBOND<sup>®</sup> 20HV(FDA)**

## Typical Dimensions

| Nominal Size<br>(in. / mm) | I.D.<br>(in. / mm) | O.D.<br>(in. / mm) | Min. Wall<br>(in. / mm) | Span<br>(ft / m) | Press. Rating<br>(psig / bar) | Weight<br>(lbs/ft - kg/m) |
|----------------------------|--------------------|--------------------|-------------------------|------------------|-------------------------------|---------------------------|
| 2" (50)                    | 2.00 (51)          | 2.50 (63)          | 0.24 (6)                | 12.6 (3.8)       | 200 (13.8)                    | 1.5 (2.2)                 |
| 3" (80)                    | 3.00 (76)          | 3.50 (89)          | 0.24 (6)                | 14.2 (4.3)       | 200 (13.8)                    | 2.2 (3.3)                 |
| 4" (100)                   | 4.00 (102)         | 4.50 (114)         | 0.24 (6)                | 15.4 (4.7)       | 200 (13.8)                    | 2.9 (4.3)                 |
| 6" (150)                   | 6.00 (152)         | 6.63 (168)         | 0.30 (8)                | 18.2 (5.5)       | 200 (13.8)                    | 5.9 (8.8)                 |
| 8" (200)                   | 8.00 (203)         | 8.75 (222)         | 0.36 (9)                | 20.5 (6.3)       | 200 (13.8)                    | 8.9 (13.3)                |
| 10" (250)                  | 10.00 (254)        | 10.88 (276)        | 0.42 (11)               | 22.7 (6.9)       | 200 (13.8)                    | 12.4 (18.5)               |
| 12" (300)                  | 12.00 (305)        | 13.00 (330)        | 0.48 (12)               | 24.5 (7.4)       | 200 (13.8)                    | 16.4 (24.4)               |
| 14" (350)                  | 14.25 (362)        | 15.13 (384)        | 0.42 (11)               | 23.5 (7.1)       | 150 (10.3)                    | 17.1 (25.5)               |
| 16" (400)                  | 16.25 (413)        | 17.25 (438)        | 0.48 (12)               | 25.1 (7.6)       | 150 (10.3)                    | 21.6 (32.2)               |
| 18" (450)                  | 18.25 (463)        | 19.38 (492)        | 0.53 (14)               | 26.7 (8.1)       | 150 (10.3)                    | 28.9 (43.1)               |
| 20" (500)                  | 20.25 (514)        | 21.50 (546)        | 0.59 (15)               | 28.0 (8.5)       | 150 (10.3)                    | 34.7 (51.7)               |
| 24" (600)                  | 24.25 (616)        | 25.75 (665)        | 0.71 (18)               | 30.0 (9.0)       | 150 (10.3)                    | 47.8 (71.3)               |

All spans rated for SG=1.0 (water) and is limited by 1) a bending stress of 1,000psi (6.9MPa) for dead weight only, 2) a temperature of 150deg F (65deg C), and 3) a deflection of 0.50in. (12mm) over three spans. Maximum spacing is 30ft (9.1m). Actual spacing in the field may be shorter due to other design conditions such as wind loads. Information on larger pipe sizes is available from Specialty Plastics.

## Typical Properties

| Property                    | Value (U.S.)  | Value (S.I.) |
|-----------------------------|---------------|--------------|
| Pipe Axial Tensile Strength | 8,400 psi     | 57.9 MPa     |
| Pipe Axial Tensile Modulus  | 1,400,000 psi | 9.7 GPa      |
| Pipe Hoop Tensile Strength  | 26,400 psi    | 182.0 MPa    |
| Pipe Hoop Tensile Modulus   | 2,200,000 psi | 15.2 GPa     |
| Bending Strength            | 16,800 psi    | 115.8 MPa    |
| Bending Modulus             | 1,400,000 psi | 9.7 GPa      |

| Property                 | Value (U.S.)          | Value (S.I.)         |
|--------------------------|-----------------------|----------------------|
| Density                  | 0.06 lb/cu in.        | 1.7 g/cu cm          |
| Thermal Expansion Coeff. | 0.00001 in./in./deg F | 0.000018 mm/mm/deg C |
| Minor Poisson's Ratio    | 0.55                  | 0.55                 |
| Major Poisson's Ratio    | 0.35                  | 0.35                 |
| Hazen Williams Coeff.    | 150                   | 150                  |
| Specific Roughness       | 0.0002 in.            | 0.0005 cm            |



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