

# Bondstrand™ Series 2000M-WD & 7000M-WD Fire-Resistant Product Data

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## Description

Bondstrand Series 2000M-WD and 7000M-WD are glass fiber-reinforced epoxy (GRE) pipe systems designed to meet performance criteria of U.S.C.G. PFM1-98. Products feature a 2 mm thick intumescent coating applied at the factory to the exterior of the pipe and fittings. When exposed to fire, the coating expands to form an incombustible foam char that protects and insulates the piping.

The pipe wall of 7000M-WD is electrically conductive.

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## Uses and Applications

- Offshore Fire protection systems (wet and dry)
- Onshore above ground fire protection piping

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## Listings and Approvals for Bondstrand Series 2000M-WD/7000M-WD Piping Systems

- American Bureau of Shipping (U.S.)
- United States Coast Guard

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## Performance

Bondstrand Series 2000M-WD and 7000M-WD have been demonstrated to maintain pressure following exposure to a hydrocarbon fire as prescribed by U.S.C.G. PFM1-98 and meet the requirements of ASTM F1173, ASTM D2992 and ASTM D2996.

Pipe system design for pressure ratings up to: 17.2 bar (250 psi) for 1 - 16 inch and 16.0 bar (232 psi) for 18 - 40 inch, depending type of fittings, see contents for each fitting designated pressure rating. Refer to NOV Fiber Glass Systems.

Individual system components may not have the same ratings as the pipe. Refer to the detailed product information for the specific components to determine the pressure rating for the system as a whole.

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## Characteristics

**Pipe** — Filament-wound fiberglass-reinforced epoxy pipe with nominal 0.020-inch (0.5 mm) integral resin-rich reinforced liner (2000M-WD) or with no liner, with comingled carbon fibers (7000M-WD) and 2 mm external intumescent coating. For typical physical and mechanical properties, refer to Bondstrand Product Data, Bondstrand Series 2000M/7000M Glassfiber Reinforced Epoxy (GRE) Pipe Systems for Marine Service.

**Fittings** — Wide range of lined filament-wound fiberglass-reinforced epoxy fittings.

**Flanges** — One-piece filament-wound fiberglass-reinforced epoxy resin flanges in heavy-duty hub-less configuration. Flange covers made with intumescent material is used to protect flanges.

**Joining systems** — Quick-Lock straight/taper adhesive-bonded joint featuring integral pipe stop in bell for predictable, precise laying lengths. Taper/taper bonded joints supplied in larger sizes.

**Thermosetting adhesive for bonded joints** — This includes both the Quick-Lock and Taper/Taper Joints - PSX™•34 and PSX™•60 two-part epoxy adhesives. The PSX•60 adhesive is conductive and is to be used on all installations of Bondstrand 7000M pipe.

**Typical joint lengths** — 2"-6" diameters are supplied in nominal 20 ft. (6.1m) lengths.  
8"-16" in nominal 40 ft. (12 meter) lengths.

## Fittings and Flanges

**Fittings** — See Bondstrand Product Data, Series 2000M and 7000M Fittings, for dimensions, shipping weights and pressure ratings.

90° and 45° elbows      Deluge couplings sized to accept standard spray nozzles  
 Tees and reducing tees      Reducing saddles furnished with  
 Couplings                      • Quick-Lock® socket outlet  
 Nipples                         • Flanged outlet  
 Reducers

**Flanges** — All flanges are offered in one configuration

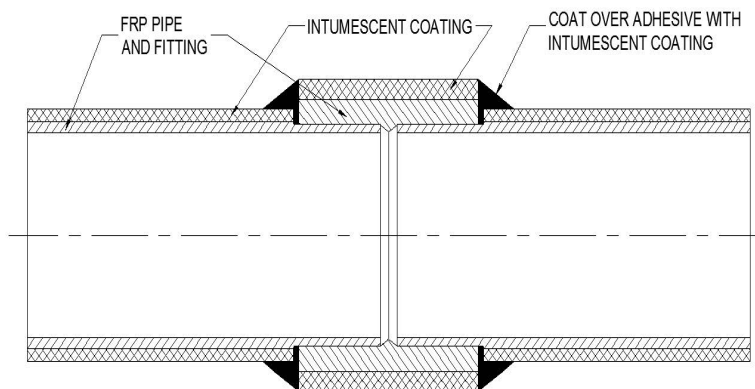
- One-piece hubless (heavy duty)

Bondstrand marine flanges are produced with the following drillings for easy connection to piping systems currently in common use; other drillings, as well as undrilled flanges, are available:

- ANSI B16.5 CI 150 & CI 300
- API 605 CI 150 & CI 300
- ISO 2084 NP-10 & NP-16
- JIS B2211      5 kg/cm<sup>2</sup>
- JIS B2212      10 kg/cm<sup>2</sup>
- JIS B2213      16 kg/cm<sup>2</sup>

See Bondstrand Product Data, Series 2000M and 7000M Flanges, for dimensions and weights for the drillings given above.

## Installation



<b>Typical Pipe Dimensions and Weights with 2 mm Passive Fire Protection Coating</b>									
Nominal Pipe Size		Pipe Inside Diameter		Min. Pipe Wall Thickness		Pipe Outside Diameter		Pipe Weight (approx)	
in	mm	in	mm	in	mm	in	mm	lb/ft	kg/m
2	50	2.10	53	0.14	3.60	2.7	67.9	1.5	2.2
3	80	3.22	82	0.14	3.60	3.8	96.5	2.3	3.4
4	100	4.14	105	0.18	4.60	4.8	122	3.2	4.8
6	150	6.26	159	0.18	4.60	6.9	176	4.8	7.2
8	200	8.22	209	0.24	6.00	8.9	228	7.3	10.9
10	250	10.35	263	0.30	7.50	11.2	285	12.0	18.0
12	300	12.35	314	0.35	8.80	13.4	339	14.9	22.4
14	350	13.29	338	0.37	9.50	14.3	364	17.1	25.6
16	400	15.19	386	0.43	10.80	16.3	415	21.7	32.6

**Typical Weights for Coated Fittings with  
2 mm Passive Fire Protection Coating**

Nominal Pipe Size		90° Elbows		45° Elbows		Tees	
in	mm	lb	kg	lb	kg	lb	kg
2	50	2.00	0.90	1.1	0.5	2.5	1.1
3	80	2.80	1.30	2.0	0.9	4.8	2.2
4	100	4.20	1.90	2.9	1.3	7.9	3.6
6	150	12.80	5.80	7.9	3.6	12.8	5.8
8	200	27.80	11.10	15.0	6.8	26.4	12.0
10	250	39.80	18.10	24.2	11.9	36.0	16.3
12	300	55.40	25.20	33.3	15	51.5	23.4
14	350	62.00	28.10	41.1	18.5	71.4	32.4
16	400	86.10	39.40	48.9	22.2	105.3	47.8

**Concentric Reducers with 2 mm  
Passive Fire Protection Coating**

Nominal Pipe Size		Concentric Reducers	
in x in	mm x mm	lb	kg
2 x 1	50 x 25	1.10	0.50
2 x 1½	50 x 40	1.30	0.60
3 x 1½	80 x 40	2.20	1.00
4 x 2	100 x 50	3.30	1.50
4 x 3	100 x 80	3.50	1.60
6 x 3	150 x 80	5.90	2.70
6 x 4	150 x 100	6.40	2.90
8 x 4	200 x 100	9.20	4.20
8 x 6	200 x 150	9.90	4.50

Note: Sizes above 16" are available upon request.

**Support Spacing**

Recommended maximum support spacing for Bondstrand Series 2000M-WD and 7000M-WD pipe when carrying liquid with a specific gravity of 1.0.

Nominal Pipe Size		Support Spacing	
in	mm	ft	m
2	50	9.0	2.6
3	80	10.0	3.0
4	100	12.0	3.7
6	150	14.0	4.1

Nominal Pipe Size		Support Spacing	
in	mm	ft	m
8	200	15.5	4.6
10	250	16.5	5.0
12	300	18.0	5.5
14	350	19.2	5.9
16	400	19.7	6.0

Note: Support spacing shown is based on pipe filled with water having a density of 1000 kg/m<sup>3</sup> with no provision for weight of valves, flanges, etc.

**Technical Support**

Consult NOV Fiber Glass Systems for further recommendations concerning shore side or offshore use of Bondstrand piping systems. For particular questions regarding the installation and use of Bondstrand Series 2000M-WD and 7000M-WD pipe and fittings, refer to the NOV Fiber Glass Systems Marine Engineering Manual.

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