MARINE PIPING SYSTEMS

Glassfiber Reinforced Epoxy

GREEN THREAD 175 / 250

NOV Fiber Glass Systems™

Marine Piping Systems

GREEN THREAD 175 and 250

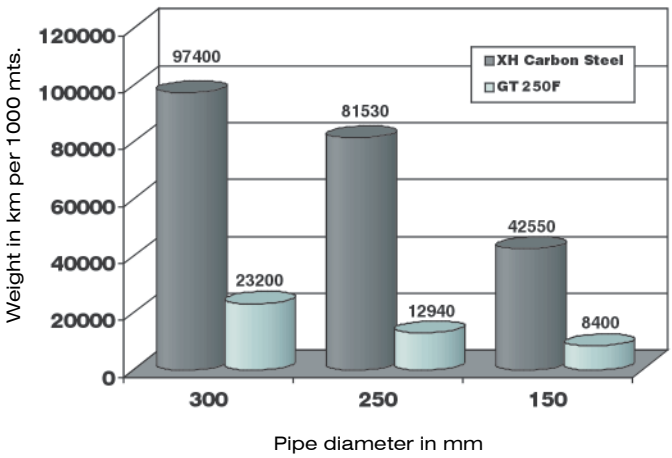
Fiber Glass Systems products meet the challenges of Marine applications by offering resistance to internal and external corrosion from saltwater, sea, air and other corrosive fluids.

GREEN THREAD 175 is rated to 175 psig / 12 bar at temperatures up to 230ºF / 110ºC and GREEN THREAD 250 is rated to 250 psig / 18 bar and are available in 2"-36" sizes. All GREEN THREAD marine pipe products are manufactured with an inner corrosion and erosion barrier that is reinforced to provide maximum resistance to the harsh marine environment. This design provides an extra safety factor for critical services such as fire protection systems and ballast piping applications.

Applications

- Salt Water Supply Lines
- Cooling Water
- Waste Lines
- Potable Water
- Process Lines
- Ballast Piping
- Cargo Lines
- Bilge Piping
- Sprinkler Systems
- Fresh Water Lines
- Sanitary Lines
- Scuppers
- Sounding Tubes
- Vent Lines
- Drains
- Conduit

Weight Comparison
GREEN THREAD 250 vs. XH Carbon Steel



Benefits

- Corrosion Resistant
- Light Weight
- Excellent Flow Characteristics
- Fast and Easy Installation
- Prefabricated Pipe Systems
- Reduced Maintenance
- Long Service Life

Fire Resistant

GREEN THREAD 175 and GREEN THREAD 250 systems are fully qualified for IMO Level-3 fire resistance without any passive fire protection required.

GREEN THREAD 250F is supplied with a unique reinforced “Fire Jacket” that has been fully qualified for modified Level-3 (L-WD) fire resistance in accordance with US Coast Guard PFM 1-98. Pipe protected by the “Fire Jacket” exhibits zero heat release when tested in accordance with IMO A.653(16) and flammability of the product is so low that it has been exempted from smoke and toxicity test requirements.

Conductive

Continuous conductive filaments are utilized throughout the pipe wall of GREEN THREAD conductive pipe systems at a predetermined pattern to prevent the accumulation of static charges and enable efficient grounding of charges through grounding saddles bonded to the pipe. A nominal 0.5 mm (0.020 in) thick conductive liner reinforced with conductive veil, is also added to prevent the accumulation of potential inductive static charge buildup.

Engineering & Design Support

Fiber Glass Systems offers complete design and installation assistance for the engineer, the shipbuilder or offshore platform constructor. FGS application engineers can provide up-front layout and system design advice, as well as comprehensive flexibility and stress analysis of piping layouts. Pipe and fittings are available in PDMS and TRIBON formats.

Fire Endurance Requirements Matrix

according to IMO 753 regulations

■ **Green Thread® Approved Systems** ■ Not Allowed □ Not Applicable

	Category A Machinery Spaces	Other Machinery Spaces	Cargo Pump Rooms	Cargo Tanks	Fuel Oil Tanks	Ballast Water Tanks	Cofferdams, Void Spaces, Pipe Tunnels, Ducts	Accommodations, Service, Control Spaces	Open Decks
Hydrocarbon & Cargo (flammable cargos with flash point > 60°C (140°F))									
Cargo Lines	□	□	■	■	□	■	■	□	■ 4
Crude Oil Washing Lines	□	□	■	■	□	■	■	□	■ 2
Vent Lines	□	□	□	■	□	■	■	□	□
Process Lines	□	□	□	■	□	■	■	□	■ 2
Produced Water Lines	□	□	□	■	□	■	■	□	■ 10
Inert Gas									
Water Seal Effluent Line	□	□	■ 1	■ 1	■ 1	■ 1	■ 1	□	■
Scrubber Effluent Line	■ 1	■ 1	□	□	□	■ 1	■ 1	□	■
Main Line	■	■	■	□	□	□	■	□	■ 6
Distribution Lines	□	□	■	■	□	□	■	□	■ 2
Flammable Liquids (Flash Point > 60°C (140°F))									
Cargo Lines	□	□	■ 1	□ 3	■	■	■	□	■ 1
Fuel Oil	□	□	■ 1	□ 3	■	■	■	■ 1	■ 1
Lubricating Oil	□	□	■ 1	□	□	□	■	■ 1	■ 1
Hydraulic Oil	□	□	■ 1	■	■	■	■	■ 1	■ 1
Sea Water (See Note 1)									
Bilge Main and Branches	■ 7	■ 7	■	■	■	■	■	■	■ 4
Fire Main	■	■	■	■	■	■	■	□	■ 11
Water Spray (Deluge)	■	■	■	■	■	■	■	□	■ 11
Foam System	■	■	■	■	■	■	■	■	■
Sprinkler System	■	■ 1	■	■	■	■	■	■	■
Ballast	■	■	■	■	■	■	■	■	■
Cooling Water, Essential Services	■	■	□	■	■	■	■	□	■
Tank Cleaning Services, Fixed Machines	□	□	■	■	■	■	■	□	■ 2
Non-Essential Systems	■	■	■	■	■	■	■	■	■
Fresh Water									
Cooling Water, Essential Services	■	■	□	□	■	■	■	■	■
Condensate Return	■	■	■	□	□	□	■	■	■
Non-Essential Systems	■	■	■	□	■	■	■	■	■
Sanitary / Drains / Scuppers									
Deck Drains (internal)	■	■	□	□	■	■	■	■	■
Sanitary Drains (internal)	■	■	□	□	■	■	■	■	■
Scuppers and Discharges (overboard)	■ 18	■ 18	■	■	■	■	■	■ 18	■
Vent / Sounding									
Water Tanks / Dry Spaces	■	■	□	□	■	■	■	■	■
Oil Tanks (flash-point > 60°C (140°F))	■	■	■	■ 3	■	■	■	■	■
Miscellaneous									
Control Air	■ 5	■ 5	■ 5	□	■	■	■	■ 5	■ 5
Service Air (non-essential)	■	■	□	■	■	■	■	■	■
Brine	■	■	□	□	□	□	■	■	■
Auxiliary Low Pressure Steam (Pressure < bar (7 kgf/cm2, 100 psi))	■	■	■ 9	■	■	■	■	■ 9	■ 9

Notes

1. Where non-metallic piping is used, remotely controlled valves are to be provided at the ship's side. These valves are to be controlled from outside the space.
2. Remote closing valves are to be provided at the cargo tanks and hydrocarbon liquid and gas retaining components as applicable.
3. When cargo tanks contain flammable liquids with a flash point greater than 60°C (140°F), "■" may replace "□" or "■".
4. For drains serving only the space concerned, "■" may replace "■".
5. When controlling functions are not required by statutory requirements, "■" may replace "■".
6. For pipe between machinery space and deck water seal, "■" may replace "■".
7. For passenger vessels, "■" is to replace "■".
8. Scuppers serving open decks in positions 1 and 2, as defined in Regulation 13 of the International Convention of Load Lines, 1966, are to be "■" throughout unless fitted at the upper end with the means of closing capable or being operated from a position above the freeboard deck in order to prevent down-flooding.
9. For essential services, such as fuel oil tank heating and ship's whistle, "■" is to replace "■".
10. Metallic ESD valves are to be provided together with fire detection, fire fighting and shutdown system.
11. Lower level of fire resistant tests (Level 3 and Level WD) may be considered for the fire water ring main and deluge systems provided the system arrangements meet Appendix 1, Section 7 of this guide.

GREEN THREAD 175

Pipe Size in (mm)		Nominal I.D. in (mm)		Nominal O.D. in (mm)		Nominal Weight lbs/ft (kg/m)	
2	(50)	2.15	(54.6)	2.51	(63.7)	0.9	(1.34)
2½	(65)	2.75	(69.1)	3.11	(79.0)	1.2	(1.79)
3	(80)	3.28	(83.6)	3.66	(93.0)	1.4	(2.08)
4	(100)	4.28	(108.7)	4.66	(118.4)	1.8	(2.68)
5	(125)	5.20	(132.1)	5.73	(144.9)	2.5	(3.73)
6	(150)	6.35	(161.3)	6.80	(172.7)	3.1	(4.61)
8	(200)	8.36	(212.3)	8.84	(224.5)	4.3	(4.60)
10	(250)	10.36	(263.1)	10.93	(277.6)	6.0	(8.93)
12	(300)	12.28	(311.9)	12.92	(328.2)	8.3	(12.35)
14	(350)	14.04	(356.6)	14.74	(374.4)	10.5	(15.63)
16	(400)	16.04	(407.4)	16.82	(427.2)	13.3	(19.79)
18	(450)	17.83	(452.8)	18.68	(474.5)	16.1	(23.96)
20	(500)	19.83	(503.6)	20.77	(527.6)	19.6	(29.17)
24	(600)	23.84	(605.5)	24.94	(633.5)	27.9	(41.52)
26	(650)	25.59	(650.0)	26.71	(678.4)	39.0	(58.16)
28	(700)	27.56	(700.0)	28.76	(730.5)	45.0	(67.11)
30	(750)	29.53	(750.0)	30.81	(782.5)	52.0	(77.55)
32	(800)	31.50	(800.0)	32.86	(834.5)	58.0	(86.49)
36	(900)	35.43	(900.0)	36.95	(938.6)	74.0	(110.35)

GREEN THREAD 250

Pipe Size in (mm)		Nominal I.D. in (mm)		Nominal O.D. in (mm)		Nominal Weight lbs/ft (kg/m)	
1	(25)	1.00	(25.0)	1.33	(34.0)	0.4	(0.59)
1½	(40)	1.50	(38.1)	1.96	(49.8)	0.8	(1.19)
2	(50)	2.15	(54.6)	2.51	(63.7)	0.9	(1.34)
2½	(65)	2.75	(69.1)	3.11	(79.0)	1.2	(1.79)
3	(80)	3.28	(83.6)	3.66	(93.0)	1.4	(2.08)
4	(100)	4.28	(108.7)	4.66	(118.4)	1.8	(2.68)
5	(125)	5.20	(132.1)	5.73	(144.9)	2.5	(3.73)
6	(150)	6.35	(161.3)	6.80	(172.7)	3.1	(4.61)
8	(200)	8.36	(212.3)	8.95	(227.3)	5.3	(7.89)
10	(250)	10.36	(263.1)	11.06	(280.9)	7.8	(11.61)
12	(300)	12.28	(311.9)	13.09	(332.5)	10.7	(15.92)
14	(350)	14.04	(356.6)	14.94	(379.5)	13.7	(20.39)
16	(400)	16.04	(407.4)	17.07	(433.6)	17.6	(26.19)
18	(450)	17.83	(452.8)	18.96	(481.6)	21.5	(32.00)
20	(500)	19.83	(503.6)	21.08	(535.4)	26.3	(39.14)
24	(600)	23.84	(605.5)	25.31	(642.9)	37.5	(55.81)
26	(650)	25.59	(650.0)	27.03	(686.5)	52	(77.55)
28	(700)	27.56	(700.0)	29.05	(737.9)	58	(86.49)
30	(750)	29.53	(750.0)	31.12	(790.5)	66	(98.42)
32	(800)	31.50	(800.0)	33.20	(843.3)	75	(111.85)
36	(900)	35.43	(900.0)	37.34	(948.5)	95	(141.67)

Joining Systems

Straight Socket Joint

The adhesive bonded straight socket joint has positive stop lands for precise makeup of piping systems. Pipe is supplied plain end x plain end.

Available in 25-300 mm (1-12 in) for the following products:

GREEN THREAD 175/175-C
250/250-C
250-F/250-CF
250-JF/250-CJF

Tapered Bell and Spigot Joint

The adhesive bonded, tapered bell and spigot joint resists movement. Pipe is supplied plain end x plain end.

Available in 350-900 mm (14-36 in) for the following products:

GREEN THREAD 175/175-C
250/250-C
250-F/250-CF

This combinations of joining systems enables the end user to take advantage of the positive stop feature of the socket joining system in the smaller sizes, while providing maximum joint efficiency and the extra reliability of the tapered joint in the larger sizes.

Approvals

Germanischer Lloyd

NOV Fiber Glass Systems™

Headquarters

2425 SW 36th Street
San Antonio, Texas 78237
USA
Phone: 210 434 5043
Fax: 210 434 7543

SALES OFFICES

Gulf Coast
Anahuac, Texas
Phone: 713 203 4377

Canada
30 Strathlea Crescent SW
Calgary, Alberta Canada T3H 5A8
Phone: 403 660 4131
Fax: 403 246 7850

Latin America
2425 SW 36th Street
San Antonio, Texas 78237
Phone: 210 434 5043
Fax: 210 434 7543

Brazil
Albano de Carvalho #400
Officina 301,
Recreio dos Bandeirantes
Rio de Janeiro, Brazil 22795-380
Phone: 55 31 94917784

Central Asia \ Russia
Microdistrict-13, Bldg-23, Apt. 4
Mangistau Region
Aktau, Kazakhstan
Phone: 7 701 5141087
Fax: 7 7292 436176

Middle East
PO Box 61335
Jafza View 18, Office 0506
Jebel Ali Free Zone
Dubai, United Arab Emirates
Phone: 9714 886 5660
Fax: 9714 886 5670

Pacific Rim
10 Ubi Crescent
#02-93 Ubi Techpark (Lobby E)
Phone: 65 6842 2293
Fax: 65 6741 2293

China
Litanghe Road
Xiangcheng Economic Development Zone
Suzhou China 215131
Phone: 86 512 8518 0099
Fax: 86 512 8512 0101

Europe
Dlha 27
Nesvady 94651
Slovakia
Phone: 42 191 836 0122

West Africa
P.O. Box 14148
Chioma Loveday Flats,
Chief Ogbonda's Compound, #105
Woji Road
Woji, Port Harcourt, RV 500001
Nigeria
Phone: 234 803 338 2623
Fax: 215 252 5140

MANUFACTORY FACILITIES

San Antonio, Texas USA

Big Spring, Texas USA

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