



Dualoy 3000/L Fiberglass Pipe and Fittings

underground piping for flammable liquids

Scope

This specification covers the approval, performance, materials and physical properties requirements for buried petroleum product piping in 2- through 6-in (25-150 mm) diameters for working pressures to 300 psi (2.07 MPa) and temperatures to 150°F (66°C).

Listing

All components furnished under this specification shall be listed with Underwriters' Laboratories (UL) for use as below-grade petroleum product piping.

Performance requirements

Pipe and fittings shall be suitable for continuous operation at the pressures listed below at a sustained temperature of 150°F (66°C). The pipe shall have an integral epoxy liner and a reinforced epoxy exterior coating.

Nominal Size		Pressure Rating	
(in)	(mm)	(psi)	(MPa)
2	50	300	2.07
3	80	200	1.38
4	100	150	1.03
6	150	175	1.21

Materials

Liner

All filament-wound pipe shall contain a resin-rich liner which shall have a minimum thickness of 0.015 inches (0.38 mm). The resin system used in the liner shall be chemically resistant epoxy resin which has been demonstrated to be satisfactory for the intended service.

Structural wall

The resins, reinforcements, colorants and other materials when combined as a composite laminate structure shall meet the performance requirements of this specification. Glass fiber reinforcement shall be Type E glass with an epoxy-compatible finish. Glass fiber content shall not be less than 60 percent by weight of the reinforced structural wall.

Exterior coating

The pipe exterior shall have a 0.005-inch (0.13 mm) thick resin-rich coating with an organic fibrous reinforcement.

Dimensions and tolerances**Pipe dimensions**

Pipe shall be manufactured to steel pipe outside diameters for all sizes. Pipe outside diameter tolerances shall not exceed ± 1 percent.

Wall thickness

The total wall thickness of pipe furnished under this specification shall not at any point be greater than 120 percent nor less than 87½ percent of the nominal thickness.

Fittings dimensions

All fittings supplied under this specification shall have face-to-face dimensions and laying lengths as specified in the manufacturer's literature.

Physical and mechanical property requirements**ASTM classification**

Pipe shall conform to ASTM D2310 standard classification RTRP-11CZ.

Property	Units	Minimum Value*	ASTM Method
Tensile strength			
Longitudinal	10 ³ psi MPa	32.5 224	D2105
Circumferential	10 ³ psi MPa	65.0 448	D1599
Tensile modulus			
Longitudinal	10 ⁶ psi GPa	2.8 19.3	D2105
Circumferential	10 ⁶ psi GPa	4.0 27.6	—
Compressive strength			
Longitudinal	10 ³ psi MPa	32.5 224	D695
Compressive modulus			
Longitudinal	10 ⁶ psi GPa	2.8 12.3	D695
Long-term hydrostatic design basis			
Static	10 ³ psi MPa	31.5 217	D2992(B)
Thermal expansion			
Linear	10 ⁻⁶ in/in/°F 10 ⁻⁶ mm/mm/°C	9.0** 16.2**	D696
Stiffness factor***			D2412
(in)	(mm)	(lb · in ³ /in ²)	(N · m)
2	50	45	5.1
3	80	65	7.3
4	100	55	6.2
6	150	250	28

* Based on structural wall thickness.

** Maximum value.

*** At 5% diametric deflection and room temperature.

Joining methods**Tapered bell × spigot adhesive joints**

Pipe and fittings shall be joined by means of a matching tapered adhesive joint. Adhesive for joining components shall be a two-part amine-cured epoxy. Adhesive system shall be used according to manufacturer's recommendations.

Adapters and crossovers

The following adapters and crossovers shall be provided as required:

- Threaded adapter: bell × male
- Threaded adapter: bell × female
- Threaded adapter: spigot × male
- Threaded adapter: spigot × female

Flanges

Flanges shall be two piece (Van Stone) type provided with raised grooves on the sealing face. Fiberglass reinforced stub ends are to be adhesive bonded to the pipe or fitting.

Workmanship

The pipe and fittings shall be free from all defects including delaminations, indentations, pinholes, foreign inclusions, bubbles and resin-starved areas which, due to their nature, degree or extent, detrimentally affect the strength and serviceability of pipe or fittings. The pipe and fittings shall be as uniform as commercially practicable in color, opacity, density and other physical properties.

Testing**Proof testing**

All fittings shall be hydrostatically tested by the manufacturer to rated pressure prior to shipment for signs of leakage or porosity.

Quality control testing

A sample of pipe shall be tested at a frequency of at least once every 1200 feet (360 m) to determine conformance of the materials to the short-term circumferential stress requirement tabulated above.

Marking

Each component shall be marked to show the following:

- Underwriters' Laboratories listing mark
- Manufacturer's name
- Maximum pressure rating

Important notice

This literature and the information and recommendations it contains are based on data reasonably believed to be reliable. However, such factors as variations in environment, application or installation, changes in operating procedures, or extrapolation of data may cause different results. Ameron makes no representation or warranty, express or implied, including warranties of merchantability or fitness for purpose, as to the accuracy, adequacy or completeness of the recommendations or information contained herein. Ameron assumes no liability whatsoever in connection with this literature or the information or recommendations it contains.

Written comments regarding this document are invited. Please write Engineering Manager, Ameron Fiberglass Pipe Division.