

Conley Piping Specification

1.0 SCOPE

1.1 This piping specification covers the requirements for Double Containment machine made reinforced thermosetting resin pipe and fittings, 1" - 30", manufactured according to ASTM D2996, the standard specification for filament wound pipe. These specifications shall cover Schedule 40 Carrier and Schedule 30 Containment pressure process piping, and drain, waste and vent pipe and fittings for use with a broad base of corrosive chemical environments including acids, caustics, various waste solutions, brines and a wide range of solvents. The Epoxy system meets the requirements for FDA.

Both pipe and fittings (tees, elbows, laterals, reducers, and crosses) shall be manufactured with a minimum double Nexus® (synthetic veil) reinforced Epoxy internal corrosion barrier, an Epoxy filament wound fiberglass reinforced cage, and a standard Nexus® reinforced external corrosion barrier. Pipe and fittings have a 25 year guarantee against ultraviolet (UV) degradation (fiber blooming). Conley D.C. (Double Containment) Piping systems are available in a wide range of size, grade and resin combinations, starting with 1 inch carrier pipe. Containment size selection must consider the detection system to be used. See the *Conley Product Data* for pressure/temperature ratings and span dimensions of each schedule.

2.0 MATERIAL

2.1 Raw materials will meet or exceed specifications for Epoxy resin systems and fiberglass materials.

2.2 The resin, reinforcement, pigments, fillers and other materials, when combined as a composite structure shall produce a pipe that shall meet or exceed the requirements of the classification system listed in ASTM D2310.

3.0 CARRIER / CONTAINMENT PIPE CONSTRUCTION

3.1 The **carrier** pipe shall consist of three specific layers; the minimum double Nexus® synthetic veil reinforced **internal corrosion barrier**, the filament wound reinforcement or **cage**, and the Nexus® synthetic veil reinforced **external corrosion / UV barrier**. This material shall then be post-cured to form an integral structure and provide optimum cross-linking density.

3.1a The 60 mil **internal corrosion barrier** (inner liner) shall consist of a minimum two layers of Nexus® synthetic veil saturated with aromatic amine cured premium Epoxy resin. This layer shall be a maximum of 90% resin and 10% reinforcement to increase impact and chemical resistance.

3.1b The glass reinforcement, or cage, shall be continuous glass roving wound at an angle 54 3/4 degrees to the longitudinal axis of the pipe, using aromatic amine

cured premium Epoxy resin, and shall be not less than 65% glass for maximum strength and flexibility.

3.1c The external corrosion barrier will be Nexus® synthetic veil reinforced for corrosion resistance and UV resistance. This is required to control the OD for straight socket design connections.

4.0 CARRIER PIPE FITTINGS

4.1 All fittings such as elbows, laterals, tees and reducers shall be equal or superior in strength to the adjacent pipe section and shall have the same internal diameter as the pipe. **Fittings shall be filament wound, and have the same three layer construction as the pipe, i.e., 60 mil Nexus® synthetic veil reinforced internal corrosion resistant barrier, filament wound and glass reinforced structural cage, and a Nexus® synthetic veil reinforced external corrosion barrier with standard 25 year guarantee against UV degradation (fiber blooming).**

4.2 Elbows – Manufactured in standard configurations with straight socket ends designed for the controlled OD of the pipe.

4.3 Reducers – Designed as concentric or eccentric gradual changes in diameter to minimally affect the fluid flow, and manufactured with straight socket ends.

4.4 Carrier Fittings shall be held concentric in the Containment Fittings by means of “spiders” at each opening. These spiders may **not** be designed to restrict thermal expansion or other loads imposed on the Carrier fittings.

4.5 Connections to carrier pipe shall be straight socket adhesive bonded using the adhesive formulation recommended for the corrosion service. **Clam shell type fittings, tapered socket fittings not allowed.**

5.0 CONTAINMENT PIPE

5.1 Containment Pipe **shall be filament wound, and have the same three layer construction as the carrier pipe, i.e., 60 mil Nexus® synthetic veil reinforced internal corrosion resistant barrier, filament wound and glass reinforced structural cage, and a Nexus® synthetic veil reinforced external corrosion barrier with standard 25 year guarantee against UV degradation (fiber blooming).**

5.2 Carrier Pipe shall be held concentric with the Containment Pipe by means of 2 "spiders" for each 20 foot section.

5.3 Thermal Expansion - **Differential thermal expansion and/or contraction of the CARRIER AND CONTAINMENT PIPE shall be controlled by means of an INTERLOCKING UNION, PATENTED BY CONLEY CORPORATION, NUMBERS 5,419,593.**

6.0 CONTAINMENT PIPE FITTINGS

6.1 Containment Fittings **shall be filament wound, and have the same three layer construction as the pipe, i.e., 60 mil Nexus® synthetic veil reinforced internal corrosion resistant barrier, filament wound and glass reinforced structural cage, and a Nexus® synthetic veil reinforced external corrosion barrier with standard 25 year guarantee against UV degradation (fiber blooming).**

6.2 The "Closure Joint" for the containment piping shall also be suitable as a "Pull point" for any leak detection system that may be required.

11.4 Bolts, Nuts, and Washers - Bolts, nuts, and washers shall be furnished by the customer. Metal SAE washers shall be used under all nut and bolt heads. All nuts, bolts and washers shall be of materials suitable for use in the exterior environment.

11.5 Gaskets - Gaskets shall be furnished by the customer. Recommended gasket materials shall be a minimum of 1/8 inch in thickness with a suitable chemical resistance to the service. Gaskets shall have a Shore A hardness of 50 to 70. **See the Conley Installation & Fabrication Manual for bolt torque requirements.**

11.6 Fabrication - Fabrication procedures and certification of fabricators shall be in accordance with the **Conley Installation & Fabrication Manual**

12.0 QUALITY ASSURANCE AND INSPECTION

12.1 Conley's Quality Assurance program is in compliance with ISO 9001. Pipe and fittings shall be inspected and measured at each stage of manufacture, i.e. liner, reinforcement and external corrosion barrier. For optimum strength and corrosion resistance, all pipe and fittings shall be post cured.

ISO 9001:2008
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