
PRODUCT SPECIFICATIONS SHEET**ELECTROFUSION COUPLINGS****PE3408/PE4710 HDPE BLACK**

Note: This Specification supercedes all previous Product Specifications and is subject to change without notice.

SCOPE:

This document describes the standard specifications and features related to Georg Fischer Central Plastics' PE3408/PE4710 Electrofusion Couplings and Electrofusion Reducer Couplings for pressure piping systems.

REQUIREMENTS:

- ASTM D2513 Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings
- ASTM D3350 Specification for Polyethylene Plastic Pipes and Fittings Materials
- ASTM F714 Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter
- ASTM F1055 Specification for Electrofusion Type Polyethylene Fittings for OD Controlled PE Pipe and Fittings

REFERENCE DOCUMENTS:

- ASTM D3035 Standard for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
- ASTM F1290 Standard for Electrofusion Joining Polyolefin Pipe and Fittings
- AWWA C90 Standard for Polyethylene Pressure Pipe and Fittings, 4 in. Through 63 in., for Water Distribution
- ANSI/NSF 61 Standard for Drinking Water System Components and Health Effects
- PPI TR-19 Thermoplastics Piping for the Transport of Chemicals
- PPI TR-31 Underground Installation of Polyolefin Pipe
- ASTM F2164 Standard Practice for Field Leak Testing of Polyethylene (PE) Pressure Piping Systems Using Hydrostatic Pressure

CERTIFICATIONS/LISTINGS:

- FM 1613 Approval Standard: Plastic Pipe and Fittings for Underground Fire Protection Service
- AWWA C906 Standard for Polyethylene Pressure Pipe and Fittings, 4 in. Through 63 in., for Water Distribution
- ANSI/NSF 61 Standard for Drinking Water System Components and Health Effects

MATERIALS:

- PE Resin: Pre-blended black high density virgin resin. Recognized by the Plastic Pipe Institute as having a PE3408 / PE4710 / PE100 rating and a Hydrostatic Design Basis of 1600 psi @ 73°F. This resin has a cell classification of 445574C* in accordance with ASTM D3350.

**Note: Previous editions of ASTM D3350 resulted in cell classifications of 345464C and 345564C.*

- Heating Wire: Copper, nickel or alloy.

- Terminal Pins: Machined or die swaged 70/30 brass or nickel-plated carbon steel.

- Resistor: Metal film type. $\pm 1\%$ Tolerance.

TEST METHODS:**ASTM D1598 Time-to-Failure of Plastic Pipe Under Constant Internal Pressure.**

Must exceed 170 hours in 80°C bath @ 670psi Hoop Stress, or
Must exceed 1000 hours in 80°C bath @ 580psi Hoop Stress, or
Must exceed 1000 hours in 23°C bath @ 1600psi Hoop Stress.
(All methods are considered equivalent)

ASTM D1599 Short-Term Hydraulic Pressure Failure of Plastics Pipe, Tubing, and Fittings.

Uniform pressurization until failure between 60 and 70 seconds from start of test. Must result in ductile failure at a pressure great enough to create a 2520psi Hoop Stress.

AWWA C906 Section 4.5 fitting Test requirements

Five-second pressure test @ 4x's the rated working pressure performed on each production lot.

Tensile Strength Test

Test at a pull rate of 0.20 inches per minute. Test should result in a minimum of 25% elongation in the pipe without separation of the pipe from the coupling.

Joint Integrity Test

Crush Test a sectioned assembly until the walls of the pipe meet. Should result in less than 15% separation of the fusion length, or

Fusion Evaluation Test (FET) a sectioned assembly 90° in both directions four times each without separation along the bond line. Minor separation at the outer limits of the fusion heat source may be seen.

Evaluation for Voids

Voids in the fusion interface are acceptable only if they are round or elliptical in shape, with no sharp corners. Individual voids cannot exceed 10% of the fusion zone with the combined sizes of multiple voids not exceeding 20%

FEATURES:

40 Volt System. Installation temperature range from -10°F to 120°F. Can be supplied with an integral identification resistor which can be recognized by all Georg Fischer Central Plastics Processors to set the proper fusion time. All Georg Fischer Central Plastics Electrofusion Couplings are supplied with an ISO compliant 24 bit barcode to facilitate use with other brands of processors. Can be supplied AWWA or FM listed. Manufactured in the United States.

PRESSURE RATING:

PE3408 / PE4710 Electrofusion Couplings are pressure rated to an equivalent of 125psi for natural gas and 200psi for water @ 73°F. Pressure ratings are subject to de-rating depending on ambient temperatures.

PRESSURE TESTING:

Pressure testing can be conducted in accordance with the recommendations of the pipe manufacturer, or as described in ASTM F2164 STANDARD PRACTICE FOR FIELD LEAK TESTING OF POLYETHYLENE (PE) PRESSURE PIPING SYSTEMS USING HYDROSTATIC PRESSURE, typically 1.5 x's the rated working pressure not exceeding 8 hours in duration for a single test.

MAXIMUM OPERATING TEMPERATURE:

The maximum operating temperature of PE3408 / PE4710 Electrofusion Couplings is 140°F. Pressure de-rating factors should be considered when operating systems above the 73°F stated pressure rating, to maintain the 50 year substantiated long-term hydrostatic strength of the polyethylene material.

STORAGE/SHELF LIFE:

Black high density polyethylene resin contains a minimum 2% of a finely dispersed concentration of carbon black which provides some degree of protection from UV effects. Even so, it is recommended that fittings which are stored for extended periods (two years or greater) be stored indoors in their original packaging. Fittings stored indoors in their original packaging have virtually unlimited shelf-life.

CHEMICAL RESISTANCE:

Polyethylene generally exhibits strong resistance to many chemical compounds. Known chemical resistance characteristics at specified temperatures can be found in PPI Technical Report TR-19.

INSTALLATION:

Please refer to Georg Fischer Central Plastics Electrofusion Installation Procedures Manual for proper installation instructions. Georg Fischer Central Plastics strongly recommends that electrofusion fittings be installed only by persons that have received training from an authorized instructor, and have a strong working knowledge of polyethylene and heat fusion, and have qualified electrofusion joints through destructive testing. Persons responsible for the joining of polyethylene pipes by fusion methods must qualify according to the requirements of Title 49 Code of Federal Regulations, Section 192.285.