PRODUCT SPECIFICATION:

BUTT FUSION FITTINGS
PE3408/PE4710 PLUS HDPE BLACK

SCOPE:
This document describes the standard specifications and features related to GF Central Plastics' PE4710 (PLUS) butt fusion fittings for pressure piping systems. This specification covers Tees, Elbows, Caps, and Reducers.

SIZES:
Tee: ½ CTS – 2 CTS, ½ IPS – 12 IPS, 4 DIPS – 12 DIPS
45 Degree Elbow: 2 IPS through 12 IPS, 4 DIPS through 12 DIPS
90 Degree Elbow: ¾ IPS through 12 IPS, 4 DIPS through 12 DIPS
Reducer, Cap: ½ CTS – 12 IPS

REQUIREMENTS:
ASTM D2513 Specification for Thermoplastic Gas Pressure Pipe, Tubing, and Fittings
ASTM D3350 Specification for Polyethylene Plastic Pipes and Fittings Materials
ASTM D3261 Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastics Pipe and Tubing
AWWA C906 Standard for Polyethylene Pressure Pipe and Fittings, 4 in. Through 63 in., for Water Distribution
CSA B137.4 Polyethylene Piping Systems for Gas Service

REFERENCE DOCUMENTS:
ASTM F2620 Standard Practice for Heat Fusion Joining Polyethylene Pipe and Fittings
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
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 Plastic Pipe and Fittings for Underground Fire Protection Service
ANSI/NSF 61 Standard for Drinking Water System Components and Health Effects
CSA B137.4.1 Polyethylene Piping Systems for Gas Service (≤ 8 IPS - PE4710 PLUS listing)

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. PE4710 PLUS rated per CSA Z662 and B137.4. This resin has a cell classification of 445574C* and a chlorine resistance rating of CC3 in accordance with ASTM D3350.

*Note: Previous editions of ASTM D3350 resulted in a cell classification of 345464C and 345564C.
TEST METHODS:
ASTM D1598  Standard Test Method for Time-to-Failure of Plastics Pipe Under Constant Internal Pressure
Must exceed 200 hours in 80°C bath @ 750 psi hoop stress, or
Must exceed 1000 hours in 80°C bath @ 660 psi hoop stress, or
Must exceed 1000 hours in 23°C bath @ 1600 psi hoop stress.
(All methods are considered equivalent)
ASTM D1599  Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing
and Fittings.
Uniform pressurization until failure occurs between 60 and 70 seconds from start of test. Must
result in ductile failure of the pipe, independent of the fitting or fusion, at a pressure great
enough to create a 2900 psi hoop stress in the pipe.
AWWA C906  Section 4.5 Fitting Test Requirements
Five second pressure test 4x’s the rated working pressure performed on each production lot.
ASTM D2122  Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

FEATURES:
Made in USA from pre-blended virgin materials with CSA Z662 and B137.4 PE4710 PLUS designation. These
fittings are available in various configurations and DR and are primarily intended for use in pressure piping
applications. These fittings are compatible for heat fusion to any PE material made from a like or similar resin.
NSF 61 Listed. Select sizes can be supplied with CSA, AWWA, or FM marking. Designed for use on pipe
conforming to ASTM F714, D2513, and D3035.

PRESSURE RATING:
PE4710 Butt Fusion Fittings are pressure rated in accordance with industry and regulatory guidelines for natural
gas or water @73°F using unit stresses and recommend design factors. Pressure ratings are subject to change
depending on ambient temperatures. Pressure ratings vary according to wall thickness and the design factor for
the intended application, see below for ratings:

<table>
<thead>
<tr>
<th>Fitting DR</th>
<th>Water (.63 DSF)</th>
<th>Water (.5 DSF)</th>
<th>Natural Gas (.4 DSF) US</th>
<th>Natural Gas (.45 DSF) Canada PLUS</th>
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<td>265</td>
<td>170*</td>
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*49 CFR Part 192 limits the maximum operating pressure of regulated plastic pipeline to 125 psi.

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 PE4710 butt fusion fittings 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 for up to 10 years. 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:
These fittings are compatible for heat fusion by butt, socket, or electrofusion joining products. They can be heat fusion joined to pipe or fittings manufactured from like or similar resin. Qualified mechanical joining products can be used to join these fittings, consult the manufacturer for recommendations. Fusion jointing should only be attempted by persons who have been trained and have qualified joints through destructive testing.

End of Life/Disposal: Polyethylene fittings are 100% recyclable and suitable for recycling into post-consumer products.

Approved by:

Jeff Wright
Technical Director