



## Weld-End Non-ID Obstructed Polyethylene-to-Steel Transition Fittings

### Letter of Compliance

The following standards are directly or tangentially considered in the design and manufacture of Hawkeye Industries' Transition Fittings. As not all sections of all listed documents are applicable to the design of the transition fittings, so engineering judgment has been used to specify which sections are appropriate to the design of the transition piece.

### Primary Fitting Codes and Standards

#### CSA B137.4-05

##### *Polyethylene Piping Systems for Gas Service*

Hawkeye Industries uses only pipe conforming to this standard for the manufacture of transition fittings. Pipe meeting this specification will simultaneously meet ASTM D2513.

CSA B137.4-05 also specifies the minimum required pullout strength for fittings up to 12 NPS (see table 7). These minimum pullout values are significantly lower than the tensile strength of the polyethylene pipe. The pullout strength of Hawkeye Industries' transition fittings are designed to meet or exceed the tensile strength of polyethylene pipe.

Hawkeye Industries' transition fittings have been pressure tested to 150% maximum allowable operating pressure (MAOP). For PE 3408 materials, MAOP is derived from PPI TR-9, and for bimodal (i.e. PE 100) materials, it is derived from EUB Directive 022.

#### CSA Z662-03

##### *Oil and Gas Pipeline Systems*

Fittings manufactured from PE 3408 meet the criteria, as specified in CSA Z662-03 sections 13.3.3.1, 13.3.3.2 and 13.3.3.3 for manufacturing, design strength and resin requirements respectively. The latest revision of CSA Z662 (due in 2007) addresses the use of bimodal materials, but cannot be referenced until published.

### Referenced Codes and Standards

#### API 15LE

##### *Specification for Polyethylene Line Pipe*

Sections 1 through 9 are referenced in CSA Z662-03 §13.3.3.1, specifying purchasing guidelines, design, manufacture, quality control, marking and storage.

#### ASTM F1973-05

*Standard Specification for Factory-Assembled Anodeless Risers and Transition Fittings in Polyethylene (PE) and Polyamide (PA11) Fuel Gas Distribution Systems*

#### ASME B31.8-2003

*Gas Transmission and Distribution Piping Systems*

#### ASTM D2513-05

*Standard Specification for Thermoplastic Gas Pressure Pipe, Tubing and Fittings*

#### ASTM D2837-04

*Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials or Pressure Design Bases of Thermoplastic Products*

Referred to in CSA Z662-03 §13.3.3.2 for minimum hydrostatic design basis (HDB) of 11.0 MPa [1600 psi]

#### ASTM D3035-03

*Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Base on Controlled Outside Diameter*

#### ASTM D3350-05

*Standard Specification for Polyethylene Pipe and Fittings Materials*

Referred to in CSA Z662-03 §13.3.3.3

#### ASTM F714-05

*Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter*

#### ASTM F1588-02

*Standard Test Method for Constant Tensile Load Joint Test (CTLJT)*

#### CSA B137.0-05

*Definitions, General Requirements, and Methods of Testing Thermoplastic Pressure Piping*

#### PPI TR-3

*HDB/PDB/SDB/MRS Policies*

#### PPI TR-4

*HDP/PDB/SDB/MRS Listed Materials*

#### PPI TR-9

*Recommended Design Factors and Design Coefficients for Thermoplastic Pipe*

#### PPI TR-21

*Thermal Expansion and Contraction in Plastic Piping Systems*

**The following three standards refer specifically to bimodal (PE 100 Materials)**

#### EUB Directive 022

*Use of Bimodal High-Density Polyethylene Pipe in Oil and Gas Service*

**ISO 9080:2003**

*Plastics Piping and Ducting Systems – Determination of the long-term hydrostatic strength of thermoplastic materials in pipe form by extrapolation*

**ISO 12162:1995**

*Thermoplastics Materials for pipes and fittings for pressure applications: Classification and designation – Overall service (design) coefficient*

**Material Traceability**

Standard P.O. / MTR document control is used to track steel and other metallic fitting components.

Raw polyethylene used to manufacture the Hawkeye Industries transition fitting is identified immediately upon receipt with the following information:

- Resin type (PE 3408, PE 100, etc)
- Manufacturer of the Raw Material
- Size and SDR of the raw material
- Our purchase order number

Following each manufacturing operation, information is reapplied to the part if, as a result of the handling and machining, the information is removed. At no time is a polyethylene part staged, assembled or stored without individual identifying information.

Material is traceable from end-user purchase order number, through Hawkeye Industries internal work order number, to raw material supplier to resin manufacturer.

Sincerely,

A handwritten signature in black ink that reads "Jason Lauder". The signature is written in a cursive, flowing style.

Jason Lauder, P.Eng  
Engineering Manager  
Hawkeye Industries Inc.

JL/jh