Molded Polyethylene Ball Valve Specification Sheet

Molded Full-Port Polyethylene Ball Valves manufactured by Integrity Fusion Products, are injection over-molded **High-Density Polyethylene valves** that are designed and manufactured for use in applications that include, but are not limited to:

- *Municipal water distribution & service lines*
- *Wastewater conveyance*
- *Irrigation*
- *Oil and Gas Production*
- *Industrial piping applications*
- *Process Lines*
- *Mining*
- *Landfill*

POLYETHYLENE VALVE BODY:

Integrity Fusion Products Polyethylene Ball Valve bodies are manufactured from virgin, NSF listed, pre-blended, bi-modal black high density polyethylene resin that has a cell classification of 445574C-CC3 that conforms to ASTM D3350 and is recognized by the Plastic Pipe Institute as having a PE3408 / PE4710 / PE100 rating with an HDB (Hydrostatic Design Basis) of 1600 psi @ 73° F, and can be heat fused to any manufacturers' PE pipe, molded fittings, or fabricated fittings manufactured from material made from PE3408 / PE4710 / PE100 resin that complies to ASTM D3350.

INTERNAL RETAINERS – PIVOT BALLS and OPERATING NUTS:

The over-molded Full-Port Pivot Balls and Pivot Ball Retainers, and the external Square Operating Nuts are produced from virgin Polypropylene resin that has a designated cell class of PP0211 that complies with all requirements of ASTM D4101, AWWA C521, and ANSI/NSF/CAN 61.

INTERNAL PIVOT BALL SEATS – STEM SEATS and WEATHER SEALS:

IntegriFuse Polyethylene Ball Valves come available with a choice of either EPDM, or Nitrile (HNBR) internal Pivot Ball Seats, Stem Seats, and Weather Seals. IntegriFuse Polyethylene Ball Valves manufactured with EPDM material is visually designated with Blue Polypropylene Square Operating Caps. The EPDM material used in IntegriFuse Poly Ball Valves is ASTM D1418, NSF/ANSI/CAN 61, AWWA C521 compliant, and provides reliable sealing from -20° F to +140° F. IntegriFuse Polyethylene Ball Valves with EPDM seats are designated and approved for use in potable water systems. IntegriFuse Polyethylene Ball Valves manufactured with Nitrile (HNBR) seats, are much more resistant to heat, ozone, and abrasion than EPDM seats, and are designed and approved for use in more aggressive, non-potable water applications such as; oil and gas, industrial, chemical, food and pharma. IntegriFuse Polyethylene Ball Valves with Nitrile (HNBR) seals are ASTM D1418, ASME 16.40 compliant, and are visually designated with White Polypropylene Square Operating Caps.

STAINLESS-STEEL PIVOT BALL STEMS

The **Stainless-Steel Pivot Ball Stems** are designed to provide excellent strength and durability, and manufactured from **ANSI/AWWA C800 compliant 316 Stainless Steel.**

IntegriFuse Full-Port Polyethylene Ball Valves are manufactured, tested, certified, and listed in accordance with standards and requirements that meet a wide range of project requirements that include:

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) Pipe and Tubing**
ASTM D4101	-	**Standard Classification System and Basis for Specification for Polypropylene Injection and Extrusion Materials**
AWWA C901	-	**Polyethylene (Pe) Pressure Pipe and Tubing, 3/4 In. Through 3 In. For Water Service**
AWWA C906	-	**Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 65 In. (100 mm Through 1,650 mm), for Waterworks**
AWWA C521	-	**Plastic Ball Valves**
ANSI/NSF 61	-	**Plastic Piping System Components & Related Materials**

Conditions for the Required De-Rating of a Transition Fitting Fittings MAOP

The Maximum Allowable Operating Pressures (MAOP) for molded PE4710 fittings *must be de-rated for elevated temperatures in all service applications*, including Oil & Gas Gathering Systems installed in Class 1 or Class 2 locations (low population areas not subject to DOT CFR *Title 49 Part 192* regulations) or where Federal Codes do not apply. *Including Water, Brine, Dry Natural Gas applications with NO associated hydrocarbons.*

API Specification 15LE (1995) states "In most circumstances, the HDB obtained at 73° F can be used for applications up to 100° F without further derating" Values in this table use a material design factor of .63 and a Fluid Service Factor of 1.0

The maximum operating temperature of Integrity Fusion Products PE4710 Molded Fittings *should not exceed 140° F.* (TABLE 2)

Fitting MAOP by SDR vs. Operating Temperature				
SDR	73.4° F	100° F	120° F	140° F
7	333 psi	260 psi	210 psi	166 psi
9	250 psi	195 psi	158 psi	125 psi
11	200 psi	156 psi	126 psi	100 psi
17	125 psi	98 psi	79 psi	63 psi

TABLE 2

Dry, gaseous hydrocarbons have no adverse effect on our molded fittings normal expected service life, and naturally occurring chemicals in the soil will not attack or cause our fittings to degrade. They do not rust, rot, or corrode; they naturally resist the buildup of scale and other deposits, and they do not support the growth of algae, bacteria, fungi, or other marine life.

Table 3 provides an added derated MAOP of a molded electrofusion fitting when installed into services and applications subjected to an extended exposure of liquid hydrocarbon concentrations of 2% and greater.

Values in Table 3 use a material design factor of .63 and a Fluid Service Factor of 0.5

MAOP by SDR Derated for Operating Temperature and Transporting a Media Containing 2% or greater Hydrocarbon Content				
SDR	73.4° F	100° F	120° F	140° F
7	166 psi	129 psi	105 psi	83 psi
9	125 psi	98 psi	79 psi	63 psi
11	100 psi	78 psi	63 psi	50 psi

TABLE 3

Fluid Service Factors

Produced Water, Brine, Process Water with no associated liquid hydrocarbons	1.0
Dry Natural Gas (no hydrocarbon liquids used in Class 1 and Class 2 locations and in low population area not subject to DOT CFR *Title 49 part 192*	1.0
Crude Oil, Wet Natural Gas, Liquid Hydrocarbons, Process Water with >2% liquid hydrocarbons	.5
Gas Distribution piping that is permeated by solvating chemicals, liquid hydrocarbons or liquified gas condensate	.5