

INFO BRIEF NO. 3

HDPE FUSION BEADS CAN BE IGNORED

Questions arise periodically asking if the flow rate and pressure loss is affected by the internal bead of butt fused HDPE piping systems. Heat fusion joining is a field-proven, leak proof process and is the most common method used for joining HDPE pipe.

Numerous field flow performance measurements show the internal bead to be insignificant. Analytical studies of the fusion bead effect support these field measurements.

For example: The Hazen-Williams flow equation shows that a 10" SDR 26 HDPE pipe system, which is 1,000 feet long, will have a pressure drop of 5 psi when flowing 1,600 gpm. This HDPE pipe system will have 25 heat fusion joints assuming that 40-foot joints were utilized. At each joint the beads will be approximately 3/16" high and 3/8" wide. The approximate ID of 10" SDR 26 is 9.87". Therefore, the ID in the region of the fusion bead will be approximately 9.5". Using the same Hazen-Williams flow equation to calculate the pressure drop over the fusion bead length of 9.38" (3/8" x 25 joints) one can verify that the pressure drop due to the fusion beads will be .005 psi. This correlates into a 1 gpm reduction when taking into account the additional pressure drop due to the internal beads.

Other analyses, such as the work energy relationships for each bead, yield similar results as that shown in the example.

NOTICE:

The data contained herein is a guide to the use of PolyPipe[®] polyethylene pipe and fittings and is believed to be accurate and reliable. However, general data does not adequately cover specific applications, and its suitability in particular applications should be independently verified. In all cases, the user should assume that additional safety measures may be required in the safe installation or operation of the project. Due to the wide variation in service conditions, quality of installation, etc., no warranty or guarantee, expressed or implied, is given in conjunction with the use of this material.

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