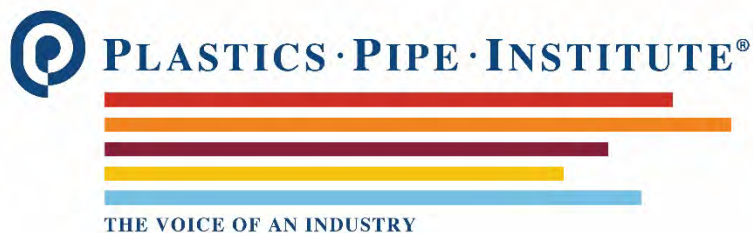


Polyethylene Pipe Butt Fusion
Structure, Process, and
Terminology
TN-51
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POLYETHYLENE PIPE BUTT FUSION STRUCTURE, PROCESS, AND TERMINOLOGY

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Polyethylene Pipe Butt Fusion Structure, Process, and Terminology

The purpose of this Technical Note is to impart a basic understanding of the fusion joint and its sub-structure, with the plane of co-crystallization across which the long polyethylene molecules inter-diffuse (knit together) to form the full strength joint. The roll back beads are an indication of a correctly made butt-fusion, however the actual joint is the plane of co-crystallization, which is centered between the dual beads.

Butt-Fusion of polyethylene plastic pipe was pioneered in the USA by industry 'founding fathers' among whom are Ole Larsen, Bob Weaverling, Bud Bridenstine, John Merideth, Jean Louthan, Paul Petro, and others, most of whom began extruding and fusing polyethylene pipe in 1958, as employees of Phillips Petroleum's oilfield **Drilling Specialties Co.** (abbreviated initials: DRISCO), which evolved into Driscopipe® in the late 1970's. Drilling Specialties Co. made the first hand operated flat-heater plate fusion machines heated by an acetylene torch with an embedded oven thermometer. Later an associate company was invited to assume the manufacture of fusion equipment so DRISCO could focus on extrusion of high density polyethylene pipe. As a result, today we all enjoy the benefit of quality fusion machines across the world.



Figure 1: Natural Color Polyethylene Pipe being Fused, 1959, in Caney, Kansas