



### PA-11 Butt Fusion Photo Gallery

This gallery contains photographs of PA-11 butt fusion joints that have been properly made using the butt fusion procedure provided. These photos show that there can be a significant variation in the bead appearance with PA-11, depending upon the pipe and ambient conditions. This is not a complete catalog, but rather a subset of fusion appearances. All of these fusions have been shown to meet the D.O.T. CFR 192.283 requirements. It should be emphasized that the PA-11 melt bead appearance will not be the same as the polyethylene (PE) melt bead. PA-11 melt does not roll over as much as PE because they are different materials and have different viscosities and melt flow characteristics. This variation in fusion appearance shows the importance of maintaining proper interfacial pressure during fusion, since it would be difficult to use fusion appearance to validate good fusion conditions. Field operators should not expect the same appearance as PE melt beads.

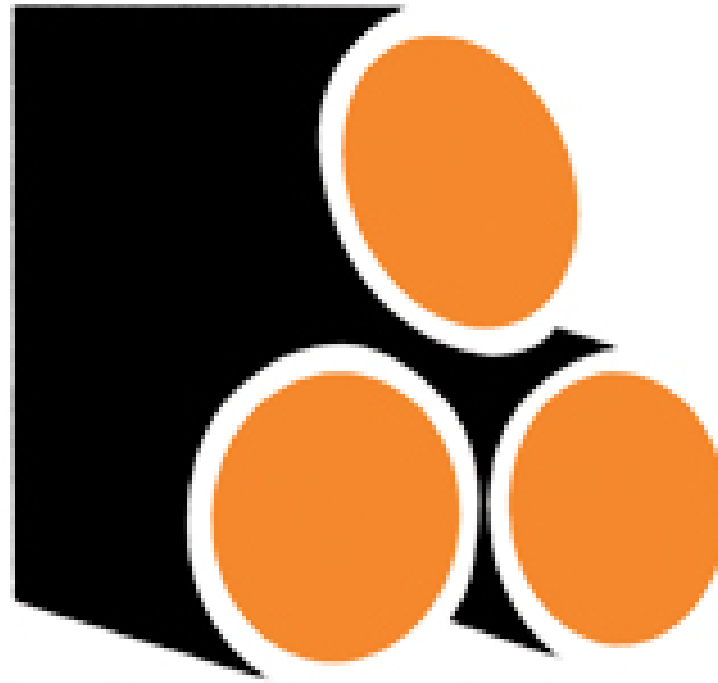
Sample I.D.	Pipe Size	Moisture Content (% H2O)	Heater Temperature (F)	Ambient Temperature (F)	Heat Soak Time (s)	Torque (ft-lb)	Interfacial Pressure (psi)
D1.2	2" SDR11	0.16%	500	120	60		



Sample I.D.	Pipe Size	Moisture Content (% H2O)	Heater Temperature (F)	Ambient Temperature (F)	Heat Soak Time (s)
D1.8	2" SDR11	0.16%	500	20	60



Sample I.D.	Pipe Size	Moisture Content (% H2O)	Heater Temperature (F)	Ambient Temperature (F)	Heat Soak Time (s)	Torque (ft-lb)	Interfacial Pressure (psi)
D2.2	2" SDR11	1.26%	500	120	60	10	80



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Sample I.D.	Pipe Size	Moisture Content (% H2O)	Heater Temperature (F)	Ambient Temperature (F)	Heat Soak Time (s)	Torque (ft-lb)	Interfacial Pressure (psi)
E1.2	1" SDR11	0.33%	500	120	60	2	80



In the case of a butt fusion between PA-11 pipe and a PA-11 molded fitting the two melt beads should be exactly the same (as shown in the photograph to the left below). This is achieved by the extrusion process and the fitting is manufactured by the molding process. These processes introduce different stresses in the final product, and this is often manifested by a difference in bead appearance. If the exact same phenomenon is observed in butt fusions made from PE extruded pipe and fitting, the manufacturer should be made aware of this potential difference between a pipe and a fitting.



Examples of Acceptable Fusions of PA-11 Pipe to PA-11 Fitting