

Large Diameter Electrofusion (LDEF)

Electrofusion couplings for joining 14-inch and larger polyethylene pipe are commercially available from North American manufacturers and suppliers. However, successful joining with large diameter electrofusion (LDEF) couplings requires that qualified persons make LDEF joints in strict accordance with the electrofusion coupling manufacturer's joining instructions.

- LDEF joints made by unqualified persons can fail or leak or both.
- LDEF joints that are not made in accordance with the installation instructions of the LDEF coupling manufacturer can fail or leak or both.
- LDEF coupling manufacturers' installation instructions require that the user first determine that the pipe is suitable for LDEF joining before making joints. **Pipes 14-in and larger that are made in accordance with ASTM D 2513, ASTM D 3035, ASTM F 714, ASTM F2619/F2619M, AWWA C906, or API 15LE must be checked before use in accordance with LDEF coupling manufacturer joining instructions.**

Qualified Persons

LDEF joining is performed only by persons that have received training in large diameter electrofusion joining from the manufacturer of the electrofusion coupling being used.

- Qualified persons have received training from the LDEF fitting manufacturer, and can produce written proof that they participated in a LDEF training program administered by the LDEF coupling manufacturer.
- Written proof of qualification must be for training to make 14-inch and larger electrofusion joints. Training in electrofusion joining of sizes below 14-inch does not qualify persons to make 14-inch and larger electrofusion joints.
- LDEF couplings and joining procedures from different LDEF coupling manufacturers are different. Therefore, training from one LDEF fitting manufacturer does not qualify persons to make joints using a different LDEF manufacturer's fittings. Training from a party that is not authorized by the specific LDEF coupling manufacturer to administer LDEF training does not qualify.
- Field joints must be made by the persons that received the training and can produce written proof of training. Field supervision of untrained individuals is not a substitute for training received in a program administered by the LDEF coupling manufacturer.
- WL Plastics does not recommend LDEF joining to WL Plastics HDPE piping products by unqualified persons.

LDEF Joining Is Not Always a Suitable Joining Procedure

In some circumstances, LDEF joining may not be a suitable joining procedure. LDEF joining instructions may set limits for pipe OD or roundness that are significantly different from OD specifications and roundness requirements in the pipe standard, that is, pipe that is in full compliance with the standard may not meet limits established by the LDEF coupling manufacturer. Before making LDEF joints, the user must first determine that the LDEF coupling manufacturer's requirements can be met. If not, LDEF joining should not be performed.

- LDEF couplings from Manufacturer A will accommodate a gap up to ¼-inch between the LDEF coupling ID and the pipe OD. However, PE pipes will normally have up to 1 ½% toe-in at the end, will contract at lower temperatures, and PE pipe is usually slightly oval, which when combined can result in gaps larger than ¼-inch. AWWA and ASTM pipe standards for 14-inch and larger PE pipe do not have OD roundness requirements. Therefore, pipe that meets all specification requirements but is cold or slightly oval or may have slight OD conditions such as high or low spots around the OD may not be suitable for LDEF joining. Some normal OD conditions may not be field correctible with rounding devices. In such circumstances, LDEF couplings should not be used to join the pipe.
- Instructions for joining LDEF couplings from Manufacturer B require pipe OD that is within the min/max tolerance for the LDEF coupling ID. However, Manufacturer B LDEF coupling ID dimensions and tolerances are as much as 80% different from the pipe OD dimensions and tolerances in ASTM, AWWA and API standards for 14-in and larger PE pipe. That is, pipe can be in full compliance with the pipe standard, but not meet the limits established by Manufacturer B for LDEF joining with its couplings. At additional cost, WL Plastics can manufacture special pipe for use with Manufacturer B LDEF couplings. Contact WL Plastics Customer Service for information and availability.
- Pipe that has been in service and that has been exposed to liquid hydrocarbons may be permeated. Fusion joints to liquid hydrocarbon permeated pipes can be compromised and of low quality. If liquid hydrocarbon permeation is known or suspected, WL Plastics recommends the use of mechanical joining devices, and does not recommend joining by electrofusion, butt fusion, socket fusion or saddle fusion.

Additional LDEF Information

Additional information on LDEF joining products and LDEF joining is available from LDEF fitting manufacturers. General information about LDEF joining is available in PPI TN-34 *Installation Guidelines for Electrofusion Couplings 14" and Larger*, from the Plastics Pipe Institute, PPI, at www.plasticpipe.org.

This publication is intended for use as a piping system guide. It should not be used in place of a professional engineer's judgment or advice and it is not intended as installation instructions. The information in this publication does not constitute a guarantee or warranty for piping installations and cannot be guaranteed because the conditions of use are beyond our control. The user of this information assumes all risk associated with its use. WL Plastics Corporation has made every reasonable effort to ensure accuracy, but the information in this publication may not be complete, especially for special or unusual applications. Changes to this publication may occur from time to time without notice. Contact WL Plastics Corporation to determine if you have the most current edition.



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