

PPI Guidelines for Qualification Testing of Mechanical Couplings for PE Pipes in Pressurized Water or Sewer Service TN-22/01



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Foreword

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September 2001

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Scope and Purpose:

The test methods given below apply to mechanical coupling products used to join butt-ends of polyethylene (PE) pipe made to AWWA C906 or 4" and larger pipes made to ASTM F714 and used in pressurized water service for force mains, sewers, and potable water.

Passing all test methods below provides reasonable assurance that the mechanical coupling product may be used successfully on PE pipe at the full pressure rating and capacity of the pipe. Testing other than what is contained herein may be required depending on the materials and design of the mechanical coupling. The mechanical coupling manufacturer is responsible for determining if additional testing is required.

The recommended test methods consider joint integrity and are intended for mechanical couplings that both seal and restrain butt-ends of pipe. If a manufacturer wishes to test only for sealing or only for restraining, an additional device for restraining or sealing is required for the in-service application.

Durability and corrosion issues are not addressed in this procedure. The coupling manufacturer must establish durability and corrosion resistance based on the coupling material and application.

Mechanical couplings for PE pipes must withstand not only the operating line pressure but also 'recurrent surges' to 1.5 times the rated pressure, 'occasional surges' to two times the rated pressure, axial loads imposed by temperature changes and axial loads caused by Poisson effect contraction. (See AWWA Standard C-906 for definitions of "recurrent" and 'occasional' surges.)

The four test categories are: (1) 1000 Hour Pressure Test to verify sealing and resistance to steady-pressure and axial pulling forces. (2) Repeated Surge Test to verify long-term surge resistance for sealing and restraining. (3) Slow Cycling Test to verify resistance to creep and stress relaxation. (4) Short-term Pressure Test to provide a 1.5 safety factor against surge pressure in the coupling and restraining components.

These tests are for design qualification, and may not be applicable for manufacturing quality control tests. To verify compliance with applicable