

# Test Method for Measurement of Peel Strength of Multilayer Polyolefin Coating Systems

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## Document History

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AMPP values your input. To provide feedback on this standard, please contact: [standards@ampp.org](mailto:standards@ampp.org)

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## Foreword

This test method establishes a relatively simple procedure to produce more consistent test data by using compact and light in weight equipment with good control of the peeling angle and speed. The effort to develop this method was led by representatives of coating manufacturers, coating applicators, equipment suppliers, corrosion specialists, and other personnel involved in the construction of pipeline facilities. This test method is intended for use by pipeline operating companies, pipeline owners, pipeline contractors, pipeline inspection services companies, coating companies, and pipeline coating mills.

## Scope

This test method describes a reliable methodology for determining the peel strength of polyolefin-based multilayer pipeline coating systems, generally for coating thickness less than 12 mm (0.47 in). This standard provides a method to measure the peel strength of polyolefin-based multilayer coating systems, such as 2-layer polyethylene coating (2LPE), 3-layer polyethylene (3LPE), 3-layer polypropylene (3LPP), and heat shrink sleeve (HSS) field joint coating. It provides essential information on the quality of the applied coating. This is particularly important for field applied coatings, of which the application process is significantly impacted by the environmental conditions and the skill set of the field applicators.

## Rationale

There have been several efforts in the past to develop a reliable field peel strength test method for coating systems. Current practice and standards allow the use of different methods to measure peel strength, leading to inconsistent results. Examples include a method that uses a hand-held, spring-loaded gauge without control of the peeling speed and angle; and a hanging weight test method where the peeling angle varies with pipe size and position at the point of peeling. There are types of equipment capable of providing consistent peel test results as noted in ISO 21809-1 and ISO 21809-3; however, that equipment is often complicated, heavy, and not practical for in-house use, but inconvenient to operate in the field.

## Referenced Standards and Other Consensus Documents

The latest edition, revision, or amendment of the referenced documents in effect shall govern unless otherwise dated.

### **ASTM International, [www.astm.org](http://www.astm.org):**

ASTM D7091 Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

### **International Organization for Standardization (ISO): [www.iso.org](http://www.iso.org):**

ISO 21809-1 Petroleum and natural gas industries – External coatings for buried or submerged pipelines used in pipeline transportation systems – Part 1: Polyolefin coatings (3-layer PE and 3-layer PP)

ISO 21809-3 Petroleum and natural gas industries — External coatings for buried or submerged pipelines used in pipeline transportation systems — Part 3: Field joint coatings