

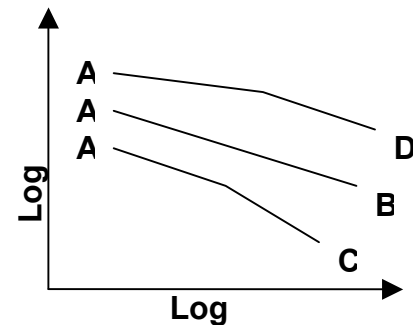
Field Testing

Field testing is performed on fully assembled pipelines or its sections.

Following visual acceptance of joints and pipeline components, pressure pipelines are subjected to hydrostatic pressure testing. The hydrostatic test pressure at any point in the pipeline shall be not less than the design pressure and not more than 25% above the rated pressure of any pipeline component.

Pressure decay test. Due to creep response and stress relaxation of the material, the test pressure applied to a leak-free polyethylene pipeline will decay in a non-linear manner.

The pipeline is accepted where there is no failure of any component, no visible leakage, and slope of pressure decay curve drawn in logarithmic scale is within the specified range.



Constant pressure test (water loss method) is regarded as independent of soil support and is sometimes referred to as a reference test.

In a pipeline, pumped with water to the test pressure and shut off, the pressure will drop significantly due to creep behaviour of the PE pipes. Following settling for 12 hours, the test pressure is maintained for 5 hours, and quantity of make-up water measured.

The pipeline is accepted where there is no failure of any component, no visible leakage, and reduction in quantity of make-up water with time is as specified.

Modified pressure rebound method is applicable for PE pressure pipelines up to and including DN 315. The test procedure includes three phases.

On preliminary stage, following quick filling of the pipeline, the hydrostatic pressure is maintained for 30 min., and allowed to decay for 1 hour. If pressure decay value does not exceed the requirements, the test proceeds to the next stage where pressure is allowed to drop quickly to the specified level, and quantity of bled out water measured. During the main stage, further changes of pressure are observed for 30 minutes.

The pipeline is accepted where there is no failure of any component, no visible leakage, the pressure decay value on the preliminary stage and quantity of bled out water on the next stage is as required, and the pressure rises or remains static during the main stage.

Visual test may be conducted for small pipelines where all joints are left exposed. The pipeline is accepted where no failure of any component is observed and there is no visible leakage at all joints.

Non-pressure pipelines are tested for leakage. Low pressure air testing and vacuum testing include achieving positive/negative pressure of 25 kPa and allowing the pressure/vacuum to decay. The pipeline is accepted where there is no failure of any component, no visible leakage, and change in pressure/vacuum does not exceed 7 kPa.

Hydrostatic testing is conducted at 20 kPa pressure for 2 hours; quantity of specified make-up water shall not be exceeded. During infiltration testing the pipeline is observed for infiltration for a 24 h period – the pipeline is accepted where there is no infiltration.

For non-pressure pipelines, and where structural verification for pressure pipelines is required, deflection testing may be conducted. For PE and PP pipelines, the maximum allowable vertical deflection at 30 days is 5 %.