

PVC PIPE FIELD TESTING - MAXIMUM TEST PRESSURE

POST-INSTALLATION PRESSURE TESTING

Project specifications for pressure pipe typically require pressure-testing of an installed pipeline. The governing AWWA specification for installation and testing of PVC pipe is AWWA C605. Section 10.3 of the standard, titled “Hydrostatic Testing,” provides information on test pressures and other important items. Another source of information is Uni-Bell’s *Handbook of PVC Pipe*, Chapter 11 “PVC Pressure Pipe Installation.”

TWO CRITICAL AREAS

Both AWWA C605 and the *Handbook of PVC Pipe* provide a wide range of information on installation and post-installation processes. This Tech Brief focuses on two areas where they provide important guidance for testing of an installed line:

1. Determining test pressures
2. Maximum test pressures

DETERMINING TEST PRESSURES

AWWA C605 Section 10.3.5 “Test Pressure” gives instructions:

The hydrostatic test pressure shall not be less than 1.25 times the stated anticipated maximum sustained working pressure of the pipeline measured at the highest elevation along the test section and not less than 1.50 times the stated sustained working pressure at the lowest elevation of the test section.

To summarize:

- The test pressure measured at the point of lowest pressure (highest elevation) shall not be less than 125% of the anticipated maximum working pressure
- The test pressure measured at the point of highest pressure (lowest elevation) shall not be less than 150% times the anticipated maximum working pressure

The *Handbook of PVC Pipe* provides the same upper-end value:

A test pressure of 50% above normal operating pressure is generally sufficient.

MAXIMUM TEST PRESSURE = PIPE'S PRESSURE CLASS

C605 places limits on test pressure in section 10.3.3 “Procedure”:

The test pressure shall not exceed the design pressure of the pipe, fittings, valves, or thrust restraints.

To emphasize the point, C605 Section 10.3.5 “Test Pressure” repeats the limitations:

However, in no case shall the test pressure exceed the rated working pressure for any joint, thrust restraint, valve, fitting, or other connected appurtenance of the test section.

The *Handbook of PVC Pipe* has similar language in section 11.8.3:

Test pressure should not exceed design pressure for pipe, appurtenances or thrust restraints.

For PVC pipe, all three of these examples have the same intent: **the test pressure should not exceed the pipe’s pressure class.**

SUMMARY

AWWA C605 and the *Handbook of PVC Pipe* are in agreement on pressure testing of PVC pipelines:

- Test pressure should not exceed the pressure ratings of any of the components of a pipeline.
- Specifically for pipe, test pressure should not exceed the pressure class of the pipe. For example:
 - For DR14, maximum test pressure = Pressure Class = 305 psi
 - For DR18, maximum test pressure = Pressure Class = 235 psi
 - For DR25, maximum test pressure = Pressure Class = 165 psi

References: AWWA Standard C605 “Underground Installation of Polyvinyl Chloride (PVC) and Molecularly Oriented Polyvinyl Chloride (PVCO) Pressure Pipe and Fittings” (2013); Uni-Bell PVC Pipe Association, *Handbook of PVC Pipe* (2013)