

PVC PIPE ASSOCIATION TECHNICAL BRIEF

THERE IS NO “LEAKAGE” ALLOWED FOR GASKETED PVC PIPE

Opponents of gasketed PVC pipe (primarily fused-joint HDPE) have been waging a campaign of misinformation, alleging that AWWA documents permit leakage for gasketed pipes. The truth is that AWWA standards and manuals do not allow leaking joints.

UNDERSTANDING PRESSURE AND LEAKAGE TESTING

One of the typical post-installation acceptance tests for pressure pipe is a combined pressure and leakage test. Its purpose is to locate defects in materials or workmanship, so repair can be done prior to acceptance of the line. During this test, the contractor is typically required to measure the amount of water that is added to the line to maintain the test pressure. If the amount of water added is less than the specified “make-up water allowance,” the line passes the test. Conversely, if the amount of water added is greater than the allowance, the line fails the test.

Unfortunately, some editions of AWWA documents did use the term “leakage allowance” – this term is now being revised to reflect its true purpose: “make-up water allowance.” Reasons for this allowance include:

- Entrapped air
- Movement due to seating of valves, joint restraints, etc.
- Slight increase in pipe diameter due to internal pressure

The fact that there is a “make-up allowance” does not mean that a pressure pipe system is allowed to leak. The AWWA C605 installation standard for PVC and PVCO pipe requires that: “All visible leaks shall be repaired, regardless of the amount of leakage.” AWWA Manuals for other pressure-piping materials have similar requirements:

- Concrete: Manual M9
- Steel: Manual M11
- Ductile Iron: Manual M41
- Fiberglass: Manual M45
- Polyethylene: Manual M55

HDPE – A SPECIAL CASE

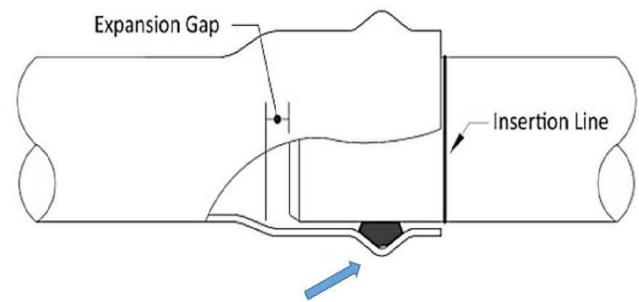
HDPE has a lower modulus of elasticity than all other AWWA pressure-pipe materials. This means that it continues to swell and stretch under test pressures, despite a “conditioning” period for HDPE that is not needed by other materials.

This swelling will be increased by the use of new thinner walls for HDPE pipe using PE4710 materials. The math is simple: the new material’s tensile strength and modulus of elasticity are not changed, but the wall is 25% thinner for the same pressure class. The equations are linear, so a 25% thinner wall means 25% additional swelling for the same test pressure.

THE BOTTOM LINE: LEAKAGE IS NOT ALLOWED FOR PVC PIPES

The plain truth is that AWWA standards and manuals do not allow leakage for any joining systems.

Gasketed bell-and-spigot pipe is the joining system of choice for AWWA pressure pipes. There are more than 250 million pressure-pipe gaskets in service for PVC pipe and hundreds of millions more for other materials. These joints are designed and tested to provide leak-tight service for the life of the pipe. Allegations to the contrary are not supported by fact.



Gasketed PVC Pipe Joints Provide Watertight Seals

References: AWWA Manuals M9, M11, M23, M41, M45, M55; AWWA Standard C605; *Handbook of PVC Pipe*, Uni-Bell