FLOWTITE® GRP PIPE AND FITTINGS

TESTING

The testing requirements will usually be specified in the project specification or documents.
FLOWTITE® pipelines should be tested in accordance with AS/NZS2566.2 Buried flexible pipelines – Part 2 Installation.

LEAKAGE TESTING FOR PRESSURE PIPELINES

The pipeline may be tested as a whole or in sections, depending on the length and diameter of the line, the availability of water and the spacing between sectioning valves or blank ends.

Before testing,

- The pipeline must be sufficiently backfilled to make sure it doesn't move during the test.
- Flanges and mechanical couplings should be left exposed for inspection.
- Concrete thrust blocks must be completed and cured before the test.
- Test ends (valves and blank flanges) must be restrained against thrusts.

It is not necessary to leave FLOWTITE® couplings uncovered prior to testing

Where no testing specification is given, the following procedures are typical for normal water and sewer pipelines.

TESTING PROCEDURE FOR PRESSURE PIPE

Clean the line and test for major defects by flushing.

1. A pressure gauge should be installed preferably at the lowest point in the section.
2. Open the hydrants at the high points of the line.
3. Slowly fill the test length with water preferably from the lowest point ensuring air is vented at the high point valves.

   The recommended rate of filling should be based on a flow velocity of 0.05m/s and can be calculated from,

   $Q_f \leq 12.5 \times \pi \times D^2$
   Q_f = filling rate in litres per second
   D = pipe diameter in metres

4. Allow all air to escape. Air trapped in the line will affect the test results.
5. Allow the line to stabilise.
   This may take up to 24 hours as the line settles due to the extra weight of the water and movement due to temperature changes.
6. Pressurise the system to the specified pressure. If not specified refer to AS/NZS2566.2 Clause 1.4.36. Hydrostatic pressure at any point in the pipeline is,
   a. Not less than the design pressure and
   b. Not greater than 1.25 x the rated pressure of any pipeline component.

   It will probably be necessary to add make up water for some time after to maintain this pressure, as the pipe will expand slightly and any trapped air will dissolve.

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7. Maintain the test pressure for at least one hour. Measure the amount of water which will need to be added from time to time to bring the line back to the test pressure.

The pressure test of a section can be considered to be satisfactory if:

a. There is no failure of any thrust block, pipe fitting, valve, joint or any other pipeline components

b. No leakage can be seen

c. The amount of make-up water added to keep the line up to pressure during the test was not more than,

Q = 0.14 x D x L x H
Q = permissible make up water (litres per hour)
D = Nominal pipe diameter (metres)
L = Length of the line under test (km)
H = Average test pressure (head in metres)

This permissible make up water rate is not leakage, but is an allowance for the expansion of joints under pressure and the amount of air that will inevitably be trapped and compressed during the test.
COMPRESSED AIR TESTING IS NOT PERMITTED FOR PRESSURE PIPE!

LEAKAGE TESTING PROCEDURE FOR NON-PRESSURE PIPELINES

Field testing is used for revealing damaged pipes, unsatisfactory embedment, poor jointing or other laying deficiencies.

For gravity sewers, 'leakage testing' may be required before acceptance.

A leakage check on a buried non – pressure pipeline can be completed using any of the following methods:

- Vacuum test (usually - 28kPa).
- Low pressure air test (usually 28kPa).
- Infiltration test (where laid below the water table).

Note: Test requirements can vary between Water Authorities and should be checked prior to testing.

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AIR TESTING

The test length of the pipeline is generally restricted to lengths between manholes.

Pump in air slowly until the pressure is reached. (Do not exceed 30kPa for safety reasons).

The pressure test is considered to be successful if the pressure does not drop more than 7kPa within the time frames shown in the following table.

If no leaks have been detected shut off the air. If the pipeline fails the test, re-pressurise to the required pressure and look for leaks.

DN	MINIMUM ALLOWABLE TIME (MINUTES) FOR DIFFERENT TEST LENGTHS WITH 7KPA PRESSURE DROP		
	50m	100m	150m
300	6	9	14
375	7	14	22
450	10	21	31
525	14	28	42
600	18	37	55
675	23	46	70
750	29	57	86
900	41	83	124
1000	51	102	153
1200	73	147	220

STRUCTURAL ASSESSMENT

OVALITY TESTING

An ovality test is a useful way of checking that the installation requirements have been met and should be completed as soon as possible after the installation is finished.

For sizes up to DN600

This usually involves passing an ovality proving tool 'OPT' through the pipeline.

If the proving tool passes through the pipeline without getting stuck, then it can be considered to have passed the test.

In larger pipe sizes a visual line-of-site inspection will usually indicate any abnormal deflections.
Measured deflections should be based on the following calculations:

$$\text{Deflection (\%)} = \frac{(\text{Actual ID} - \text{Installed ID}) \times 100}{\text{Actual ID}}$$

The maximum allowable deflections for FLOWTITE® pipes at various times after backfill completion are as follows:

TIME/PERIOD	24 hours	3 days	7 days	14 days	30 days	3 months
DEFLECTION (%)	2.8	3	3.4	3.8	4	4.4

The information contained in this document should serve as a guide only and is subject to change without notice. For more information please contact Iplex Pipelines Australia Pty Ltd.