

Australian Standard™

Test method for the resistance of pipe joints to plant root intrusion

STANDARDS
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Australian Chamber of Commerce and Industry
CSIRO Manufacturing & Infrastructure Technology
Energy Networks Association
Engineers Australia
Master Plumbers, Gasfitters and Drainlayers New Zealand
New Zealand Water & Waste Association
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PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee PL-045, Plastics Pipe Systems Test and Calculation Methods.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

Root intrusion through pipe joints may be a major problem due to the combination of arid climate and vigorous vegetation growth. Root intrusion can result in infiltration and exfiltration through pipe joints and in severe cases it can cause chokes, blocking flow through the pipeline.

Studies of elastomeric joints have shown that interfacial pressure assessment alone does not give a reliable indication of resistance to root intrusion due to other contributing factors such as pipe surface roughness, material composition and permeability.

This Standard has been developed to assess the ability of elastomeric and press fit joints as well as joints using packing medium such as grouts and sealants to resist root intrusion in sewer and storm water pipe systems.

The testing described within this Standard is performance based, using plants with root systems having the ability to penetrate joints. Studies have shown that joints, which pass this Standard, have performed well in the field whereas joints that fail have performed poorly in the field. However, successful performance in this test does not cover issues such as poor installation practice and provides no guarantee that root intrusion will not occur.

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STANDARDS AUSTRALIA

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Test method for the resistance of pipe joints to plant root intrusion

1 SCOPE

This Standard sets out a method for assessing the ability of pervious joints in sewer and stormwater pipe systems to resist plant root intrusion. It is applicable to all joints including those in new and rehabilitated pipelines, as well as manholes and maintenance shafts.

The method is applicable to a range of fittings including straight couplings, elbows and junctions, with a range of joint types including elastomeric seal joints, flanged joints and joints between spirals in spiral wound pipes.

Impervious joint types such as fused joints and solvent cement joints do not require testing.

Testing with both *Melaleuca armillaris* and rye-grass is specified in this Standard to take into account the ability of different root types to penetrate joints.

2 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

2.1 Assembly

Series of piping components, which includes at least one test joint.

2.2 Representative joint

A joint in an assembly of less than or equal to DN 600 that has the same design characteristics as a joint in an assembly greater than DN 600.

3 TEST ASSEMBLIES

Test assemblies shall be prepared in accordance with the manufacturer's instructions, using pipes and fittings complying with the manufacturer's nominated tolerances. Assemblies shall be tested in the primary orientation for their intended application. No chemical root inhibitors shall be present in any material under test.

If the joint to be tested is from a rehabilitation technique and grout is integral to the technique, the joint shall be grouted to the inside of a larger diameter pipe, in accordance with the manufacturer's instructions. The outer pipe shall have a hole measuring $\frac{1}{4}$ of the pipe's diameter by 300 ± 50 mm cut into it to simulate a large flaw. This controlled flaw shall face the surface of the soil. The joint under test shall be positioned close to the centre of the hole to allow soil and roots to make contact, in accordance with Figure 1.

If the joint to be tested is from a rehabilitation technique and the pipe to be rehabilitated is not integral to the technique, the joint may be made without an outer pipe, in accordance with Figure 2 (i.e., complete assembly in contact with soil and roots).

A minimum of six of each type of joint shall be tested (three with rye-grass for 12 months and three with *Melaleuca armillaris* for a minimum of 24 months).

Assemblies up to DN 600 shall be tested. Larger assemblies may be assessed by testing a smaller diameter assembly using representative joints.

NOTE: Assemblies larger than DN 600 may be tested; however, more than 2 growing seasons may be required to fully assess the performance of the joints.