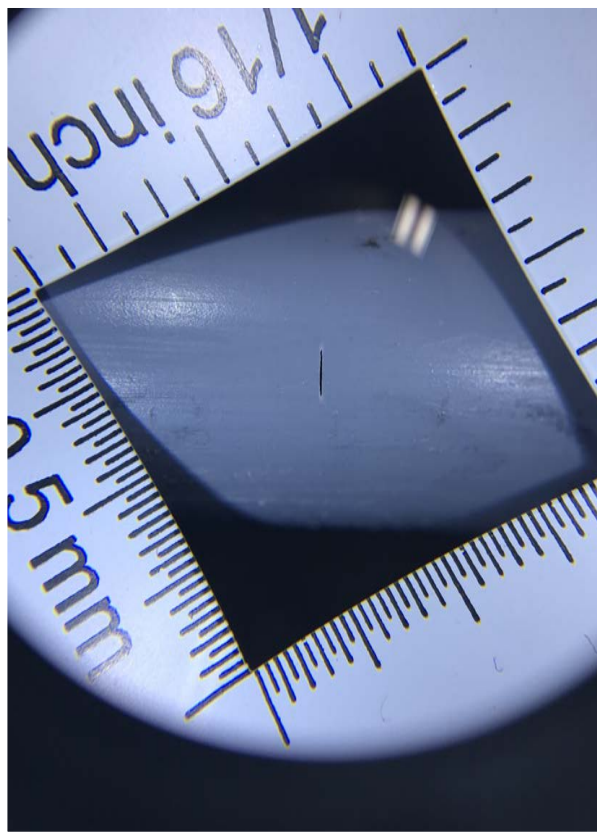
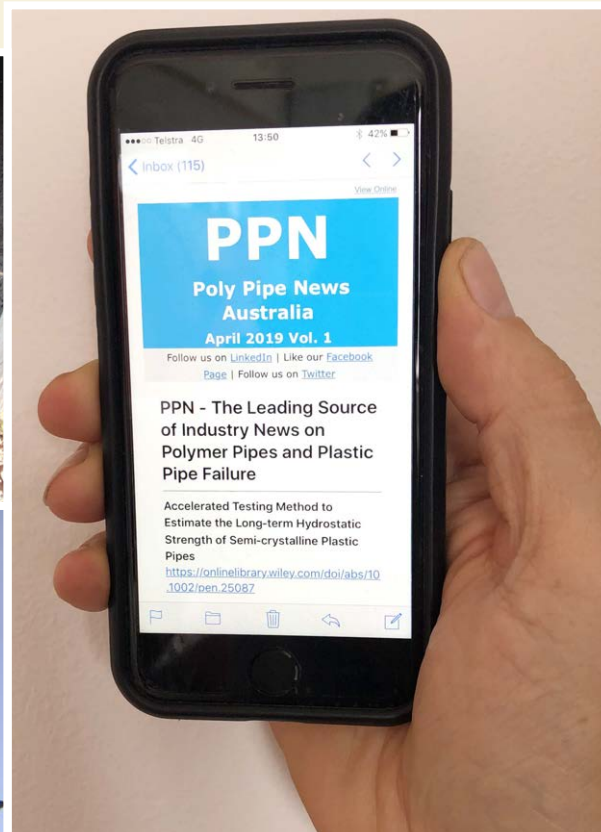


# Plastic Pipe Testing



**WE KNOW POLYMERS - WE KNOW TESTING**

ExcelPlas routinely performs testing of plastic pipes and fittings to various Standards which include Australian, European and International Standards.

The staff employed at the laboratory have a combined experience of more than 85 years within the plastics industry specifically with manufacturing, quality control and the research and development of plastic piping systems including HDPE, PEX, PP-R, PVC, U-PVC, M-PVC, O-PVC, ABS, GRP, GRE and PB.

Services provided by ExcelPlas include conformance testing, compliance testing, batch release testing, root cause analysis for field failures and non-destructive testing of samples.

ExcelPlas specialises in HDPE Pipe Condition Monitoring, Failure Analysis and Testing. In the event of a HDPE butt weld or electrofusion weld failing during initial testing, or in service, we can conduct investigations to assist in identifying the root cause of the failure. This service also extends to the premature failure of the pipe or fitting itself.

ExcelPlas is NATA accredited for butt weld tests, bend and tensile tests, peel decohesion tests on electro fusion sockets and failure mode determination.

### Pipe Testing

The manufacturers can ascertain the quality of their water and sewage pipe products by testing them according to product standards.

Excelplas performs a wide range of approval tests and factory production control tests of plastic pipes and fittings as required by specification, MQA and product norms.

Also ExcelPlas offers factory audits and inspection for manufacturing/production control inspection.

Our testing services include  
Pipe pressure tests (hydrostatic pressure testing)  
Impact tests at various temperatures  
Pipe dimension determination tests  
Temperature exposure and derating testing  
Material characterization and durability testing.

ExcelPlas provides testing, analysis and inspection services for compliance with standards and certification of plumbing products. The testing is performed in accordance with relevant Australian and international standards. Typical plumbing products that are tested are pipe fittings, couplers, pipes and drainage products. We have been accredited by NATA for specific tests related to plastic plumbing pipe.

- PE, PP-R, PEX and multilayer pipe
- Plumbing fittings (electrofusion sockets, saddles and elbows)
- Valves
- Floor drains



### Condition Monitoring of HDPE Pipes

ExcelPlas conducts Condition Monitoring of In-Service HDPE Pipes using Critical Point Ageing for Pipeline Integrity Management (PIM)

The 'critical ageing point' for different PE grades. This 'critical point' refers to the point where the change in material properties occurs.

This point can be measured by means of oxidative induction time (OIT) and carbonyl index (CI). A relationship between the measured CI and the ageing time has been developed which can assist industry to obtain a predictive understanding on the remaining life time of in service HDPE pipes.

Assessing the Integrity of In-service Polyethylene Pipes Using:

- Oxidative Induction Time (OIT),
- Carbonyl Index (CI) and
- Melt Flow Rate (MFR) in an Analytical Model

### Major Customers;

- |         |                      |
|---------|----------------------|
| -QGC    | -Origin Energy       |
| -Santos | -BHP Mining          |
| -Arrow  | -Heathcote Resources |



### Poly Pipe Failure

ExcelPlas has extensive experience investigating plastic pipe system failures, and can provide a root cause diagnosis.

Plastic pipe systems (extruded pipes and injection moulded fittings) are used in many service installations including potable water, water heating, sprinklers or compressed air and in underground applications such as sewerage and land drainage. With most pipe system installations consisting of kilometres of pipe and potentially thousands of fittings, failures over time are an unfortunate but common occurrence.

Our experience shows these typically originate from four key sources:

- Faults in the original pipe or joint components (manufacturing)
- Faulty installation / engineering (workmanship)
- Contamination effects, e.g. PVC pipe inclusions, solvent cement effects (environment); lack of fusion due to greases/silicones
- System operating outside of design criteria (end-user operation) e.g. excessive service pressure, elevated chlorine levels

The consequences of such failure can vary dramatically dependent on the final application and location – from small-scale failures in the home to potentially catastrophic industrial installation failures with significant associated damage and financial loss.

Supported by our extensive microscopy, analytical, material and product testing laboratories ExcelPlas Labs are able to fully characterise polymer composition and mechanical performance in order to assess the cause of product / material failure. This can involve recommendations for remedial or corrective actions to minimise the risk of further failure.

Our capabilities and experience investigating plastic pipe system failures provides valuable support to the service installation sector and large end users such as commercial building and hospitals.

#### Plumbing Pipes, Fittings and Components

ExcelPlas is a NATA accredited laboratory (Accreditation No. 17149) that conducts mechanical and analytical testing for piping, drainage water transfer and plumbing products. We provide independent and validated reports for both manufacturers and importers, across a range of plastic plumbing products to satisfy requirements of various national and global standards and for Watermark certification.

#### Products Tested:

- Plumbing pipes for cold, warm and hot water
- Electrofusion couplers
- Plumbing and Drainage fittings:
- Baths, Basins, Sinks, Showers.
- Taps & valves
- Controllers, Connections and other fittings.

#### Testing Performed on Plumbing Products & Pipes:

- Dimensional
- Endurance
- Flow Characteristics
- Impact
- Load
- Pressure
- Pressure Fatigue
- Strength/Torque
- Thermal Cycling

#### Relevant Testing Standards:

- AS 1260 PVC-U Pipes and Fittings for Drain, Waste and Vent Applications
- AS 1462 Methods of Testing for Plastics Pipes and Fittings
- AS 1477 PVC Pipes and Fittings for Pressure Applications
- AS 2492 Cross-linked Polyethylene (PE-X) Pipes for Pressure Applications
- AS 2642 Polybutylene (PB) Plumbing Pipe Systems for Hot and Cold Water Applications
- AS 2888 Methods of Testing Plastic Waste Fittings
- AS 3499 Water supply - Flexible hose assemblies
- AS 3707 Method for Testing Pressure Cycling Resistance of Pipes and Fittings
- AS 4129 Fittings for Polyethylene (PE) Pipes for Pressure Applications
- AS 4130 Polyethylene (PE) Pipes for Pressure Applications
- AS 4176 Multilayer Pipes for Pressure Applications - Multilayer Piping Systems for Hot and Cold Water Plumbing Applications - General
- EN 12117 Plastics Piping Systems - Fittings, Valves And Ancillaries Determination Of Gaseous Flow Rate/pressure Drop Relationships
- ISO 1167 Thermoplastics pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure – Part 1: General method
- ISO 3126 Plastics piping systems - Plastics components - Determination of dimensions
- ISO 3459 Plastic piping systems - Mechanical joints between fittings and pressure pipes - Test method for leak tightness under negative pressure

#### Testing of Multilayer Pipes:

- PERT-AI-PERT
- PEX-AL-PEX
- PERT-AI-PEX
- PERT-EVOH-PERT
- PEX-EVOH-PEX
- PERT-EVOH-PEX
- PERT-PA-PERT
- PEX-PA-PEX
- PERT-PA-PEX
- PERT-KYNAR ADV-PVDF
- PE100-KYNAR ADV-PVDF
- PE-ATL-ULF Silicone

**25+**

Years in Operation

**15+**

Qualified Staff

**500+**

Return Customers

**1000+**

Failure Analyses

**8000+**

Laboratory Jobs

ISO 3501 Plastics piping systems - Mechanical joints between fittings and pressure pipes - Test method for resistance to pull-out under constant longitudinal force

ISO 3503 Plastics piping systems - Mechanical joints between fittings and pressure pipes - Test method for leak tightness under internal pressure of assemblies subjected to bending.

ISO 6259-1 Thermoplastics pipes - Determination of tensile properties – Part 1: General test method

ISO 6259-2 Thermoplastics pipes - Determination of tensile properties - Part 2: Pipes made of unplasticised poly(vinyl chloride) (PVC-U), chlorinated poly (vinyl chloride), (PVC-C) and high impact poly(vinyl chloride) (PVC-HI)

ISO 10147 Pipes and fittings made of crosslinked polyethylene (PE-X) - Estimation of the degree of crosslinking by determination of the gel content.

ISO 13477 Thermoplastics pipes for the conveyance of fluids - Determination of resistance to rapid crack propagation (RCP) - Small-scale steady-state test (S4 test)

ISO 13479 Polyolefin pipes for the conveyance of fluids - Determination of resistance to crack propagation - Test method for slow crack growth on notched pipes

ISO 13953 Polyethylene (PE) pipes and fittings - Determination of the tensile strength and failure mode of test pieces from a butt-fused joint

ISO 13954 Plastics pipes and fittings - Peel decohesion test for polyethylene (PE) electrofusion assemblies of nominal outside diameter greater than or equal to 90mm.

ISO 13955 Plastics pipes and fittings - Crushing decohesion test for polyethylene (PE) electrofusion assemblies

ISO 13957 Plastics pipes and fittings - Polyethylene (PE) tapping tees - Test method for impact resistance

ISO 18553 Method for the assessment of the degree of pigment or carbon black dispersion in polyolefin pipes, fittings and compounds

ISO/TR 10837 Determination of the thermal stability of polyethylene (PE) for use in gas pipes and fittings

ISO 14531-1 Plastics pipes and fittings - Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels - Metric series – Specifications - Part 1: Pipes

ISO 2505 Thermoplastics pipes - Longitudinal reversion - Test method and parameters

#### Pipe Failure Root Cause Analysis

The impact of a failure and understanding the consequences of the failure on an installed system is essential for our clients. ExcelPlas assists clients by identifying and categorising pipe and plumbing failures in the shortest time frame possible with an assessment on any remaining installations.

The ExcelPlas team understand the different modes of pipe failure and is able to provide the most effective solution to minimise recurring failures.

Using our experience in combination with laboratory testing we are able to determine the root cause and hence to minimise and eliminate the failure mechanism(s) identified.

Our positive, open and client-focussed approach works to minimise future failures by providing the experience and knowledge in testing.

#### ExcelPlas – Pipes & Fittings Testing Laboratory

Accredited to ISO 17025 by the National Association of Testing Authorities (NATA) Australia, and is Australia's largest laboratory dedicated for the testing of plastic pipes and fittings to various Standards which include Australian, European and International Standards.

The staff employed at the laboratory have a combined experience of more than 85 years within the plastics industry specifically with manufacturing, quality control and the research and development of plastic piping systems including HDPE, PEX, PP-R, PVC, U-PVC, M-PVC, O-PVC, ABS, GRP, GRE and PB.

Services provided include conformance testing, compliance testing, batch release testing, root cause analysis for field failures and non-destructive testing of samples.

ExcelPlas Lab Specialising in HDPE Pipe Condition Monitoring, Failure Analysis and Testing In the event of a HDPE butt weld or electrofusion weld failing during initial testing, or in service, we can conduct investigations to assist in identifying the root cause of the failure. This service also extends to the premature failure of the pipe or fitting itself.

ExcelPlas Pipe Testing is a Leader in the Field of Polyethylene (PE) and High-Density Polyethylene (HDPE) Testing - ExcelPlas is accredited with the National Association of Testing Authorities (NATA) for butt weld tests, bend and tensile tests, peel decohesion tests on electro fusion sockets and failure mode determination.

ExcelPlas reaches and informs its extensive Poly Pipe customer base weekly using its proprietary Digital Marketing Platform PPN – Poly Pipe News.

**contact: [www.excelplas.com](http://www.excelplas.com)**



**WE KNOW POLYMERS - WE KNOW TESTING**