

Test possibilities materials



Problems in pipelines are often caused by the joints. In this area Kiwa Technology has built up vast experience over the years. For example, we have used our expertise in the area of plastic welding (of PE, PEX, PA, PP etc.) and other jointing techniques for years to support our consultancy regarding research and development projects.

We do this with different aims and for different market parties, such as energy companies, water companies, contractors, suppliers, manufacturers and insurance companies.

Chemical and Physical Analyses

- FTIR spectroscopy (with more than 200,000 reference spectra) and ATR, Diffusion reflection, Pyrolysis-FTIR
- Gas Chromatography
- Extraction and identification of additives
- Determination of resistance against hydrolysis of acetals (e.g. polyoxymethylene, POM), nylons, polyesters etc.
- Permeation of gases and moisture through pipe walls, components and fittings
- Differential Scanning Calometry (DSC)
- Thermic Stability (Oxidative Induction Time, OIT)
- Thermogravimetric analysis or thermo balance (TGA)
- Viscosity and porosity
- Melt Flow Rate (MFR)
- Density
- Corrosion analysis, for example:
 - Stress corrosion
 - Pitting corrosion
 - Galvanic corrosion

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- Erosion corrosion.

Mechanical Tests

- Tensile tests, also at elevated temperatures up to 150 °C and also on complete pipes and connectors made of plastic or metal (steel, cast iron, copper etc.)
- Constant-load tests (relaxation) and creep tests on pipe segments at elevated temperature to determine the residual lifetime of polymers
- Testing of the resistance against slow crack growth in polymers, such as polyethylene (PE) and polyamide (PA):
 - Strain Hardening test (SHT)
 - Cracked Round Bar Test (CRB)
 - Full Notch Creep Test (FNCT)
 - Pennsylvania Notch Test (PENT)
 - Constant Load (CL)
 - Notch test
 - Cone test
- Internal water pressure tests and burst pressure tests (up to 95 °C)
- Drop, impact, tensile impact and bending tests, for example on polyvinyl chloride (PVC)
- Stress corrosion tests
- Peel tests and Slow Peel Tests (SPT) on plastic electrofusion welds
- Tests on butt welds in plastic pipelines
- Integrity tests on district heating pipelines.

Microscopy

- (Stereo) light microscopy
- Scanning Electron Microscopy (REM) with EDX analysis (X-ray Micro-Analysis)
- Microstructure determination (also in the field with non-destructive replicas)
- Picture analysis
- Fracture surface research.