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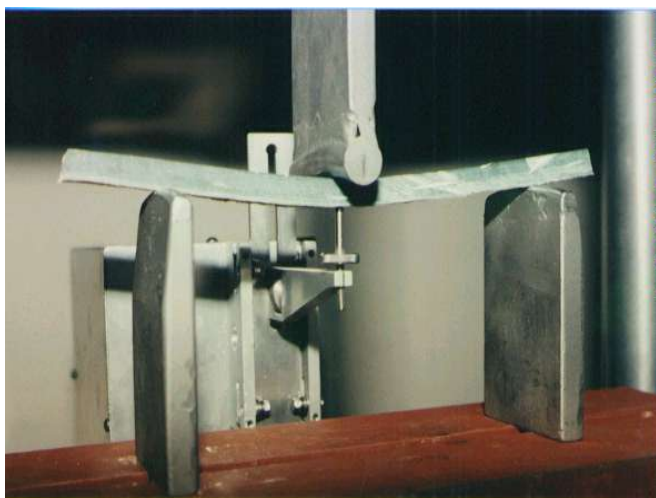
TRENCHLESS Technology

Sewer Repair Pipe Material Testing

It is important for owners of sewer infrastructure to verify the integrity of the materials being used to repair and upgrade sewer pipes, whether they are a CIPP epoxy resin impregnated woven material or a FFP polyethylene or PVC material. The materials must be tested to ensure that they meet both the chemical resistance and physical requirements for the environment. Recommended tests should include:

- Tensile strength.
- Flexural strength.
- Modulus of elasticity.
- Wall thickness of pipe.
- Chemical resistance to potable water, nitric acid, phosphoric acid, sulfuric acid, gasoline, vegetable oil, detergent, soap, bleach and other chemicals and cleaning materials.

Ideally the tests should be completed on material samples that are prepared under actual field conditions.



Levelton Consultants Ltd. has extensive experience in testing plastics, composites, metals, alloys and construction materials. The Physical and Mechanical testing laboratory is CSA certified and has extensive facilities including two universal testing machines to 530 kN capacity, a compressive testing machine to 1800 kN and a variety of related apparatus for stress-strain and load-displacement measurements. Facilities also include a comprehensive inventory of equipment for electrochemistry and corrosion studies. The equipment is calibrated annually and is certified as per the requirements of ASTM.

Our Analytical Chemistry laboratory is accredited by the Standards Council of Canada (SCC), in cooperation with the Canadian Association for Environmental Analytical Laboratories (CAEAL) for specific tests listed in the scope of accreditation approved by the SCC. Approved testing procedures include ASTM, CSA and other recognized organizations.

Our laboratories have conducted a wide variety of tests over the past 36 years on plastic and composite materials including sewer pipe rehabilitation materials such as Cured-In-Place Pipe (CIPP) and Folded-and-Formed Pipe (FFP). Tests on these materials are governed by the following ASTM material and installation standards.



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- D5813** - Cured-in-Place Thermosetting Resin Sewer Pipe
- F1216** - Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
- F1743** - Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
- F1867** - Installation of Folded/Formed Poly (Vinyl Chloride) (PVC) Pipe Type A for Existing Sewer and Conduit Rehabilitation
- F1871** - Folded/Formed Poly (Vinyl Chloride) Pipe Type A for Existing Sewer and Conduit Rehabilitation

ASTM tests conducted on the pipe can include the following:

- D543** - *Resistance of Plastics to Chemical Reagents*
- D638** - *Tensile Properties of Plastics*
- D790** - *Flexural Properties of Unreinforced and Reinforced Plastics*
- D2122** - *Determining Dimensions of Thermoplastic Pipe and Fittings*
- D2412** - *Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading*
- D2583** - *Indentation Hardness of Rigid Plastic by Means of a Barcol Impressor*
- D2990** - *Tensile, Compressive and Flexural Creep and Creep-Rupture of Plastics*
- D3039** - *Tensile Properties of Polymer Matrix Composite Materials*

As part of Levelton Consultants Ltd., our materials testing engineers and technologists can offer a comprehensive approach and integrate these services with other engineering and testing services offered by our Company. This could include concrete and grout quality assurance testing by our Construction Materials Division and shoring inspection by our Geotechnical engineers. Our unique multitalented, integrated services make us well qualified to provide many of the engineering and testing requirements for the Trenchless Technology industry.



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