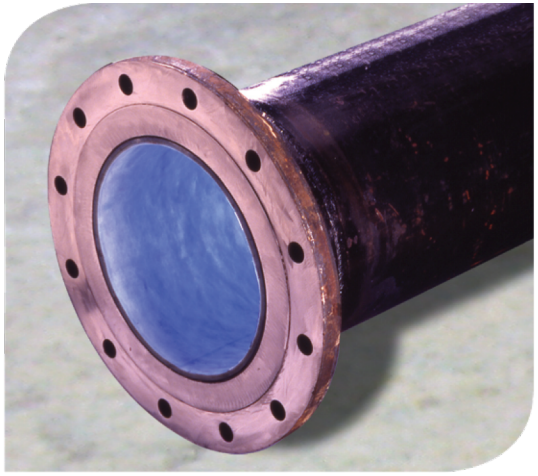
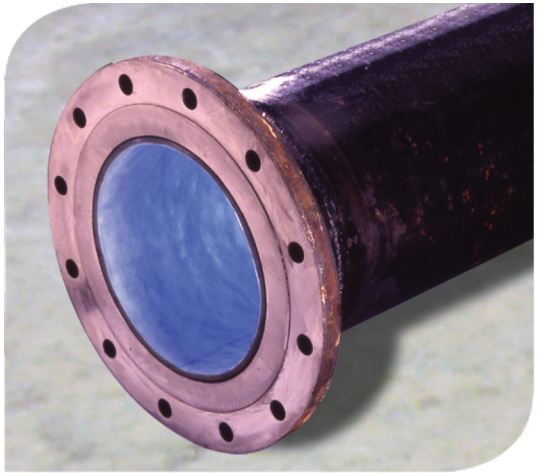
Global-*i*-Solution and Insituform cooperate for CIPP pressure and gravity pipe rehabilitation



Part one – Pressure pipe application

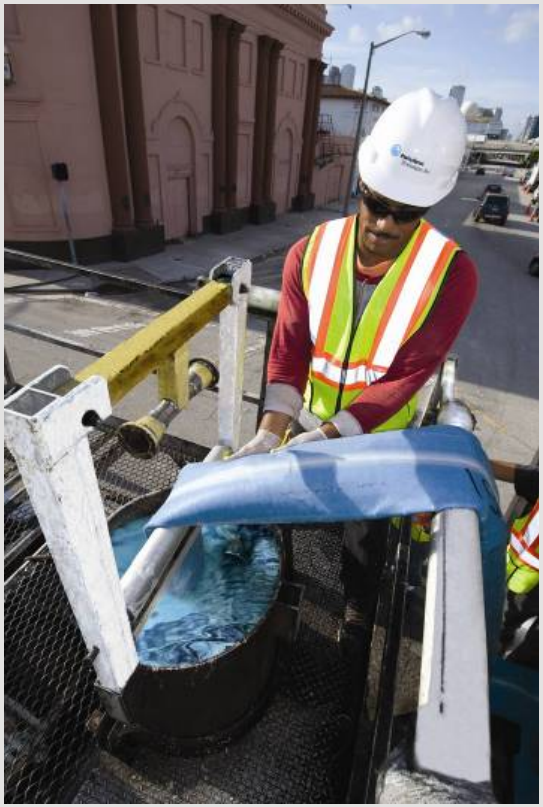


Cured-in-Place Pipe

- AWWA Class III or Class IV rating
- Can be a structural solution
- Corrosion-resistant
- Small jobsite footprint
- Typically reinforced with materials such as fiberglass

What is Cured-In-Place Pipe?

- Developed in 1971 by Insituform, cured-in-place pipe (CIPP) is a trenchless technology
  - Initially used in sewers
  - Modified properties made it suitable for the drinking water market
  - End product is a jointless, pipe-within-a-pipe that protects against spills, breaks and pipe leakage
- Over 40,000km of CIPP have been installed in the last 38 years by CIPP contractors



InsituMain™ Product Characteristics

- Designed as fully structural, independent of host pipe
- Jointless, continuous pipe lining
- Tight fit maximizes flow capacity
- Materials inhibit further corrosion or internal buildup
- Certified to ANSI/NSF Standard 61
- Manufactured and installed under ISO:9000 certified quality management system

InsituMain™ Technical Envelope

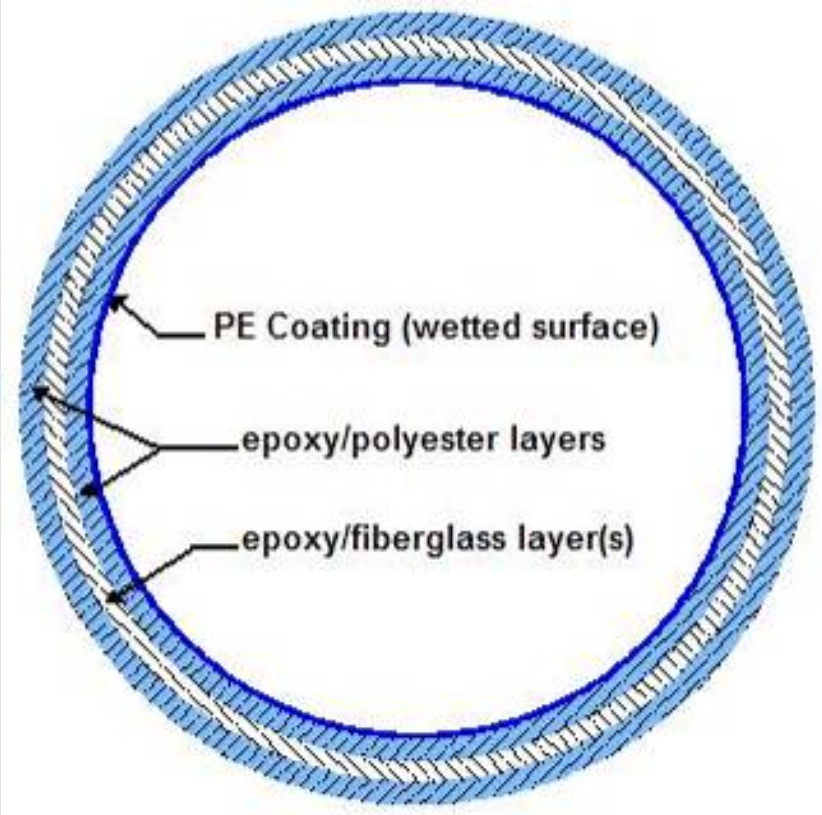
Diameter Range	150mm to 1200mm
Effluent Temperature	Up to 50° C
Internal Pressure Capability	10 bar
Bends	Up to 22.5°
Host Pipe Material	All Materials
Mechanical Properties	Exceeds ASTM F1216 and ASTM F1743

InsituMain™ Applications

- The system is suitable for the following applications:
  - Distribution and transmission mains
  - Cooling water lines
  - Fire water mains
  - Industrial pressure applications
  - Sewage force mains

InsituMain™ Composite Structure

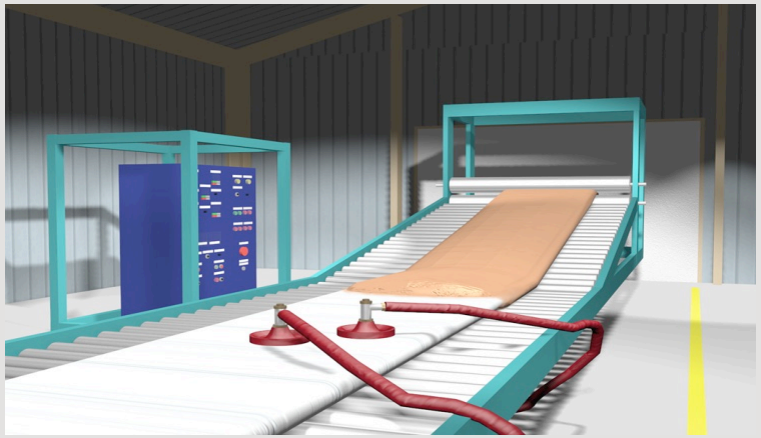
- Epoxy/fiberglass structure
  - Provides high tensile strength
  - Number of layers vary depending on diameter and internal pressure
- Epoxy/polyester felt structure
  - Provides for external load capacity
  - Layer thickness can be varied depending on loading conditions
- PE coating
  - Water contact surface
  - Coating also provides water barrier for installation processes



InsituMain™ Design

- Internal pressure standalone design of 10 bar
  - Hydrostatic burst tested up to 90 bar
  - Custom designs possible
- External loading design accounts for:
  - Soil
  - Groundwater loads
  - Traffic
  - Other live loads

InsituMain™ Manufacturing



- Custom manufactured glass reinforced tube
- Tube impregnated with epoxy resin – regional facility or near jobsite
- Typically transported to job site in refrigerated trucks

Installation Process – Bypass and Pipeline Access

- Bypass is set up pre-installation for potable water pipelines and for non-potable pipelines as needed
- Disinfection per AWWA/owner standards ensures continuous supply of safe drinking water
- Pits are dug to access lines

Pre-Installation – Cleaning

- Pipeline is cleaned using drag scrapers, high pressure water jetting, pigs or other similar equipment, as needed

InsituMain™ Installation

- InsituMain is installed utilizing the inversion or pull-in process
- Liner is formed under pressure utilizing hot water or air/steam
- Lengths of 152 meters to 230 meters typical
- Longer lengths possible depending on site conditions
- Hydrostatic pressure testing follows lining, as required
- ASTM F1216 or F1743

Restoring Service

- Lined pipe disinfected per AWWA/owner requirements prior to reconnecting to system
- Standard fittings (MJ, etc.) are installed to reconnect the lined pipe section with existing system

Potable Water Case Study

- Water main renewal
- 183 meters
- 200mm in diameter
- 80-year-old steel host pipe
- Depth of pipe: 3 meters deep
- Three installations

Non-Potable Case Study

- Sewage Treatment Plant
- 150mm in diameter
- Cement-mortar lined DIP
- Three pipes connecting two main clarifiers
- 6 bar operating pressure
- Deteriorating due to wear and abrasion

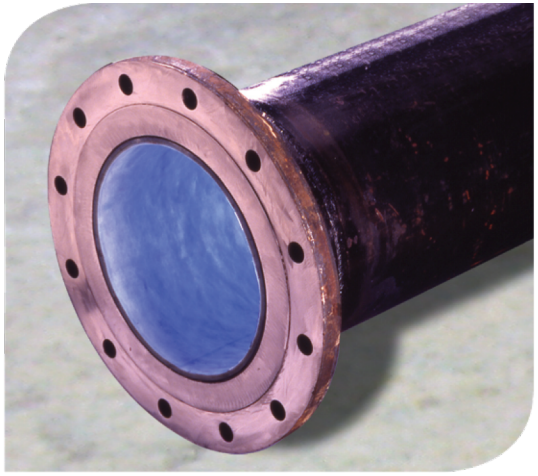
InsituMain™ Product Benefits

- Utilizes proven CIPP technology
- Provides a fully structural, independent pipe lining system
  - Handles both internal and external load requirements
- Small footprint and excavations minimize social costs
- Eliminates the need for specialized fittings

CIPP EngineeringSolutions

Insituform

Part two – gravity pipe application



Two systems available

Standard CIPP felt liner with water column inversion for larger dimensions > 1200 and longer length up to 350 m

IPlus® UV cured glass Liner for efficient and fast application for smaller and medium range diameter 150 – 1200

Technical Envelope

Applies for Insituform® CIPP and IPlus® as we in G*i*S apply it

Diameter Range	150mm to 1200mm
Effluent Temperature	Up to 50° C
Internal Pressure Capability	Only Gravity
Bends	Yes
Host Pipe Material	All Materials
Mechanical Properties	Exceeds ASTM F1216 and ASTM F1743

Information Envelope

We engineer for your needs any Cured-In-Place-Pipe solution for underground pipelines in sewer, water, industry and raw water.

Aegion/Insituform is our partner in manufacturing the Liner designed to your needs.

We provide full scale solutions for rehabilitation projects:

- Project planning, technical specification and Design
- Equipment and Material
- Installation support and training

Information Envelope

Insituform® cured-in-place pipe (CIPP) has been used for more than 45 years to protect a wide variety of structures and pipelines from corrosion, restore structural integrity, reduce infiltration, eliminate leaking joints, improve water quality and increase pipeline flow capacity*.

G*i*S hase chosen Insituform as our general partner for CIPP solutions, providing us access to the best product portfolio available on the market with the largest experience!

*Reference Insituform website: www.aegion.com/capabilities/cured-in-place-pipe

CIPP EngineeringSolutions

Insituform®

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