

IPLUS® COMPOSITE

More strength. More capacity. Better for the environment.



iPlus® Composite is a next-generation carbon or glass fiber-reinforced cured-in-place-pipe (CIPP) solution with greater strength and stiffness than traditional CIPP — making it ideal for rehabilitating medium- to large-diameter (24 inches to 96 inches) sanitary and storm sewers.

More strength. Reinforcing fibers are integrated into the pipe wall to create a uniform laminate structure with improved physical properties. The improved flexural properties make iPlus® Composite an excellent choice to reconstruct larger diameters or non-circular shapes, such as arch pipes or egg shape sewers.

More capacity. By combining innovative engineering technology with superior materials, iPlus® Composite is a fully structural pipeline rehabilitation product that is approximately two thirds the wall thickness of conventional CIPP offerings. Thinner iPlus® Composite walls increase the flow area, enhancing the pipe flow rate when compared to more conventional rehabilitation products.

Better for the environment. iPlus® Composite is a product that does more with less. Less resin is used during production, less energy is required to cure this product and less fuel is needed to transport this product to the jobsite. iPlus® Composite can be installed in less time than conventional CIPP, saving energy and reducing emissions released into the air from on-site equipment. All these factors are good for the environment and will help agencies meet mandates to reduce emissions and conserve energy.



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iPlus® Composite offers many other benefits:

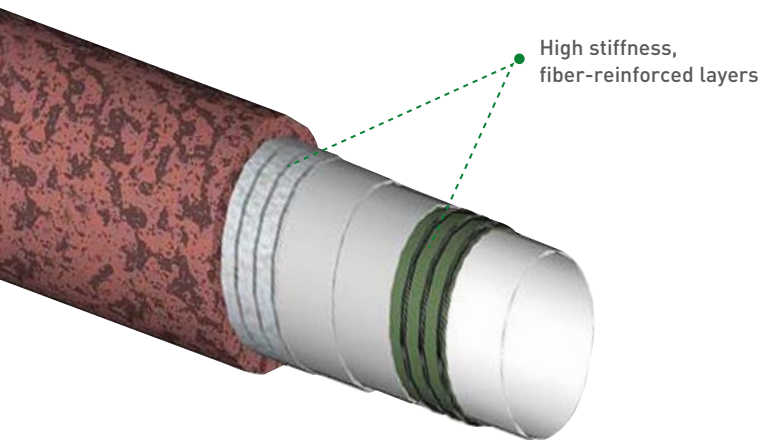
- Provides a seamless, jointless “pipe-within-a-pipe”
- Restores structural integrity
- Significantly reduces infiltration
- Stabilizes a wide range of pipe shapes
- Increases flow capacity compared to the host pipe and more conventional rehabilitation products

Material and Structure

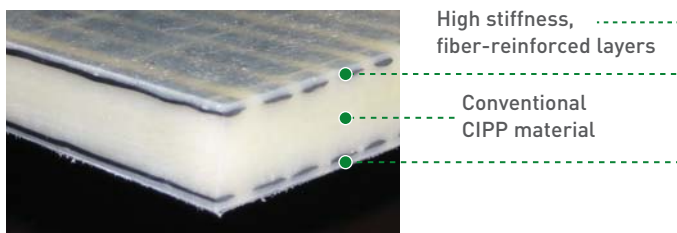
iPlus® Composite is reinforced with carbon fiber and/or fiberglass materials which provides excellent chemical resistance to constituents found in sewers and exceeds all of the trenchless industry corrosion requirements.

The iPlus® Composite laminate design method optimally locates the structural reinforcing materials (see picture below), reducing the pipe wall thickness by nearly half. As with other CIPP products, the applied pipe loads are calculated according to the trenchless technology industry’s accepted standards.

iPlus® Composite has a polypropylene coating on the inside pipe surface. This elastomeric flow surface increases the pipe’s smoothness, reduces the surface friction and provides an additional corrosion barrier for the pipe.



iPlus® Composite Sandwich Construction



Manufacturing

The iPlus® Composite tube is assembled in an Insituform ISO 9001:2008 certified manufacturing facility employing the manufacturing processes and equipment used to construct traditional Insituform® CIPP products. This ensures the tubes are made with the same attention to detail and high standards of quality our customers have come to expect from decades of conventional CIPP tube manufacturing.

The iPlus® Composite Technical Envelope*	
Diameter range	24 in. – 96 in.
pH range	0.5 – 10.5
Effluent temperature	up to 120° F
Pipe condition — fully deteriorated	Yes
Pipe condition — partially deteriorated	Yes
Bends	Yes
Offset joints	Yes
Maximum shot length	750 feet
Host pipe material	All materials

*Applications outside these ranges may be considered on a case-by-case basis.

The iPlus® Composite Design Example

Host pipe diameter	48 in.
Host pipe ovality	5%
External head of water above invert	17 ft.
Soil depth above invert	25 ft.
Soil modulus	1,000 psi
Soil density	120 lb/ft ³
Typical HWY live load	16,000 lbs
Safety factor	2
Design method	ASTM F1216

Traditional Insituform® CIPP vs. iPlus® Composite Illustration*

Design Values	Standard Insituform® CIPP	iPlus® Composite
Flexural modulus	400,000 psi	750,000 psi
Flexural strength	4,500 psi	4,500 psi
Wall thickness	28.5mm	19.5mm

*Actual values will vary depending on design and project specifications.



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