

# Trenchless Sewer Rehabilitation

USING THE CIPP METHOD



Trelleborg DrainLining – for all curing methods

# Trelleborg DrainLining

## What it's used for

Trelleborg Seals & Profiles is among the leading specialist companies offering innovative technologies for the maintenance of sewer systems



### The Method at a Glance

The Trelleborg DrainLining method is a trenchless sewer rehabilitation (“no-dig” application) that features a flexible, corrosion-proof tube (liner) made up of synthetic and/or fiberglass.

The liner is impregnated with reactive resin and then introduced – with the help of an inversion unit – into the host pipe through a manhole, access pit or inspection chamber. This process, which uses air or water pressure, inverts the liner so that the resin-impregnated side is forced against the pipe wall.

The resin-impregnated liner can then be cured with heat or at ambient temperatures. The cured fiber/resin compound now forms a tight and frictional fit with the host pipe wall. This cured-in-place pipe (CIPP) system is thus integrated with the host pipe and fully meets structural and hydraulic requirements.

A final CCTV inspection is then performed to review and document the result of the rehabilitation process. A final leakage test is performed according to the EN 1610 standard or to similar international standards.

### Trelleborg DrainLining – a customized solution

Trelleborg provides innovative solutions for almost any lining application, with the Trelleborg DrainLining system being perfectly suited to the rehabilitation of

- **Main pipes of sewerage systems**
- **House sewers**
- **Lateral connection pipes**
- **In-house pipes**

The perfectly matched components of the system guarantee optimal lining results.

### APPLICATIONS

The Trelleborg DrainLining method is suitable for use in circular-, egg-, or special-shaped pipes made out of common pipe materials such as concrete, cement, plastic (PVC, GRP, PP, HDPE), cast iron, reinforced concrete or vitrified clay.

### DAMAGE TYPES

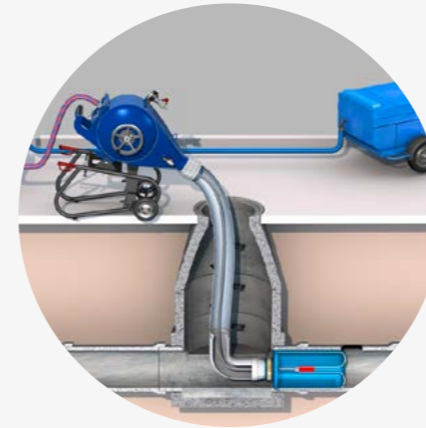
- *Leaks (with or without groundwater infiltration or exfiltration) in pipe walls, at pipe joints and lateral connections, etc.*
- *Offset pipes, ruptures, cracks, and pipe debris*
- *Closing of lateral connections which are no longer needed*
- *Mechanical wear*
- *Corrosion*

### Components at a Glance

- **LINER, PRELINER, CALIBRATION HOSES**
- **RESIN SYSTEMS**
- **INVERSION UNITS**  
for various applications
- **IMPREGNATION UNITS**
- **RESIN MIXING UNITS**
- **VACUUM SYSTEMS**
- **CURING UNITS**  
(Hot water, steam, light)

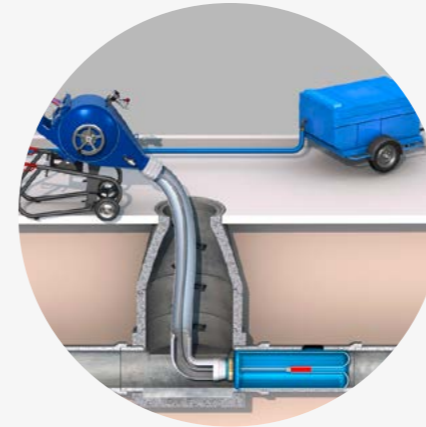


# Trelleborg DrainLining Functional principle



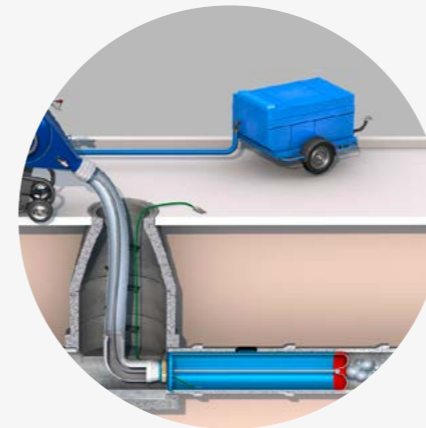
1

The Trelleborg DrainLining method uses a flexible tube (liner) made up of corrosion-proof synthetic and/or fiberglass and coated with flexible plastic on the outside. The fiber is then impregnated with reactive resin and the liner is introduced into the host pipe section through a manhole, access pit or inspection chamber with the help of an inversion unit.



2

During this process, which uses air or water pressure, the liner is inverted so that the resin-impregnated side is forced against the pipe wall. The plastic coating is now on the inside and helps keep the liner pressurized until the resin is cured.



3

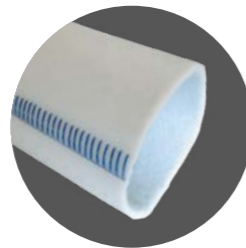
The resin-impregnated liner in the pipe section can be cured with hot water, steam, light or at ambient temperatures depending on the resin system and liner type used. After the fiber/resin compound is fully cured, the liner forms a tight and frictional fit with the host pipe wall. This cured-in-place pipe (CIPP) system is thus integrated with the host pipe and fully meets structural and hydraulic requirements.

# Trelleborg DrainLiner Various types

Trelleborg provides perfect liner solutions for the rehabilitation and repair of main lines, laterals, lateral connections, horizontal and vertical pipes with bends and in different diameters.

## Quality at the highest level

Since 2012, Trelleborg has been manufacturing the carrier materials (liners) for trenchless rehabilitation solutions under state-of-the-art production standards. Trelleborg's products and quality management processes have attained ISO 9001 and ISO 14001 certifications as well as undergone tests by/received certification from international organisations such as ASTM International, EUROFIN and the DIBt (the German Centre of Competence for Construction). These independent tests and certifications prove that our quality promises are kept.



## Trelleborg ProLiner

Precise and robust: Perfect for standard installations in laterals and house connection lines

The Trelleborg ProLiner is recommended for standard installations with bends up to 45°. It is excellently suited for steam curing methods. Its outstanding impregnation behavior ensures easy handling and trouble-free installation with high-quality results.

- DN 100 – DN 600 (4 – 24 inch)
- Longitudinal fiber reinforcement for precise installation
- Appropriate for ambient, hot water and steam cure

For detailed information please refer to the product data sheet.



## Trelleborg UltraFlex Liner

Perfect for the renovation of laterals and pipes within building structures



The innovative UltraFlex liner is of practically universal use for vertical or horizontal pipes, even with bends up to 90° and up to 2 nominal diameter changes. It reliably achieves a minimum wall thickness of 3 mm. Its longitudinal expansion can be calculated very well in advance.

- DN 70 – DN 250 (2¾ – 10 inch)
- Appropriate for ambient, hot water and steam cure

For detailed information please refer to the product data sheet.



## Trelleborg MultiFlex Liner

Unbeatable for the renovation of vertical and horizontal building pipes



Perfectly suited for vertical and horizontal pipes in buildings with very small diameters. Its extremely flexible coating overcomes even multiple bends up to 90° and dimensional changes (transitions).

- DN 30 – DN 250 (1¼ – 10 inch)
- Excellently suited for both ambient and light cure
- Hot water and steam cure possible if combined with a Calibration hose

For detailed information please refer to the product data sheet.





# Trelleborg Resin Systems for ambient and hot cure

Trelleborg supplies a wide range of hot-cure and ambient-cure epoxy and silicate resins for pipe rehabilitation. All have been tested by independent inspection bodies to meet **ASTM, WIS, DIN EN** and other international standards.

They

- are specifically designed to work with Trelleborg DrainLiners to guarantee successful installations
- are environmentally friendly and easy to use due to their ample pot time and short cure time
- are able to cure in the presence of water
- withstand high temperatures without distortion, and are resistant to chemicals ranging in pH value from 1 to 12
- are approved by the German DIBt (Deutsches Institut für Bautechnik – German Institute for Construction Engineering)



## Trelleborg Resin for Light Cure

The new „Trelleborg LightCure Resin“ – a hybrid resin suitable for the most UV-LED-cure devices:

- reactive one-component resin for light curing in the wavelength range of 400 nm  $\pm$ 10
- excellent impregnation behaviour
- optimized for faster and complete curing
- completely set surface (no oxygen inhibition)
- practically no shrinkage
- excellent mechanical properties
- matches with Trelleborg MultiFlex Liner and Trelleborg UltraFlex Liner



# More Information

Use our **Trelleborg SiteGuide App**, including resin calculator and many helpful downloads for your construction site!



## DIBt APPROVALS

No. Z-42.3-468 for buried pipes  
Trelleborg DrainLiner Method DN 100 – DN 600  
with Trelleborg Epoxy Resin HC120  
with Trelleborg Epoxy Resin FC30

No. Z-42.3-488 for building pipes  
Trelleborg DrainLiner Method DN 50 – DN 200  
with Trelleborg Epoxy Resin HC120

**FOR MORE INFORMATION VISIT OUR WEBSITE**



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