

# Max Pull-in-Place Bladder

PATENT PENDING

## I Dual-Function TPU Bladder — Inflates & Pulls In A Single Device

### DESCRIPTION

An engineered Pull-in-Place bladder that combines the functions of a pull string and an inflation membrane in a single device, eliminating the need for the separate pull string used in conventional Pull-in-Place systems.

The CalTube Bladder is manufactured from thermoplastic polyurethane (TPU) flat film, assembled as a tube with an overlap seam. This double-layer seam is significantly stiffer than the single-layer film, providing the axial stiffness required to position the liner precisely under normal pull loads.

At the same time, the flexible single-layer film provides the hoop expansion needed for inflation. At operating pressures of 5–20 psi, expansion ranges from up to 25% for a 2" bladder to up to 75% for a 8" bladder.

During installation, the bladder serves as both the pulling element and the inflation membrane. After the resin cures, it is deflated and withdrawn.

### DIAMETER RANGE

2" through 8" nominal host pipe (larger diameters available on request)

### AVAILABLE MANUFACTURER LENGTHS

- 50 ft. (+/-) — short-run lateral and in-building applications
- 100 ft. (+/-) — standard stock length for main-line Pull-in-Place shots
- Custom / longer lengths available on request

### APPLICATIONS

- Pull-in-Place CIPP point repairs and full-length lateral rehab
- In-building drain, waste, and vent (DWV) rehabilitation with Max Pull-in-Place Liner, 2mm
- Underground lateral and small-diameter main rehab with Max Pull-in-Place Liner, 2mm and 4.5mm
- Ambient, hot-water, or steam cure of impregnated liner under bladder pressure
- Translucent construction enables visual confirmation of liner placement and cure progression

### RECOMMENDED CURING METHOD

Ambient, hot-water, or steam cure of the liner resin. Maximum sustained bladder service temperature 176°F | 80°C. Consult the liner-resin TDS for cure schedule.

### RESIN COMPATIBILITY

Compatible with Max Pull-in-Place Liner systems and standard epoxy, polyester, and vinyl ester Pull-in-Place resins. A PE separation tube prevents resin-to-bladder bonding.

### INSTALLATION

Pull-in-Place: the impregnated liner and separation tube are pulled into the host pipe using the CalTube Bladder as the pull member, then inflated to 5–20 psi to conform the liner to the pipe wall. Use of liquid lubricant is recommended for the bladder.



TO COME

### USAGE

Single-use only. Inspect for cuts, abrasion, or seam disbondment before every installation. Discard bladders that show any seam or other damage.

### COATING

Thermoplastic Polyurethane (TPU) film, 500-µm nominal thickness.

### CARRYING MATERIAL

Unsupported TPU film (no carrier fabric); bonded double-layer overlap seam provides longitudinal stiffness

### SEAM

Heat-bonded overlap seam (typical 1" wide); ultrasonic welding or adhesive bonding acceptable alternates

### COLOR

Clear / translucent (allows visual confirmation of liner position and cure)

### STORAGE / HANDLING

Store rolls flat or on end in original packaging, away from direct sunlight and heat sources. Protect the seam and film surfaces from puncture and abrasion. Recommended

storage temperature: 40°–95°F | 4°–35°C. Shelf life at recommended temperature: in excess of 1 year in unopened original packaging. Do not stack heavy loads on packaged bladders. Rotate stock first-in / first-out; verify seam integrity and film condition before deploying any bladder that has exceeded its recommended shelf life.

#### AVOID EXTREMES OF HUMIDITY

Recommended storage humidity: 25% rh – 65% RH. Shelf life at 65% RH, 95°F: 1 year.

#### AVOID PROLONGED WET STORAGE

Prolonged wet or submerged storage is not recommended. Do not store bladders in contact with standing water, wet resin, cleaning solvents, or aggressive-pH liquids. Return unused inventory to dry, ventilated storage after any field exposure.

#### INSTALLATION

Installation Air Pressure — typical working range 5 to 20 psi | 0.34 to 1.38 bar. Inflation produces 25–75% hoop expansion depending on diameter while the bonded seam limits longitudinal stretch to under 10% at 50–100 lbf. Do not exceed the maximum recommended pressure for the host pipe diameter.

*Maximum recommended installation pressures by host pipe diameter (CalTube Bladder with MaxLiner Pull-in-Place Liner).*

| PIPE DIAMETER (INCHES)          | 2  | 3  | 4  | 5  | 6  | 8 |
|---------------------------------|----|----|----|----|----|---|
| MAX. RECOMMENDED PRESSURE (PSI) | 20 | 17 | 14 | 12 | 10 | 7 |

#### AVOID DIRECT SUNLIGHT OR INCIDENT UV RADIATION

TPU film is susceptible to polymer degradation (chain scission) and embrittlement under prolonged UV exposure. Store bladders in original opaque packaging, away from direct sunlight. Discard any bladder showing extended outdoor exposure or discoloration. Note: discoloration is not by itself sign of material bladder property loss.

#### MECHANICAL DAMAGE SHOULD BE AVOIDED

- Do not place the bladder on grit, gravel, or debris. Sweep and cover the work-area floor first.
- Do not walk on, drive over, or place tools on the deployed bladder.
- Avoid dragging the bladder across concrete, brick, cast iron, or other abrasive surfaces.
- Keep the bladder away from sharp edges, taps, and snags. Ensure feed rollers and guide sleeves are clean and free of burrs.
- Always use a polyethylene separation tube between the resin-impregnated liner and the bladder.

#### CHEMICAL ATTACK

Avoid prolonged contact with solvents (acetone, MEK, THF, chlorinated solvents, and especially ethanol) and uncured resin systems. TPU is chemically compatible with fully cured MaxLiner Pull-in-Place resin systems.

#### CERTIFICATIONS / STANDARDS (OPTIONAL)

Manufactured for use in Pull-in-Place CIPP installations per ASTM F1743, F1216 and F2019 as applicable.

#### SAFETY

Always use Personal Protective Equipment (PPE) when using this product. Do not ingest. Always read the container label warning and Safety Data Sheets (SDS) prior to use. If you do not understand or cannot adhere to the guidelines and procedures for handling and use of these products in strict accordance with the SDS, do not use these products. SDS can be downloaded from the MaxLiner Mobile App or website.

#### DISPOSAL

Disposal must conform to local and state regulations.

It is important to note that the MaxPox Resin System is specifically designed for CIPP applications and has not been modified from another industry resin in attempt to fit the complex environmental, design and performance needs required in underground rehabilitation industry.

#### TECHNICAL SUPPORT

Call technical support with additional questions at (877) 426-5948.

#### DISCLAIMER

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