

## PROPER WET-OUT OF SMALL DIAMETER CIPP

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There was a time in pipeline rehabilitation when most cured-in-place pipe (CIPP) liners were wet-out at a facility and delivered to the contractor on-site. These wet-out facilities were responsible for ensuring that impregnation standards were met. But as smaller diameter lateral and in-house lining has grown in popularity, most contractors and installers are wetting out in the field, and the responsibility to control quality and adhere to the appropriate standards falls squarely on their shoulders.

By its nature, lateral and in-building pipe rehabilitation makes buying thousands of feet of wet-out tube impractical. Unlike manhole-to-manhole main lines, where having thousands of feet of the same size liner at the ready in a refrigerated truck adds value and efficiency, small diameter installers must have the versatility to impregnate liners of different lengths, diameters, and thicknesses on jobsites. This fact places the obligation to make sure wet-out is performed properly on the technicians in the field, adding to their other job tasks. But with proper training and system support, understanding why and how to wet-out correctly does not need to be a burden and can easily be implemented into the workflow.

Why the fabric tube needs to be wet-out in a certain manner is straightforward: Because the final quality of the CIPP is dependent upon proper wet-out. To achieve this, installers should be conducting wet-out with a calibrated gap thickness under vacuum or other approved method. Both ASTM F1216 and ASTM F1743 mention design thickness. This thickness is determined as described in the contract specifications, and the impregnation process should ensure that, with proper installation and cure procedures, the thickness of the finished CIPP meets or exceeds the requirement.

The technical training and support offered by CIPP manufacturers and distributors is critical in teaching installation crews how to follow wet-out standards. A proper process must include the appropriate use of the wet-out equipment. Ideally, trainers will demonstrate to the trainees how to use the equipment in a controlled manner, while also focusing on establishing the standards.

When wet-out rollers are used, gap thickness is determined by the design thickness of the CIPP. Technicians should also be taught that the roller is designed to calibrate and distribute the resin evenly, not to drag or feed the liner through the equipment.



Calibrated, wet-out liner

Correctly wetting out a liner in the field has been made easier in recent years by the advancement of the equipment available. For example, newer model calibration rollers are extremely mobile and available with variable speed control and adjustable thickness settings down to a tenth of a millimeter. This gives the roller a versatility that appeals to installers and allows them to control quality easily. Likewise, vacuum pumps and units are trending towards smaller, more mobile construction.



Wet-out liner before resin distribution and calibration

By receiving good training and support, and using the proper equipment and methods, contractors are able to adopt wet-out processes that meet standards and lead to more successful installations.

### PRO TRICK

One piece of feedback most small diameter lining manufacturers and system providers get from contractors is the need to solve the issue of removing the excess resin from the liner after wetting-out without making a mess. Resin consumption is calculated at a rate that will allow for a small slug to remain for efficient impregnation of the last few feet of felt. Removing this last portion of resin without getting it on the ground or the rollers can be tricky.

One method used by a number of installers repurposes old calibration tube or other hose to use as a containment sleeve. Simply cut a piece of used calibration tube or hose about three to four feet long that is one diameter size up from your liner, slide the end of the liner inside the sleeve about a foot, and pass both the liner and the sleeve through your calibration tube until all of the extra resin is in the containment tube. This will keep that extra resin from creating a mess on your equipment and work area.

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