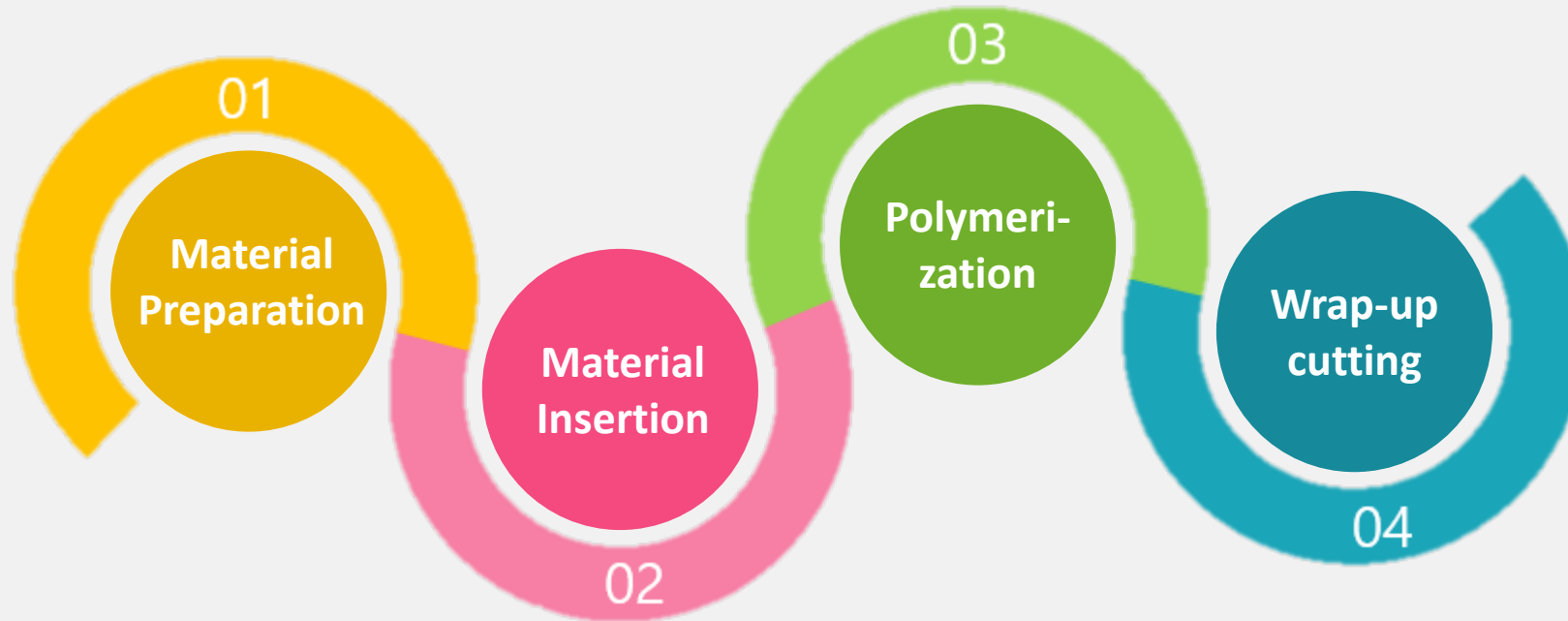


WHAT are Cured-In-Place-Pipes (CIPPs) ?

- ❑ The process chemically manufactures a new plastic pipe inside an existing damaged pipe
- ❑ Advantages: Do not dig up existing pipe, little to no traffic shutdowns, can be less expensive than other repair alternatives
- ❑ Raw chemicals and materials are brought onsite to manufacture the plastic outdoors



HOW is a CIPP created onsite?



Step 1. Prepare Materials

- Uncured resin
- Initiators, felt, plastic films and coatings, filters, and reinforcements

* Styrene-based resins, such as polyester and vinyl ester, are the most popular

Step 2. Material Insertion

- Flexible tube containing raw chemicals is inserted into the damaged culvert.

Step 3. Polymerization

- Thermal (hot water, steam) or photo (UV light) curing

* Steam method is the most popular U.S.

Step 4. Physically cuts

- The ends of the hardened plastic are mechanically removed
- The new CIPP pipe is placed into service

Multiple types and methods for CIPP manufacturing

Resin Types

Polyester
(est. most popular)

Vinyl ester
(est. > cost of polyester)

Epoxy
(est. >> cost of polyester)

People also say "Styrene resin" vs. "Non-styrene based" resin

Resin + Solvents + Fillers + Catalysts + Initiators are added to create an uncured resin tube

Method to insert uncured resin tubes

Air inversion

Water inversion

Pull in place

Sometimes resin may leave the tube and flow into cracks and sewer laterals. May not cure. Tubes sometimes have a plastic coating. Plastic "preliners" sometimes used.

Method to polymerize resin

Thermal – Steam injection
(most popular)

Thermal – Hot water recirculation

UV – Light exposure
(est. most growth)

Cooldown method

Forced hot air

Forced ambient air

Recirculated water

WHAT CIPP manufacture looks like?

