MASTER® BUILDERS SOLUTIONS

Sealing of Annular Space Around Pipes or Conduits

For Spaces Approximately 1/16” (1.6 mm) or Less

Purpose

This guide outlines the standard method for sealing the annular spaces around leaking concrete pipes, metal pipes, or electrical conduits using polyurethane grout injection. The goal is to ensure effective sealing and long-term durability while maintaining a safe and controlled work environment.

Required Materials & Equipment

Pumps & Hoses

- Grout Pump: Airless sprayer pump (e.g., Graco 390 Ultra)
- Water Pump: Use a separate pump. **Do not use the grout pump for water.**
- Grout Hose: Hose suitable for high-pressure grout injection.

Injection Accessories

- Injector ball valve
- Drive-In Ports: 1/2" or 3/8" plastic ports (e.g., MasterRoc® EQ 538 PK).
- Mechanical packers: 1/2" or 5/8" (e.g., MasterRoc EQ 512 PK and MasterRoc EQ 558 PK)

Chemicals

- Polyurethane Resin and Accelerator:
  - MasterRoc® MP 355 1K (with MasterRoc MP 355 1K Accelerator)
  - MasterRoc MP 355 1K DW (with MasterRoc MP 355 1K Accelerator)
  - MasterRoc MP 351 LV (with MasterRoc MP 351 LV Accelerator)
  - Non-Flammable Cleaning Agent: MasterRoc MP 231CLN.

Miscellaneous

- Three 5-gallon clean buckets with lids:
  - Bucket A: Cleaning agent
  - Bucket B: Grout resin
  - Bucket C: Waste collection

Preparation

1. **Safety Briefing:** Conduct a pre-job meeting to review safety protocols and environmental precautions.
2. **Pre-Drilling Assessment:** Measure 3 – 4 inches (7 – 10 cm) away from the pipe and mark the drilling positions around the pipe at:
   - 12:00
   - 3:00
   - 6:00
   - 9:00 o'clock

Drilling and Port Installation

1. Drill 1/2" or 3/8" holes (depending on the size of the port) at a 45° angle, targeting the annular space.
2. Be careful not to damage the pipe during drilling.
3. Flush all holes thoroughly with clean water to remove debris.
4. Install drive-in ports starting with the 6:00 o'clock position

Grouting Procedure

1. Water Pre-Flush:
   - Pump clean water into the 6:00 o'clock port to moisten and prepare the injection path.
2. Grout Preparation:
   - Pour 1 gallon of grout resin into Bucket B.
   - Measure the appropriate amount of accelerator (refer to TDS).
   - Add the accelerator to the resin and mix thoroughly using a drill paddle mixer.
   - Insert the purged suction hose from the pump into Bucket B.
   - **Important: Do not** allow the pump to draw air, and **do not** pour used grout back into the original container.
3. Injection Sequence:
   - Start at the 6:00 o'clock port.
   - Pump grout until it begins to exit from adjacent, higher-positioned holes.
   - Stop, disconnect, and install packers at the next positions: 3:00 and 9:00, then 12:00 last.
   - Allow grout to migrate and fill the voids. Let it set if overflow occurs.
4. Finishing:
   - Once the grout is cured, remove excess grout using a scraper or wire brush.
   - Clean up the surrounding concrete using a solvent if necessary.

Pump Loading & Cleaning Procedure

Before Grouting

1. Pour 2 gallons of MasterRoc MP 231CLN into Bucket A.
2. Pump the cleaning agent through the gun back into Bucket A to fully purge the system.
3. Switch to Bucket B (unaccelerated resin) and pump into Bucket C until resin flows from the injector gun.

After Grouting

1. Return to Bucket A and pump the cleaning agent into Bucket C until the system is fully purged.
2. Continue pumping until all cleaning agent is expelled.
3. Always keep lids sealed on all buckets when not in use.

Safety and Best Practices

Personal Protective Equipment (PPE)

- Safety goggles and chemical-resistant gloves
- Long-sleeved protective clothing
- Respiratory protection if working in enclosed or poorly ventilated areas

Operational Safety

- Always conduct a pre-job safety talk.
- Ensure clear communication among team members during injection.
- Never mix water and grout within the same pump system.
- Handle all chemicals according to their Safety Data Sheets (SDS).

Equipment Handling

- Label all buckets clearly to avoid cross-contamination.
- Do not reuse any chemical that has been pumped back.
- Store chemicals in a cool, dry, and well-ventilated location.

Additional Notes

- Grout naturally flows upward during injection—plan accordingly.
- Avoid grout overuse; stop pumping as soon as you observe extrusion from upper ports.
- Use only approved polyurethane resins compatible with the site conditions.
- Maintain a clean and organized worksite at all times to prevent accidents or contamination.

About Master Builders Solutions

Master Builders Solutions is a leading global manufacturer of concrete admixtures, as well as other sustainable solutions for the construction industry, focussed on delivering its vision: **Inspiring people to build better.** Master Builders Solutions provides value-added technology and market-leading R&D capabilities to improve the performance of construction materials and to enable the reduction of CO2 emissions in the production of concrete. Founded in 1909, Master Builders Solutions has ca. 1600 employees operating 35 production sites globally, supporting their customers in mastering their building challenges of today – for a decarbonised future.

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