MASTER® BUILDERS SOLUTIONS

Instructional Guideline:

Crack and Joint Injection Using Chemical Grout

Overview

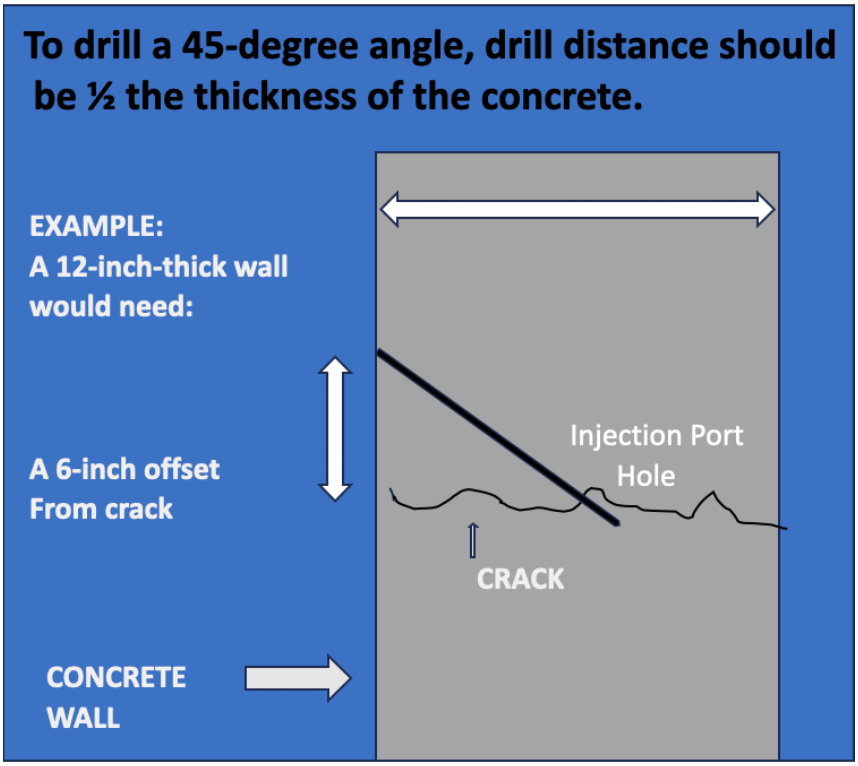
Chemical grouting is a widely used method for sealing leaking cracks and joints in concrete structures. This technique can be applied in both wet and dry conditions to prevent water ingress or egress, restore structural integrity, and fill voids.

1. Surface Preparation and Crack Assessment

- **Cleaning:** Remove surface debris, coatings, and mineral deposits using a wire brush, grinder with a wire cup wheel, pressure washer, or other mechanical means. If contamination is severe, chemical cleaners may be used, but they must be fully flushed or neutralized before proceeding.
- **Initial Sealing:** For wide cracks, apply Oakum or hydraulic cement to minimize grout loss. For high-flow leaks, insert Oakum soaked in chemical grout using a screwdriver or similar tool to reduce leak volume before injection.

2. Injection Port Installation

- **Port Spacing:** Spacing depends on crack width and concrete thickness. As a general rule, space ports at a distance equal to the concrete thickness. For example, use 3-4 inch spacing for tight cracks and up to 24 inches for wide cracks. Stagger ports from side to side when possible.
- **Drilling Port Holes:**
  - Drill at a 45-degree angle and at one-half the thickness of the concrete to intersect the crack or the joint at its midpoint.
  - For example, for 12-inch-thick concrete, drill the port holes 6 inches from the crack.
  - Common drill bit sizes: 3/8, ½, or 5/8 inch.
  - Flush holes with clean water to remove dust and debris.



- **Port or Packer Installation:**
  - Insert mechanical packers until the rubber sleeve is just below the surface.
  - Tighten with a wrench or ratchet until firm. Do not overtighten.
  - Avoid striking packers on grease coupler/zerk fittings.

3. Equipment and Setup

- **Pump Configuration:**
  - Use two pumps when applying water-reactive chemical grouts, one for clean water and one for the grout.
  - Make sure no water is introduced into the grout pump.
  - Flush the grout pump with MasterRoc® MP 231 CLN or another approved cleaner before and after extended pauses to eliminate any moisture in the pump.
- **Pressure Management:**
  - Equip hoses with high-pressure ball valves for on/off control.
  - Adjust pressure settings as needed; begin low and increase only as required.
  - A minimum of 250 psi is required to open mechanical packer valves. Avoid excessive pressure that could crack or spall concrete.

4. Pre-Injection Crack Flushing

- Begin by injecting clean water to confirm the port holes intersect the crack and to remove any debris.
- For vertical cracks: start from the lowest port and inject upwards.
- For horizontal cracks: start at one end and proceed sequentially.
- Continue flushing until clear water emerges from the crack.

5. Chemical Grout Injection

- Prepare chemical grout per manufacturer's instructions, including accelerator addition if specified.
- Follow the same injection sequence used for water:
  - Vertical: bottom to top.
  - Horizontal: end to end.
- Use the minimum pressure necessary for effective grout delivery.
- Monitor travel of grout between ports and ensure complete coverage.

6. Post-Injection Procedure

- Allow grout to fully cure as specified by the manufacturer.
- Inspect all ports and the crack for successful sealing.
- Remove mechanical packers and patch injection holes as needed.

Safety and Best Practices

- Always wear appropriate PPE (gloves, eye protection, etc.).
- Dispose of chemical materials per regulatory requirements.
- Keep work area ventilated during injection operations.

Notes

- Always perform a site-specific evaluation to tailor procedures to structural conditions.
- Consult technical data sheets and SDS for each product used.

For further guidance or assistance, contact your local Master Builders Solutions technical representative.

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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