

# QE-1 and QE-2 Epoxy Adhesives Installation Instructions

## 1 Installation

### 1.1 *Materials*

- 1.1.1 Adhesive: QE-1 and QE-2 are injectable, hybrid adhesives available in 20-ounce (585 ml) cartridges. Two components are kept separate in a labelled dual-chambered cartridge. The two components combine and react when dispensed through the static nozzle supplied by QuickTie.
- 1.1.2 Each cartridge label is marked with an adhesive expiration date. The shelf life applies to an unopened cartridge stored in a dark, dry and cool environment.

### 1.2 *Hole Cleaning Equipment and Accessories:*

- 1.2.1 Hole cleaning equipment comprised of air nozzles, steel wire brushes supplied by QuickTie.
- 1.2.2 Dispensing Tools: Adhesives must be dispensed with pneumatic or manual dispensing tools that are provided by QuickTie.
- 1.2.3 Standard Threaded Steel Rods: Rods must be clean, all-thread rods. Carbon steel threaded rods are furnished with a 0.0002" (0.005 mm) thick zinc electroplated coating.
- 1.2.4 Steel Reinforcing Bars: Deformed reinforcing bars must be straight and free of mill scale, rust, mud, oil and other coatings that may impair the bond with the adhesive.
- 1.2.5 Ductility: In order for a steel element to be considered ductile, the tested elongation must be at least fourteen percent (14%) and reduction of area must be at least thirty percent (30%). Failure to meet these percentages will be considered as brittle.
- 1.2.6 Concrete: The specified compressive strength of the concrete must be from 2,500 psi to 8,500 psi (17.2 MPa to 58.6 MPa).

### 1.3 *General Installation*

- 1.3.1 Installation of the QuickTie QE-1 and QE-2 Adhesive must conform to the manufacturer's printed installation instructions, or MPII, which are included on each adhesive unit package.
  - 1.3.1.1 See Appendix A for Manufacturer Installation Instructions
- 1.3.2 The adhesive anchoring system may be used for upwardly overhead, or upwardly inclined, orientation applications. Upwardly inclined, horizontal and drill depths that are deeper than 6" (150 mm) are to be installed using injection plugs in accordance with the manufacturer installation instructions. The injection plug corresponding to the hole diameter must be attached to the extension tubing and nozzle, both of which are supplied by QuickTie.
- 1.3.3 Installation of anchors in horizontal or upwardly inclined orientations shall be fully restrained from movement throughout the specified curing period through the use of temporary retention wedges, external supports or other methods. Where temporary restraint devices are used, their use shall not result in impairment of the anchor shear resistance.

### 1.4 *Special Inspections:*

- 1.4.1 Periodic special inspections must be performed where required. The special inspector must be on the jobsite initially during anchor installation to verify anchor type, anchor dimensions, concrete type, concrete compressive strength, adhesive identification and expiration date, hole dimensions, hole cleaning procedures, anchor spacing, edge distances, concrete thickness, anchor embedment, tightening torque and adherence. All must be per the manufacturer installation instructions.

- 1.4.2 The special inspector must verify the initial installations of each type and size of adhesive anchor by construction personnel onsite. Subsequent installations of the same anchor type and size by the same construction personnel are permitted in the absence of the special inspector. Any change in the anchor product being installed, or the personnel performing the installation, requires an initial inspection. For ongoing installations over an extended period, the special inspector must make regular inspections to confirm correct handling and installation of this product.
- 1.4.3 Continuous special inspection of adhesive anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads shall be performed in accordance with ACI 318-19 26.13.3.2(e), ACI 318-14 17.8.2.4, 26.7.1(h), and 26.13.3.2(c) or ACI 318-11 D.9.2.4, as applicable.
- 1.4.4 Additional requirements set forth in IBC Section 1705.1.1 and IBC Table 1705.3 of the 2021, 2018, 2015 or 2012 IBC, or 2009 IBC Section 1705, 2009 IBC Section 1706, or 2009 IBC 1707 must be observed, where applicable.

## Appendix A. Manufacturer Installation Instructions

### *Drilling and Cleaning - Hammer Drilled Holes:*

1. Using a rotary hammer drill and standard carbide bit, drill hole to specified diameter and depth required by the anchor rod or rebar. In case of standing water in drilled hole, all water must be removed from hole prior to cleaning.
2. Starting at the bottom of the anchor hole, blow out hole 2 cycles (2X) using oil free compressed air (minimum pressure of 87 psi (6 bar)).
3. Select the correct wire brush for the hole diameter. Brush for 2 cycles (2X) in up/down twisting motion.
4. Repeat Step 2, then confirm that hole is clean and free of dust.

### *Dispensing Preparation:*

5. Check the expiration date on the cartridge to ensure it is not expired. Do not use expired product! Cartridge temperature must be between 41°F - 104°F (5°C - 40°C) when in use. Remove protective cap. Screw on proper, non-modified QuickTie mixing nozzle to cartridge. Ensure mixing element is inside the nozzle. Load cartridge into the correct dispensing tool.
6. Prior to inserting the anchor rod or rebar into the filled drilled hole, mark the embedment depth position on the anchor. Verify the anchor is straight and free of surface damage.
7. Dispense and waste 3 full strokes material to ensure uniform gray color before injecting into hole. Review and note the published working and cure times prior to injection of the mixed adhesive into the clean anchor hole.

### *Installation and Curing:*

- 8a. Fill hole 2/3 full with mixed adhesive starting at the bottom and slowly withdraw as hole fills using an extension tube as needed.
- 8b. If extension tube is required, first cut the tip of the mixer nozzle at position "X."
- 8c. Use piston plugs for overhead and vertically inclined installations, all installations with drill hole depth > 10" (250 mm), with anchor rod 5/8" to 1-1/4" (M16 to M30) diameter and rebar sizes #5 to #10 (Ø14 to Ø32). Insert piston plug to the back of the drilled hole and inject as described above.
9. Fully insert clean threaded rod or rebar with slow turning motion to the bottom of the hole. Observe gel (working) time.
- 9b. Ensure the anchor is fully seated at the bottom of the hole and that some adhesive has flowed from the hole and all around the top of the anchor. If not, the installation must be repeated. For horizontal, inclined or overhead installations, use wedges to support the anchor while curing.
10. Do not disturb, torque or apply load until full cure time has passed.