



QSR SPECIFICATIONS:
for PATCHING and INVERT REPAIR

INTENT: To provide a material specifically designed as a fast setting, corrosion resistant, reinforced cementitious patching material for filling voids and repairing of inverts.

1.0 GENERAL

The work consists of hand mixing and applying a quick-setting, corrosion resistant cementitious material to fill voids prior to spraying Strong-Seal[®] cementitious liner materials and for invert repairs. The applicator, approved and trained by Strong-Seal[®] Systems, shall furnish all labor and materials using mixing and application procedures in accordance with manufacturer's recommendations and per the following specifications.

2.0 MATERIALS

2.1 Strong-Seal[®] QSR, a quick-setting fiber reinforced calcium aluminate cementitious material, shall be used as a patching material and is to be mixed and applied according to manufacturer's recommendations and shall have the following minimum requirements:

Strong-Seal[®] QSR Minimum Requirements		
Compressive Strength	ASTM C109	>1800 psi, 1 hr. >2600 psi, 24 hrs. >3000 psi, 28 days
Bond	ASTM C882	>1600 psi, 28 days
Calcium Aluminate Cement		Sulfate resistant
Applied Density		105 pcf ± 5 lbs.
Shrinkage	ASTM C596	0% at 90% R.H.
Placement Time		5 to 10 minutes
Set Time		15 to 30 minutes

2.2 WATER:

Water used to mix product shall be clean and potable. Questionable water shall be tested by a laboratory per ASTM C-94 procedure. Potable water need not be tested.

2.3 OTHER MATERIALS:

No material (other than water) shall be used with or added to Strong-Seal[®] QSR without prior approval or recommendation from manufacturer.

3.0 CHEMICAL PROPERTIES

Strong-Seal[®] QSR is formulated with calcium aluminate cement, specially selected chemical additives, and alkaline resistant fibers.

4.0 APPLICATION

4.1 PREPARATION:

All foreign material shall be removed from the area around the leak to be stopped using a high-pressure water spray (minimum 3000 psi). Unusual conditions such as heavy grease build-up or residues of industrial or processing wastes may require hydro-blasting or chemical cleaning. Loose and protruding brick, mortar, and concrete shall be removed using a masons hammer and chisel and/or scraper.

4.2 MIXING:

Strong-Seal[®] QSR is hand mixed. It is to be mixed in quantities no greater than the amount that can be placed in ten (10) minutes. Add one (1) part water with three (3) parts of QSR or add water until desired consistency is obtained. Mixing shall be done in a round bottom mixing bowl or pail using gloved hands, a wooden spatula, or a trowel for mixing.

4.3 PLACEMENT:

4.3.1 The homogeneous mix is of a dough-like consistency and shall be placed by hand or trowel, applying pressure and holding in position until material remains in place.

4.4 INVERT REPAIR:

4.4.1 After all preparations have been completed, remove all loose material and wash wall again.

- 4.4.2 Any bench, invert, or service line repairs shall be made at this time using the quick setting patching mix (QSR) and shall be used per manufacturer's recommendations.
- 4.4.3 Invert repair shall be performed on all inverts with visible damage or where infiltration is present or when vacuum testing is specified. After blocking flow through the manhole, and thoroughly cleaning invert, the quick-setting patch material (QSR) shall be applied to the invert in an expeditious manner. The material shall be troweled uniformly onto the damaged invert at a minimum thickness of 1/2 inch at the invert extending out onto the bench of the manhole sufficiently to tie into the structural monolithic liner to be spray applied. The finished invert surfaces shall be smooth and free of ridges. The flow may be reestablished in the manhole within 30 minutes after placement of the material.

5.0 CURING

Voids filled with QSR shall be allowed a minimum one (1) hour cure time before application of Strong-Seal[®] liner and SHALL NOT be finished to a smooth surface.

Inverts and other areas not being covered with Strong-Seal[®] liner material shall be troweled to a smooth surface and blended into surrounding material.

6.0 WEATHER

No application shall be made if ambient temperature is below 40 degrees Fahrenheit. No application shall be made to frozen surfaces or if freezing is expected to occur within the substrate within 24 hours after application. Precautions shall be taken to keep the mix temperatures at time of application below 90 degrees Fahrenheit. Water temperature shall not exceed 80 degrees Fahrenheit. Chill with ice if necessary.

7.0 LIMITED WARRANTY

The Strong Company, Inc. warrants that this product was produced in conformity with its standard specifications or formulations within recognized tolerances, free of adulteration or contamination, and that the product will perform in accordance with representations in Strong-Seal[®] Systems literature and Technical Data Sheets when properly applied in strict conformance with the printed instructions on container and prescribed in technical data instructions and when applied to a properly prepared surface.

The sole remedy of the purchaser shall be replacement of the product or refund of the purchase price of the product if any defect in material and variance in the product beyond recognized tolerances in the specifications are found to exist.

No other remedy including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss shall be available to the purchaser.

DISCLAIMER

THE WARRANTY DESCRIBED IN THE ABOVE PARAGRAPHS SHALL BE IN LIEU OF ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

The Strong Company, Inc.
4505 Emmett Sanders Road
Pine Bluff, AR 71601
(800) 982-8009 Fax (870) 850-6933
Website: www.strongseal.com E-mail: info@strongseal.com