

SPECIFICATION

ChemCo Systems Polyurea Control Joint Filler, Kemko 189 New Floor Slab Installation or Repair Applications

PART 1 – GENERAL (CIS Section 3300)

1.01 Work Scope

Provide labor, products and equipment required to properly install two component fast set polyurea filler in interior concrete floor slab joints. Fill all contraction (control) and construction (formed) joints in the interior concrete floor slab where the joints will be exposed to material handling vehicle wheels. Engineer's drawings may include additional joints requiring filler, such as joints under racks and joints at column diamonds and pads.

1.02. Work Excluded

Caulking and sealant work specified in CIS Section 7900 is excluded. Refer to 7900 to determine responsibility for filling/sealing isolation joints where slab joins walls or column pads, expansion joints, etc.

1.03 Applicable Standards

Products, procedures and finished installation shall comply with the joint filling criteria established in the ACI 302.1R and ACI 360R-10 documents and all manufacturer instructions and technical literature.

1.04 Contractor Qualifications

Installer shall have a minimum of three (3) years experience in the installation of semi-rigid fillers on industrial floors. Contractor shall provide evidence of insurance coverage satisfactory to the owner/engineers and furnish a site-specific health and safety program.

1.05 Product Limitations

Semi-rigid joint filler products are designed to provide a tough, impact resistant and resilient wearing surface capable of accommodating limited joint movement. Joint filler separation from either side of the joint does not always indicate failure of the application. Cure shrinkage or other slab movement may exceed the stress relieving capabilities of the polymer filler. In the event of filler separation, a survey of in-service conditions should indicate whether additional repair is indicated. Note: semi-rigid joint filler products are not intended for use in isolation joints, seismic joints or other joints designed for movement. See 1.02.

2. MATERIALS

2.01 Product(s)

Joint filler shall be Kemko® 189 Polyurea SWL, a heavy duty, semi-rigid, two component, 0 VOC polyurea manufactured by ChemCo Systems (800-757-6773 or 650-261-3790, www.chemcosystems.com). Flexible epoxy binder for joint nosing repair shall be Kemko 047 LoMod Binder (see 3.05.1). No substitutes will be allowed. Material shall be shipped to site in original, unopened containers. Product will be stored in temperatures between 40-80 degrees F. Materials should be used within three (3) years of manufacture.

2.02 Accessory materials

Silica sand may be used at contractor's option to fill (seal) shrinkage cracks beneath filler at or below the base of the joint. Silica sand must dry (less than 0.2% wt. moisture), and bagged with a size of 20-40 mesh. Compressible backer use is prohibited other than for non-saw cut construction joints.

3. SURFACE PREPARATION AND APPLICATION

3.01 Project Conditions

Work area should be free of obstructions. Slab should be dry and not washed for at least 24 hours prior to filler installation. Substrate temperature should be greater than -20°F for 24 hours prior to filling using Kemko 189 Polyurea SWL. If using an epoxy based repair product such as Kemko 047 Low Mod Binder, substrate temperature should be greater than 40°F.

3.02 Timing of Installation

For new floors, ACI recommends that filling be deferred as long as possible to allow for maximum slab shrinkage and joint widening. It is strongly recommended that a 90-120 day slab cure period is followed. Joint filling is optimized when performed while the facility is under permanent stable temperature control.

3.03 Examination of Conditions

It is the responsibility of the installer to inspect the project and joint conditions and notify the owner or engineer in writing of any deficiencies that might adversely affect the quality or durability of the work performed or his contract price. Initiation of work by the installer implies acceptance of conditions.

3.04 Pre-Installation Sample

Before start of actual work contractor shall install samples to demonstrate his intended procedures and finished product. Sample shall include at least 25' each of both contraction and construction joints in the presence of on-site management. If procedures and finished product are approved they will be considered a standard for the entire project. At owner or engineer's option, this section can be waived.

3.05 Joint Preparation

All saw-cut joints shall be thoroughly cleaned to their full depth or 2" minimum, whichever is lesser. Construction (formed) joints that are not sawn shall be cleaned to a minimum depth of 2". Preparation shall be performed using a vacuum-equipped saw that will reach the 2" minimum depth, and shall be used in a manner that takes both joint walls back to bare concrete, removing all laitance, curing compounds, sealers, debris, etc. Where joints have minor edge chips, said chips will be "squared off" and filled along with the joint itself. Residual dust shall be removed by high pressure air with a vacuum containment.

3.05.1 Joint Repair

Weak or deteriorated concrete must be removed to sound concrete by bush hammering, scarifying, vacuum shot blasting or other suitable mechanical means. At the engineer or owner's direction, cracks or joints that exhibit significant spalling or other damage to the nosing or edge profile, shall be repaired using a temporary block-out using a flexible epoxy mortar mix. This repair mortar shall consist of Kemko 047 in a 1:3 volume mix with dried aggregate of 20-40 mesh. The restored width of the joint shall approximate the dimension that is measured in undamaged areas.

3.05.2 Shrinkage Crack Repair

Irregular shrinkage cracks can be repaired following procedures similar to the above. If the crack nominally averages 1/4" or less, it is preferred that walls of the crack be finished vertically by a dustless cutting blade to a depth of at least 1/2". The engineer or

owner may allow a “v-groove” cut as an alternative to a vertical cut. For repair of cracks averaging greater than 1/4”, see 3.05.1 or please consult ChemCo Systems.

3.06 Filling crack below joint base

The installer may use a maximum of 1/8” of silica sand placed at the bottom of the saw-cut joints to prevent filler run-thru into the shrinkage crack. Compressible backer rod is prohibited in saw-cut joints unless they exceed 2” deep. Compressible backer rod may be used in through-slab (non-sawn) construction joints but must be recessed at least 2” below the slab surface. Use of backer rod in any saw-cut joints less than 2” deep will result in the rejection of all saw-cut joints work.

3.07 Filler Installation

- a. Properly clean joints. Refer to section 3.05.
- b. At contractor’s option, install silica sand at base of joint, or backer rod as allowed and limited in 3.06.
- c. Separately, pre-mix the “A” component to disburse any settlement that occurred in shipping or storage.
- d. Dispense the Kemko 189 using a 1:1 positive ratio two-component pump equipped with a static mixer of at least 35 elements. For smaller applications, Kemko 189 can be manually mixed using a drill mounted jiffy mixer blade at no more than 400 rpm for a minimum of 2 minutes. For hand mixed applications, it is critical that the product be placed within 6-8 minutes of initial mixing—take care to make batch sizes no larger than can be used within this time frame.
- e. Place the Kemko 189 in one continual bead, filling from bottom to top until joint is overfilled (crowned). Do not fill from the top down as that can lead to trapped air bubbles which will cause loss of integrity of the repair. For very deep, wide profile or variable size joints, it may be preferable to fill the joint to within 3/8-1/2” from the top, allow some lag time for the material to settle, then apply a topping lift. Do not delay for longer than 3 hours before applying top lift or delamination can occur.
- f. After Kemko 189 cures, razor slice the overfill to leave a flush surface profile.

3.08 Finished Profile

A flat flush joint profile is critical for maximum joint protection. If profile is concave (below floor surface), abrade Kemko 189 surface and apply a cap bead (crowned). Allow to cure, then razor slice to flush.

4.0 Open to Traffic

4.0.1 Dust Control and Clean-up

All debris and construction dust shall be controlled at the source with complete adherence to OSHA standards by contractor. Contractor is responsible removing and disposing all solid or reacted waste materials in accordance with EPA, state and local standards.

4.0.2 Open to Traffic

Prior to allowing traffic, contractor shall survey all areas of joint filler placement to ensure that proper cure has occurred and that there are no settled areas, bubbled material or depressions. Should these defects be observed or Kemko 189 joint filler product remain soft after cure times in excess of 3 hours, at the owner or engineer’s option, that section should be cleaned and repaired with fresh joint filler material per 3.07.