



TECHNICAL BULLETIN CP-18

SEALANTS VS. JOINT FILLERS

Concrete joint sealants and joint fillers are different in both chemical formulation and intended use. According to ASTM C 920, Standard Specification for Elastomeric Joint Sealants, sealants are “cold-applied elastomeric single or multi-component materials used for sealing, caulking, or glazing operations on buildings, plazas, and decks for vehicular or pedestrian use, and types of construction other than highway and airfield pavements and bridges.” The primary purpose of a joint sealant is to keep water, dirt, and debris out of the joint. Designed to be able to expand and contract along with the joint, sealants are relatively soft and flexible materials, typically polyurethane, silicone, or acrylic in composition. Hard-wheeled vehicles, carts, and pallet jacks traveling over a sealant-filled joint will cause it to deflect, leaving the edges of the joint unprotected. This leads to edge cracking and spalling. Repairing spalled joints can be expensive work – a joint repair job is estimated to be four times the cost of filling the joint with the proper material initially. Industrial floor joints subjected to heavy and/or hard-wheeled traffic should be filled with a semi-rigid joint filler; the only proper use of a sealant in an industrial floor is to fill joints not subject to traffic such as isolation joints at walls or columns and under racks.

Epoxy and polyurea semi-rigid joint fillers restore continuity to a concrete floor that was disrupted by cutting joints into the surface. Because they are hard, relatively inflexible materials, joint fillers protect joint edges from damage caused by hard wheel impact and heavy loads. Their stiff nature also means that joint fillers simply cannot stretch in a lateral (side-to-side) manner. If joint fillers were flexible materials, they would deflect under load like sealants do, and thus not provide joint edge protection. Don't be misled by a joint filler's high percent elongation or expansion value. Joints widen with slab shrinkage, they do not expand along their length. Since a joint filler cannot expand with the joint as it widens, the only alternative is for the filler to separate or split. The American Concrete Institute addresses this issue in ACI 302.1R, Guide for Concrete Floor and Slab Construction:

“It is advisable to defer joint filling and sealing as long as possible to minimize the effects of shrinkage-related joint opening on the filler or sealant. This is especially important where semi-rigid fillers are used in traffic bearing joints; such fillers have minimal extensibility. If the joint should be filled before most of the expected shrinkage has occurred, separation should be expected between the joint edge and the joint filler or within the joint filler itself... earlier filling will result in greater separation and will lead to the need for more substantial correction; this separation does not indicate a failure of the filler.”

Joint filler separation does not necessarily compromise the ability of a filler to protect joint edges if the separation is less than a credit card width (1/32 inch or 0.80 mm). However, in food processing facilities where a fully seamless floor is required, if the separation is aesthetically unpleasing, or if the joint shows signs of



edge cracking or spalling, the separation can be repaired. This is done by cleaning the void spaces and re-filling with the same filler used initially or a lower viscosity epoxy material, or by removing the top ½ inch (1.3 cm) of joint filler with a saw or crack chaser and re-filling the joint.

**SEALANTS ARE FLEXIBLE,
DEFLECTING UNDER
HARD-WHEELED TRAFFIC**

**JOINT FILLERS ARE RIGID
MATERIALS, PROTECTING JOINT
EDGES FROM IMPACT**

