



TECHNICAL BULLETIN CP-26

JOINT FILLER PROPERTIES: EPOXY VS. POLYUREA

- **Shore (Durometer) Hardness**

The Shore durometer measures the relative hardness of a material by pressing a tiny needle into its surface and recording a value between 1 and 100. Higher Shore hardness numbers indicate a greater resistance to indentation, and thus indicate harder materials. The Shore A scale is used for more rubbery materials; the Shore D scale is used for harder materials; both values are often published on joint filler literature. Concrete industry standards, most notably ACI 302 (*Guide for Concrete Floor and Slab Construction*), requires that joint fillers have a minimum Shore A hardness of 80. Epoxy joint fillers and polyurea joint fillers both typically meet this requirement.

- **Elongation**

Don't be misled by tensile elongation results. A polyurea joint filler with a Shore A of 80 may have a tensile elongation of 400%, but is able to expand only about 5-15% laterally (side-to-side) before splitting or losing adhesion along the concrete bond line. A Shore 80 epoxy joint filler epoxy with 25% elongation will usually tolerate 5-8% lateral expansion. Thus, the high elongation polyurea joint filler offers very little in expansion advantage over an epoxy.

- **Adhesion to Concrete**

Both epoxies and polyureas have adequate adhesion to concrete.

- **Application Temperatures**

Freezing temperatures will prevent epoxies from curing completely. Thus, epoxies should be used only when the installation temperature is above 32°F. Polyureas are the best choice for use over a wide range of temperatures, even below freezing, as most can be installed as low as -20°F.

- **Dispensing**

Both epoxies and polyureas can be dispensed with meter-mix pump equipment. Epoxies can also be dispensed with manual bulk guns. Polyureas generally cannot be dispensed with manual bulk guns because their pot life (a few seconds) is too short. However, the short polyurea pot life coupled with the efficiency of a meter-mix pump application leads to faster turn-around time, reduced labor and cost savings.

- **Overfill-And-Shave Process**

Epoxy and polyurea joint fillers are overfilled in joints then shaved flush with the floor. Joint filler overfill should not be razored off until the filler has cured sufficiently. Due to their quick cure time, polyureas can be shaved in the first few hours after placement; some fillers (such as QWIKjoint UVR) can be shaved as early as fifteen minutes in the right conditions. Epoxy joint fillers usually can't be shaved for 8-12 hours following placement. Same-day shaveability is the primary reason most installers prefer polyureas.



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- **Traffic Time**

Because polyureas cure so quickly, the area can usually be opened to light traffic in an hour or two, sometimes even earlier. Epoxy filled joints generally can't be opened to light traffic for 6-12 hours.

- **Polyureas and Epoxies Separate Differently**

When filled joints expand (the concrete shrinks), epoxies tend to separate in a leap-frog manner, with the remaining bond jumping from side to side. Most polyureas tend to separate continually along only one side. Although this does not affect performance of either joint filler type, the separation manner of polyurea is less noticeable.

- **UV Related Color Changes**

Many interior lighting systems, especially energy efficient and/or high output bulbs, emit UV radiation in a spectrum that will cause joint fillers to turn greenish or yellowish. Both polyureas and epoxies may be affected. The exception is QWIKjoint UVR, which is highly resistant to discoloration from UV. Joints filled with QWIKjoint UVR will remain color-stable, unlike epoxy joint fillers.