

Filling Joints in Curled and Rocking Slabs

All concrete mixes contain more water than is needed to adequately activate (hydrate) the cement. This excess water gradually leaves via evaporation.

Evaporation reduces the moisture content in the upper portion of the slab, but the moisture content in the lower portion remains high. This moisture gradient variation can lead to a condition known as slab curl.



Exaggerated profile view of the slab curl phenomena

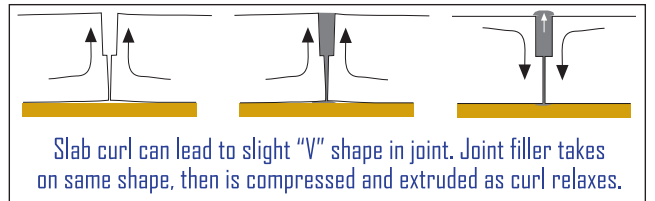
Curl usually reveals itself at the ends of slab panels, at formed construction joints. The ends of these panels will curl upward and outward, and the bottom of the slab will actually lift off the grade. Because all slabs shrink, all slab ends curl to some degree. The problem occurs when the curl is severe enough to interfere with the smooth flow of material handling vehicles (MHV's). If a slab end has lifted significantly off the grade, it can deflect (drop) when MHV loads are imposed. This drop is referred to as slab rocking. When one



Curled slab panels create impact points for material handling vehicle wheels and joint edges along curled panels can quickly deteriorate if left uncorrected.

panel deflects as a load is imposed, the adjacent slab remains in its original higher position, and thus the joint edge is vulnerable to hard wheel impact and spalling. Even without wheel impact, the semi-rigid joint filler's protection will be compromised as it shears away from its bond to the joint walls.

In some cases slab edge curl may relax, and the slab will return to its original position. Should this occur the joint filler may be compressed and literally extruded upward with its top above the floor surface.



Slab curl can lead to slight "V" shape in joint. Joint filler takes on same shape, then is compressed and extruded as curl relaxes.

Slab curl and/or rocking affects on joint fillers.

No semi-rigid joint filler can remain effective as an edge protector if slabs are significantly curled or are rocking. If rocking or slab curl conditions are detected on a project prior to the start of joint filling work we recommend that filling be delayed until the effect of the curl/rocking conditions on the joint filler and the durability of the floor and potential correction methods can be discussed by all involved parties.

Please contact Metzger/McGuire for more detailed information on the correction/repair of slab curl or rocking slab panel conditions.



Curled or rocking slab panels can compromise the ability of the filler to provide proper edge protection.