Milliken®
Concrete Cloth™

Technical Note
Edge Effects

Purpose:
Field observations of Concrete Cloth have revealed the potential for unrestrained edges to curl up during wetting and curing. The extent of this edge effect was examined under a program to determine if the unrestrained edges of Concrete Cloth tend to lift up or curl (and if so, how much) before and after wetting and if the effect changes as the concrete cures.

Procedure:
A piece of Concrete Cloth (CC8) 28.5 inch long by the width of the roll (typically a minimum of 43 inches) was cut and laid with the PVC side down on a level countertop. In the dry condition, the elevation of the edges of the Concrete Cloth above the countertop was measured. These measurements were made at the corners, quarter points and halfway points along each side. Then the Concrete Cloth was sprayed with water several times so that the cement was completely hydrated. Immediately after the Concrete Cloth was hydrated the height was recorded again. Additional measurements of the heights above the countertop were made at time intervals of 2.5 hours after initial hydration, almost 1 day after initial hydration (22.5 hours), 5 days after initial hydration (5 days 2.5 hours), and 12 days after initial hydration (11 days 21 hours).

Observations:
The measurements were tabulated as averages in the machine or roll length direction and the cross machine or roll width direction not including the corners. Measurements were taken to the nearest 1/32 of an inch (0.03 inches).

Average Height of the Edges	**Initial Before Hydration (inches)**	**Right After Hydration (inches)**	**2.5 hours After Hydration (inches)**	**1 Day After Hydration (inches)**	**5 Days After Hydration (inches)**	**12 Days After Hydration (inches)**
Machine Direction	0.23	0.30	0.32	0.70	0.72	0.53
Cross Machine Direction	0.09	0.10	0.09	0.33	0.36	0.22

Change in Height from Initial Height	**Right After Hydration (inches)**	**2.5 hours After Hydration (inches)**	**1 Day After Hydration (inches)**	**5 Days After Hydration (inches)**	**12 Days After Hydration (inches)**
Machine Direction	0.07	0.09	0.47	0.49	0.30
Cross Machine Direction	0.01	0	0.24	0.27	0.13

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The Cloth portion of the Concrete Cloth appeared to have some “memory” of being rolled-up on a roll. For this reason some initial curvature or curl at the edges of the Concrete Cloth was observed when it was laid on a flat surface while it was dry before water was applied. Once the Concrete Cloth was wet there was a small amount of observable curl in the machine direction, about seven hundredths of an inch (0.07 inches). By two and a half (2.5) hours after hydration this uplift increased to almost a tenth of an inch (0.09 inches) above the countertop in the machine direction. Again the cross machine direction remained unchanged. After almost 24 hours the curl was about seven tenths of an inch in the machine direction and about a third of an inch in the cross machine direction. This was an increase of about a half inch over the initial conditions in the machine direction and about a quarter inch in the cross machine direction. 5 days after hydration this condition was essentially unchanged. However after 12 days as the Concrete Cloth began to dry out slightly the edges of the Concrete Cloth came down some so that the height of the edges in the machine direction was about a half inch above the countertop, three tenths of an inch above the dry condition or about two tenths lower than the peak. In the cross machine direction this effect resulted in the edges being about two tenths above countertop and only a tenth of an inch above the dry condition height.

Conclusions:

Dry Concrete Cloth has some initial curl from the memory of having been on a roll. After initial wetting this curl increases slightly and grows as the concrete makes an initial set. After one day the edges of the Concrete Cloth lift up off the countertop approximately half an inch in the machine direction and about a quarter of an inch in the cross machine direction. After 12 days as the Concrete Cloth dried a little, the height measurements of the edges above the countertop were less. In other words the edges came down in elevation. In this final condition, the edges in the machine direction were a half inch above the countertop.

Recommendations:

There is some initial “memory” or curl of the edges of the Concrete Cloth as it is taken off a roll and laid flat, and there is some additional curl that takes place as the Concrete Cloth cures after hydration. This effect should be designed for in every installation. While many applications would be fine if the edges were left alone, to achieve best application and aesthetic results, Milliken recommends the edges of each piece be buried, fixed with screws, restrained temporarily by weights (such as sand bags or riprap), fixed with an adhesive, or otherwise restrained so that the edges lie flat.

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