

THE CONCRETE FLOOR REPORT

NEWS FOR EVERYONE WHO DESIGNS, BUILDS, MAINTAINS, OR OWNS CONCRETE FLOORS

A Publication of The MJA Company, Serving New York Since 1988

THE FINISHING TOUCH

Filling the Control Joints in your Concrete Floor¹

Drying Shrinkage

As concrete cures, the moisture loss after the concrete has hardened can lead to volume reduction or drying shrinkage. Drying shrinkage is the root cause of random cracking in most concrete floor slabs. Unfortunately, this is a very common and frustrating characteristic of concrete.



Random cracks in a concrete slab due to drying shrinkage²

Control Joints

Control joints are a widely used method to guide the cracks that are caused by drying shrinkage of a concrete floor slab. The control joint creates a weakened plane in the concrete slab which helps determine the spot where the concrete cracks.



The cracking due to drying shrinkage happens along the weakened plane of the control joint cut in the slab³

You might think that would be the end of the story... except those open control joints can collect dirt, debris, moisture and breed bacteria. Early on to solve this problem a soft material was used to fill the joints. While the sealer helped to block debris from accumulating in the gaps, it led to other issues.

Changes in warehousing demands and forklift design have caused floors to be subjected to much more frequent traffic and much heavier loads than in the past. The heavier traffic places larger load forces on the edge of the control joints. This force

Continued on next page

Continued from cover page

causes edge chipping which can become a hazard to both foot and wheeled traffic. Unfortunately, the soft filler did not solve the problem of the damage to the edges caused by the increased forklift traffic.



Control joint damage due to forklift traffic 4

How to Protect the Edges of Control Joints?

The changes in the design of the forklifts and the amount of traffic in modern warehouses needed a different material that would stand up to the damaging forces on the edges caused by this traffic. The soft material was not hard enough to protect the edges. A rigid, high strength, epoxy was used initially hoping to solve the problem. While the epoxy did support the edges, the bond between the side of the control joint and the epoxy was too strong. If there was additional drying shrinkage, the epoxy

could not stretch to compensate for the shrinkage. The added stress would result in random cracks occurring outside of the line of the control joints – which meant the epoxy was not a viable solution.

The new joint filler had to be flexible enough to allow for some additional shrinkage of the concrete, hard enough to protect the joint edges – and also needed to release from the wall of the joint if there was excessive additional drying shrinkage. The two products most commonly used today to fit all of the necessary characteristics are a **semi-rigid polyurea** and **semi-rigid epoxy joint filler**.

One important characteristic of a semi-rigid filler, that makes them useful for filling control joints, is that they are able to stretch laterally or side-to-side. This helps to allow for further drying shrinkage after the joint is filled. Obviously the fillers do have a limit in terms of how much stress they can tolerate. If the amount of shrinkage causes the joint to widen excessively the material will separate from the joint wall. Due to this possibility, one caution is important to mention here.

If the joints are filled too early after placement, there is a real risk that the additional drying shrinkage will exceed the ability of the filler to stretch and still adhere to both vertical surfaces of the control joint. If the amount of separation is not too severe, the edges will still be protected. If the gap caused by shrinkage between the filler and the side wall of the joint is too

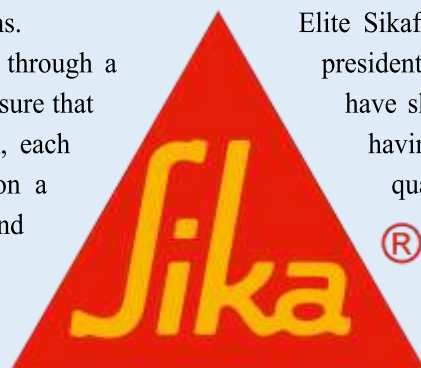
THE MJA COMPANY NAMED AN ELITE SIKAFLOOR INSTALLER FOR 2022

Buffalo, NY – July 1, 2022 – Sika Corporation has renewed The MJA Company as an Elite Level installer of Sika floor and wall systems for 2022. The company is among a selected group of flooring contractors recognized for their commitment to high quality resinous floor and wall installations.

Each year every Sikafloor Installer goes through a rigorous training and evaluation program to assure that they meet Sika's high standards. In addition, each contractor is evaluated and rated annually on a variety of technical and business criteria and

classified into one of three categories – Elite Sikafloor Installer, Master Sikafloor Installer and Sikafloor Installer – with Elite Installer being the highest level of achievement.

“We are pleased to recognize The MJA Company as an Elite Sikafloor Installer,” said Stew Snoddy, senior vice president of Sika Corporation's Flooring Division. “They have shown they are among the best in the business, having demonstrated an unparalleled commitment to quality and the resinous flooring industry.”



large, damage to the edge of the joint may occur. To avoid this, the general rule across the industry is that joints should be filled no earlier than 90 days after the concrete is placed. If the joints are filled before this, manufacturers may not warranty the filled joint.

Another characteristic that is important in terms of protecting the wall of the joint from chipping is the Shore Hardness. Both types of semi-rigid joint fillers can be formulated to have a Shore A Hardness of 80 to 85. Shore Hardness is a relative scale. It is measured by pressing a needle down on the surface of the cured filler and looking at how the material resists the indentation. Industry standards dictate that the fillers have a minimum hardness of 80. Materials with this hardness level will support the edges of the control joint and prevent the edge from chipping. If the floor is exposed to really heavy loads, the epoxy may be the filler to use.



One last characteristic of the fillers to consider is cure time. The polyurea cures in a matter of minutes and the top of the joint can be shaved clean and level within a half an hour after being placed and returned to service after another 30 minutes. The epoxy materials take up to 8 to 12 hours to cure. When they have cured, heat may need to be applied to soften the material so that the joint can be shaved clean. This makes a big difference when it comes to returning a concrete slab into service after the filling of the control joints.

As we have seen, filling the joints of your concrete floor is very important and can prevent a number of problems. As with most construction, using the material with the right physical characteristics will solve the potential problems caused by cutting the control joints into a concrete slab.

Need Help With Your Concrete?

If you have any questions about the treatment, repair, or renovation of your concrete floor, give us a call at **716-831-7091** or email us at info@themjacompany.com.

1. <https://www.forconstructionpros.com/>

2. <https://theconstructor.org/concrete/shrinkage-cracks-in-concrete-types-causes/9016/>

3. https://live.staticflickr.com/5149/5622957562_fc8567f530_b.jpg

4. The MJA Company

5. <https://www.smooth-on.com/page/durometer-shore-hardness-scale/>

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Offices & Shop:

65 Clyde Ave
Buffalo, NY 14215

716-831-7091

Mailing Address:

PO Box 501
Williamsville, NY 14231-0501

www.theMJAccompany.com

65 Clyde Ave | Buffalo, NY 14215

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In this issue:

- **THE FINISHING TOUCH -**
Filling the Control Joints in
your Concrete Floor
- **Elite Sikafloor Installer for 2022**
- **Join us at the 2022 Facilities
Management Expo**
- **Win a \$100 Gift Card**

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Contest ends October 31, 2022

Previous Answer & Winner

Answer to the contest in the last newsletter: **Buffalo History Museum**

Previous winner: **Robert R. of Trautman Associates**

No purchase necessary. Must be at least 18 years of age and a legal resident of the USA to enter.