



## **INTERIOR WOOD BLOCK FILLING: PRODUCTS AND PROCEDURES**

Filling end grain block flooring joints and spaces is standard procedure from time to time, although the procedure(s) and products used may vary. We offer many species of end grain, some more stable than others, requiring different type and quantity of joint filler. Some end grain block flooring is used for industrial manufacturing. Joint filling industrial block flooring may not be required. However, joint filling is most always an important part of commercial and residential installations. Choosing the best filler, and in a suitable color can be important. Sequencing when to fill (or not), when to coat over the filler, and with what coating, is also important. The following is a description of several filling products we offer, and their suggested application procedures. Hopefully you will find one that is suitable for your installation. Please don't hesitate to call us about your project.

***We believe our block flooring products look their best, and most always perform their best when all joints or spaces between blocks are filled, although there are times we don't fill at all! Read on, we'll explain.***

### **FOR RESIDENTIAL AND COMMERCIAL INSTALLATIONS**

Filling minor hair-line cracks between T &G hardwood flooring boards is usually accomplished with a commercial paste filler material, applied intermittently during the sanding process. We **do not** recommend this filling schedule for our end grain flooring. Early filling, followed by urethane finish, can be problematic.

Wood blocks installed in commercial or residential projects may be spaced apart, but most often are installed touching side by side. Blocks installed side by side will have very little space between them. If filling is desired soon after their installation, (which would in most cases be prior to maximum wood block contraction), the common method, and probably the only effective option at that time would be to fill with a **PASTE**. There are several commercial brands of paste fillers for wood flooring available, such as the popular "Woodwise", Redmond, Washington. Wood flour from drum sanding, mixed with your chosen finish into a paste, is also a popular paste choice. However, paste fillers are not flexible, and we believe joint fillers should be flexible. And so, we recommend flexible "Energy Seal" by Permachink, and "Conceal" by Sashco, two popular flexible fillers used for log cabins.

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Filling methods include using rubber edged trowels, sponge trowels, or even just rags, wiping all excess simultaneously from the surface. For best results we suggest buffing after filling with clean towels, making sure all filler residue is removed. Wiping and buffing will be easy if you are using a wood flour mixture with an oil finish. However, if you are using a mixture of wood flour with urethane, you will probably need to wipe the surface with the appropriate urethane solvent. If a wood flour/urethane residue is left to dry on the surface, you will definitely need to lightly screen or purple pad the surface the next day to remove the residue, then “tack-rag” and re-apply finish. Tack ragging means wrapping a damp towel around a broom, and walking back and forth with the damp towel to pick up dust before re-coating.

If joints or spaces between blocks are wide enough, we suggest **GRANULATED CORK** be used, at least initially. Granulated cork from Maryland Cork is dry, flexible, and relatively inexpensive, but will always require a sealer or binder to secure it in place. **ENERGY SEAL** or **CONSEAL** flexible paste fillers are ideal for applying over granulated cork, securing it in place while still maintaining a flexible joint. Filling with granulated cork can be a bit tricky, as it is hard to sweep clean from the surface but a very effective filler.

A question often asked is “when should we fill the joints”? The decision can be important, especially if the flooring is to be finished with urethane (rather than an oil finish). It is most always prudent to wait until maximum block contraction before filling. Maximum contraction only occurs during the dry heating season. And so, if you are installing blocks in the winter heat, you may be able to fill soon thereafter. Not necessarily right away, but certainly soon thereafter. If the installation is made without space between blocks during the spring, summer, or fall, small cracks or spaces may remain small until the following winter when the heat reduces the humidity in the space. The joints or spaces will widen from shrinkage during the heating season, the extent will depend on jobsite conditions, wood species, and the block moisture content at time of installation. Space created from shrinkage after installation makes filling easier and more effective, and we believe a more attractive installation as well.

**AN IMPORTANT NOTE: *If you must fill the flooring as part of a spring/summer/fall installation that has not yet reached maximum contraction, we strongly advise using an oil finish rather than a urethane finish. Please call us, we’ll explain.***

If the joints between blocks have not been filled, but finish must be applied, all finish applications **MUST** be made by either lamb’s wool applicator or rollers. The intention must be to seal the block surface only. Some liquid will undoubtedly migrate into the (open) joints during these applications, but the intention must remain to seal the wood surface **ONLY**. Since end grain is porous, it may require 3-4 applications, regardless of the finish used. Once the block surface is uniformly sealed and protected, the flooring can be opened to light traffic without major concern. Care must be taken to avoid large spills that would migrate into the open joints, and cause damage. Wood and water don’t mix!



## **If the blocks are to be stained**

If blocks are to be stained, the first application must be the stain. Be sure to get the color right on some extra pieces before applying stain. It would be difficult to change the block color after staining (as the stain will dive into the wood). Excess stain is easily wiped from conventional hardwood flooring. However, stain applied to end grain will immediately penetrate into the wood, leaving nothing to wipe. Therefore, be extra sure the color is right. After the stain has dried at least one night overnight, clear finish coats applied will then lock in the color.

## **If the flooring is to be finished in natural color, (not stained)**

You could complete the drum sanding, and then fill the joints before disc sanding. After drum sanding you could then empty a 25 lb. bag of granulated cork on the floor, pushing the cork around with brooms, allowing it to fill the open joints. This process may appear effective, but since the granulated cork is fluffy you would miss some areas as the cork settles to the bottom, or not! Therefore, you'll need to use a buffing machine with a sanding plate and 100 grit sandpaper below, to grind or pack the particles of cork into the joints. You'll probably need two workers to do this; one worker to run the buffer, and one worker to constantly push the cork to the buffer. Grind the particles into the joints until you think the joints are full to the bottom. The wider the joint the easier it will be to fill and reach the bottom. After grinding the cork into the joints, then sweep the excess cork particles from the surface. Sweep clean AS BEST AS YOU CAN with a soft broom. Put the excess back in the bag AS BEST AS YOU CAN! It will be difficult, in fact near impossible to sweep the surface completely free of the granulated cork. No worries. It will not be a problem if a slight amount of cork is then left on the surface at this point, but make sure the broom has only soft bristles so as not to pull the particles of cork out from the top of the joints.

**NOTE:** Filling with granulated cork always requires more granulated cork on the floor than you'll actually consume. Expect excess material on completion for your next Kaswell block floor! You'll now need to disc sand the blocks (which you have yet to do.) Disc sand the block surface with 80 to 100 grit disc paper or screen to remove any drum lines from drum sanding, using higher grits depending on the finish choice. Regardless of grit size, the discing will generate wood flour or dust on the surface, making sweeping clean easier.

**CAUTION: If the flooring was stained and sealed with urethane, you'll need to be very careful during discing not to cut through the urethane and affect the color.**

If the flooring was not stained, the wood flour/dust generated from disc sanding can key in the particles of cork at the top of the joint, making the joint look a little better too! You would then be ready to pour urethane over the surface and over the joints. Be prepared to walk the urethane back and forth, steadily, with a soft sponge squeegee, allowing the urethane to percolate into the wood

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flour/dust/granulated cork joint to solidify it. Oil finishes must be applied before filling with granulated cork.

**After the first application or urethane over the filled joint**, you may need to lightly screen the floor with 150-200 grit screens, or even a 3M purple pad might be sufficient, to clean the surface of any remaining small particles of cork or wood dust left on the surface. You may notice that the filler has dropped slightly lower than the block surface because of the wetting action of the urethane over the joint. If so, spot filling may be needed before making a second finish application. Screen clean and tack rag the surface with a damp white towel, allow the surface to dry, and apply the next application over the surface. If finishing with urethane over a non-stained surface, sequencing the work this way should mean 3-4 applications of urethane over the joints. If you have any questions about this, please do call us at any time. A stained wood block surface should have 2 to 3 applications of finish over it before filling, and maybe one or two applications after filling.

**CAUTION:** If you blanket the flooring and joints with multiple coats of urethane before maximum block contraction, and if additional shrinkage were to develop, the shrinkage will probably not reveal itself uniformly. We've all seen this happen with conventional long board flooring. It's called "panelization". Shrinkage might appear as stair-step and longitudinal cracks because the blocks are in effect glued together with urethane at the surface. This is one of several reasons why we suggest and prefer oil finishes. Regardless of when the joints are filled, regardless of the season, regardless of sequencing, shrinkage should almost always reveal itself uniformly with oil finishes. And, if or when additional shrinkage does develop, the joints can be refilled easily, or left alone.

We are many times asked what the formula of urethane (or oil finish) to wood flour should be for paste filling. By mixing the two ingredients together you will eventually achieve an appropriate consistency. The filler should be like toothpaste or mayonnaise consistency. If the mixture is too thin it will run into the cracks and disappear below the surface, and you'll be frustrated because you'd need to fill again. If the mixture is too thick (or dry), you'll not fill the crack very deeply, and you'll have difficulty wiping the surface clean. That too will make you frustrated. So, work the filler to the right consistency, and understand that while using your mixture it will change consistency and you'll need to add more oil or more wood flour as you go. If you have a good consistency, filling will be easy.

Another application technique that might be effective for paste filling is to carry the paste from one side of the room to the other using a window squeegee. If the mixture is the right consistency, the joint should fill nicely, hiding the granulated cork (if used), and the window squeegee should clean the mixture from the surface. If any of the mixture is left to dry on the surface, and there will probably be some left out there, you'll need to screen or purple pad again the next day to clean the surface. Tack rag with damp clean towels again, then re-apply oil or urethane finish.

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Our new options (effectively used for our exterior end grain pavers as well) are the “Energy Seal” flexible paste filler noted above, by Permachink, Knoxville, TN., and the “Conceal” flexible paste filler by Sashco, Thornton, CO. Both products were engineered for chinking or grouting between logs of log cabin homes. Even Romex Permeable Fillers, Vancouver, BC Canada (used primarily for exterior application) can be effective for interior filling as well. These flexible fillers are lightly textured, formulated for sealing narrow and wide gaps between logs or planks. They are highly elastic, effective for gaps up to 1” wide, very low VOC formula, and cleanup is with soap and water. FYI, “Chinking” is a term descended from Old English to describe the sealing of gaps and joinery around the interior and exterior of log homes! Again, these flexible fillers are ideal with our interior and exterior end grain block flooring.

## **A REASON NOT TO FILL**

Some of our more stable species don’t ever show shrinkage cracks. Or, if there were some slight shrinkage cracks or spaces they may be so small that it might be better not to fill them at all. Additional shrinkage after filling may show joints slightly non-uniform. Some filler may remain near the top of the joint, some filler may drop to the bottom. In some cases filled joints may not look as attractive as if they were never filled in the first place. Once filling is done, it probably will require they be re-filled again in the future. However, if the spaces are never filled at all, and if shrinkage remains minor and uniform, the shrinkage cracks may be acceptable left unfilled.

NOTE: Several of our end grain products are tongue & grooved. If a T & G end grain product is provided prefinished in its’ natural color, shrinkage cracks after installation should be of no concern. Also, if our end grain plank or strip is provided pre-finished in a dark color, be sure to stain the tongues the same dark color so they will blend with the color of the flooring.

## **FOR INDUSTRIAL BLOCK FLOORING**

For those who might still be installing traditional **INDUSTRIAL PINE BLOCK FLOORING** for a machine shop or factory floor, we suggest the following products and procedures, assuming the flooring is to remain black in color. You may know, we once produced creosote treated pine blocks, which meant the blocks were already black when they arrived at the jobsite. New industrial treated pine blocks may now be treated with a light-colored wood preservative, or not at all, and the block surface sealed over with a black sealer. The results could be very similar in appearance to the original creosote treated pine blocks that were sealed over with coal tar pitch.



## **D-1261-2 LATEX BLACK SEALER FINISH**

The following instructions pertain to the use of our D-1261-2 water based Latex Black Sealer over industrial pine blocks. Once all blocks have been installed (with adhesive) the flooring can be drum sanded (optional) for a flatter surface, but in most cases our pine blocks are immediately sealed over with our D-1261-2 Latex Black Sealer. At least two coats of the sealer should be made. One application is most always insufficient, depending of course on the type of abuse and activity on the floor. Application number one should be made by pouring the coating on to the bare wood blocks, in a straight line puddle, or what is called “wind-rows” in the pavement sealcoating business. Using a conventional sponge squeegee (suggest the Ettore sponge squeegee, product number 61018, see [www.ettore.com](http://www.ettore.com)). Walk the coating and overlap the coating in straight lines like sealing a driveway. Allow the coating to run into the voids or cracks. Move steadily, not too fast or too slowly. Apply pressure to the squeegee to remove as much liquid as possible from the surface. The first application will migrate between and below the blocks. That’s what should happen! The D-1261-2 Latex Sealer was engineered to be used as a water-based binder material, that will not cause the blocks to expand. The sealer will bind the blocks similarly to the old way of binding an industrial block floor (using hot coal tar pitch). Without a binder coat applied directly over the newly installed blocks, you’d be relying too heavily on the adhesive below to keep the blocks in place. Allow two hours for the first application to dry on the surface. The joints may take more time, but it is not necessary to wait for the joints to be completely dry. The flooring could be used after one application. However, we recommend two applications. The second application can be made the same way. However, the goal should be to create a near 100% filled floor. Coating a second time will not create a 100% filled floor. A second application would also settle out. To accomplish a 100% filled floor, sweep silica sand/play sand, even a Black Beauty sand into the open joints after the first application has dried. While sweeping, it is ok to leave a little sand behind. Pour the second application on to the floor, and carry it from one side of the room to the other. The second application puddle will pick up excess sand as you go. If you’ve used a white sand, you should have a black block surface and a white joint. Application #2 should percolate into the filler sand at the surface and solidify it. The result should be a near 100% filled industrial black block floor that will provide many years of service. The key to industrial block flooring longevity is to keep the joints filled and the surface well sealed. Coverage of the D-1261-2 Sealer over 2” depth block should approximate 28 sq. ft. per gallon if used with silica sand and two applications.

## **A-106 Black Sealer Finish**

There are many thousands of square feet of **EXISTING BLACK INDUSTRIAL BLOCK FLOORING** in industry. We always advise our industrial block flooring users, as a maintenance procedure, to keep the joints filled and the surface well sealed. But our D-1261-2 Latex will not bond well to your older existing block

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floors. And so we engineered a coating for the older block flooring surfaces. Start by making sure all blocks are well adhered to the concrete slab. If there are high or loose blocks in the flooring, you should first pull them out, clean out the bottom of the hole, clean the block or replace it with a new one, and re-set it back into the floor with one of our cold applied wood block cement products 150 TC or S2705 Adhesive.

After all repairs and replacements are complete, sweep sand across the existing wood block surface to fill all open joints. If the blocks are sitting flat on the concrete slab, and reasonably secure, we recommend you then sweep silica sand across the surface and into the joints, sweeping off the excess, and then apply one or two applications of our A-106 Black Sealer. Two fills and two coats are recommended. The A-106 Black Sealer will percolate the silica sand and harden it and provide strong lateral support to protect against development of loose blocks.