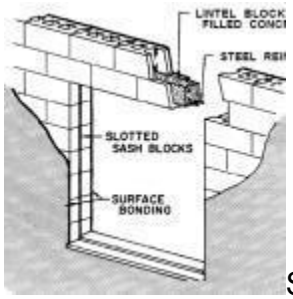
Surface Bonding Cement

Applying surface bonding cement to concrete block walls is much faster than traditional mortared block construction. The finished wall is durable and easily accomplished by a DIY weekend builder or a journeyman masonry pro.

The application and finished look of the cement wall can be tailored for any desired color and texture, making it a great way to personalize your project. Simple tools and some good planning will make surface bonding cement application easy and rewarding.



Surface bonding cement can be compared to stucco, but the important differences in the mix are glass fibers and special additives including an acrylic additive. A surface bonding cement mix applied on CMU or concrete block walls includes fiberglass and an acrylic fortifier to add strength and flexibility. The premixed bags of surface bonding are easier to work with because the recipe is calculated, just add water!

Construction with surface bonding block;A detailed 1975 manual on building dry stack walls with surface bonding coating. USDA Surface Bonding Block Guide

Bill and Rusty Wyles' Surface Bonded Cement Wall

Bill Wyles and his son Rusty have ventured to build a surface bonded block wall recently. On September 6, 2010 Bill wrote:

My son and I stuccoed a wall and the sprayer had more than enough power. We used a 3/8 hose and fittings. It goes through the mud so fast that the PSI was never a real problem. It took nor ore than 5 to 10 seconds load.

Interesting enough, we had never done stuccoing or used a sprayer and the hand method was so hard on me that we ran across your ad on the internet. My

son is a computer manager and I am a retired Marketing President but now turn my time to painting landscapes across the country and doing projects around my gentleman's ranch like my grand wall.

Quickcrete Quickwall Surface Bonding Cement PDF

Here are more pictures of Bill and Rusty's surface bonded cement wall:

The concrete block wall before surface bonded cement is applied.

Another view of the surface bonded block wall.

Ed Kliman's surface bonded block house is featured below

Ed Kliman’s surface bonded block house is making lots of progress. The walls are shown dry stacked and ready for the surface bonding cement.

This photo above is a corner view and windows.

The concrete block wall before surface bonded cement is applied.

Quikrete Quikwall Surface Bonding Cement:

Quikrete Quikwall Surface Bonding Cement is one of the most available surface bonding cements on the market today. Many of our customers spray Quickcrete on surface bonded block with great result

Crack Resistant Surface Bonding Cement PDF | Quikrete FAQ

Ingredients for Home-Mixed Surface Bonding Cement from the USDA Guide (page 15):

- Portland cement (normally packaged in 94 lb sacks). White cement is more expensive than regular gray cement but is less alkaline, has a more finished appearance, and needs less mineral coloring for pastel shades if you desire to color the mix. It is preferred for all uses, but regular type-1 gray cement is sometimes used.

- Hydrated lime (normally packaged in 50 lb sacks). Hydrated lime makes the mixture more workable and easier to apply. Lime with lowest alkaline content is made from pure dolomite limestone.

- Calcium chloride (normally packaged in 100 lb sacks), in flake crystal form. Calcium chloride makes the mixture set up quicker and results in a harder surface. It is available from agricultural chemical dealers and from distributors handling it for ice and snow removal.

- Calcium stearate (normally packaged in 50 lb boxes). Calcium stearate makes the mix waterproof. Use a wettable technical grade, generally available from chemical distributors.

- Glass fiber filament chopped into one half-inch lengths (normally packaged in 40 or 50 lb boxes). Type /E fiber, coated with silane or chrome organic binder, is available from plastic and chemical supply distributors. An Alkali-resistant fiber, type K, may be available from

building material dealers and plastic products dealers. The glass fiber acts as reinforcement in the mixture to give it strength and prevent cracking

Sanded Bonding Mix

If a sanded surface is desired, add 1 part of sand by weight to 1 part of regular bonding mix (dry weight). This must be applied one-eighth inch thick to give adequate strength and waterproofing. The cost will be slightly higher than the unsanded formulation previously described. Use a clean white sand such as that sold for playpens, about 100 percent should pass a No. 10 screen and 75 percent should pass a No. 20 screen. The same amount of water is needed for 50 pounds of sanded mix as for 25 pounds of unsanded mix. (From page 17 of the USDA Surface Bonded Block Guide No. 374)

Home Mixing the Materials

The bonding mix sets rapidly after the water and calcium have been added to the dry ingredients, especially in hot weather. If one person is plastering prepare only 25 pounds of bonding mix at one time.

The weights of the ingredients needed to make a 25 lb batch (dry weight) of the bonding mix are as follows:

Recipe for 25 lb Batch of Surface Bonded Cement

Ingredient	Parts	Pounds
Cement	78	19 1/2
Lime	15	3/4
Calcium Stearate	1	1/4

Glass Fiber	4	1/2
Calcium Chloride	2	25

Mix in dry form: the cement, lime, and calcium stearate thoroughly. Add the glass fiber and remix only long enough to distribute the fibers well. Too much stirring tends to break up the strands into individual filaments. When this happens, the bonding mix is hard to apply.

If mortar or concrete coloring is to be used, blend it into the dry mixture of cement, lime, and calcium stearate before the fibers are added. Dark colors are not recommended because they tend to splotch and fade. Even with light colors, weigh each batch carefully to avoid differences in color tone from batch to batch.

Mix the calcium chloride with 1 gallon of water. Add this solution slowly to the dry ingredients and mix hooray. Add about one-half gallon more of water. You may need to adjust this amount of water slightly to produce the right consistency for good toweling. The mix should have a creamy consistency-as thin as possible but not too thin to prevent handling with a trowel. Most people tend to make it too stiff. It will then be hard to apply and may not bond properly.

Mixing can be done by hand in a wheelbarrow or small mortar box. A garden cultivator rake or weeding hoe (three or four tine) works best. Check the mix with your hand for lumps. Wear rubber gloves to avoid possible burning of the skin.

A power driven plasterers mixer can be used. Put the water-calcium chloride solution in the mixer first and add the dry mix slowly.

If the mix becomes too stiff before it can completely used, add a small amount water. Do not add water more than 30 minutes after the initial mixing because it weakens the bond. Discard such remixed batches whenever the material again becomes too stiff to apply on a wet wall.

Batches of the dry ingredients can be mixed well in advance so that there will be no delay in preparing the mix when it is time to begin the bonding operation. If the dry mix is to be stored several weeks, place each batch in a plastic or multiwall paper bag and close the top tightly. Weigh out the calcium chloride for

each batch and seal it in a separate plastic bag; do not mix it with the dry ingredients.

Applying the Bonding Mix

Surface-bond both sides of the wall. It will not be strong enough if the bonding mix is applied on only one side.

The blocks must be free of dirt, loose sand, cement, and paint. If necessary, clean the blocks with a wire brush when they are dry. Spray the wall with water until it is wet but not dripping.

Work the mix from a hawk onto the wall with a plasterers trowel. Hold the hawk against the wall to avoid excessive spilling of the mix.

A very thin coat about one-sixteenth inch thick of the bonding mix is *all that is necessary*.

Work from the top of the wall downward. Thus, if the uncoated portion of the wall needs rewetting, the water will not run over freshly applied bonding.

Most workers can cover a section about 5 feet wide standing in one position. Start applying the bonding 2 or 3 feet from the top of the wall and trowel the mix upward to the plate. Move down another 2 or 3 feet and repeat the process, blending the freshly covered section into the bottom of the section above.

There are four essential steps in successfully applying and finishing the bonding:

1. Apply the mix with firm trowel pressure, pushing the load upward and outward until a fairly uniform coverage is attained.
2. Follow with longer, lighter strokes, holding the face of the trowel at a very slight angle to the surface (about 5″).
3. Move to the area below and apply mix as in steps 1 and 2. Continue bonding for 15 to 20 minutes, or until you have covered 25 to 30 square feet of surface.
4. Dip the trowel in the water to clean it. Retrowel the first area, holding the trowel at a slight angle as in step 2. With firm pressure and long strokes, sweep over the area only enough to smooth out any unevenness.

Too much retrowelling may cause hairline cracks, or crazing. In addition, a slightly fibrous texture has a more pleasing appearance and hides unevenness in the surface better than does a very smooth surface.

A calcamine brush may be used to obtain a pleasing, brush surface in place of toweling as described in step 4. Brushing must be done with light strokes immediately following step 3, before the mix begins to set. In hot, dry weather brushing may need to be done on smaller areas immediately after step 2. Use either horizontal or vertical strokes depending on the surface effect desires. When the brush begins to drag because of mix collecting in the bristles, dip the brush in water and shake out the excess. This will probably have to be done after brushing an area of 10 or 15 square feet.

A stippled surface may be obtained with paint roller from which the fibers have been burned off with a torch. The fibers melt, leaving nubs on the roller surface. Follow the same procedure as described for obtaining a brushed surface.

If the bonding application must be stopped for 30 to 45 minutes or more, try to stop at a corner or at the edge of a window or door opening, particularly when color has been added to the mix. Color differences that might occur between batches will then be less apparent.

Fill the corner junction between the wall and footing, carrying the bonding mix onto the top of the footing on both sides of the wall. If the wall is built on a concrete slab floor on grade, carry the surface bonding down over the outside edge of the slab to help seal the joint between wall and floor.

Wet the finished bonding with a fine spray of water once or twice the first day to aid the curing process.

Roof construction can begin 24 hours after the bonding is completed, but a longer waiting period is desirable. Erecting the roof before applying the surface bonding is advisable because the interior work can be done during inclement weather. Also, the added weight of the roof helps to seat blocks in the wall firmly.

Coverage of the Bonding Mix

Twenty-five pounds (dry weight) of bonding mix should cover at least 60 square of wall, or about 30 square feet of wall bonded on both sides.

Time Requirements

The time required to erect and complete surface-bonded walls will depend on such factors as the levelness of the floor or foundation on which the walls are to be erected, the building experience and skill of the workers, the quality of concrete blocks (particularly uniformity of dimensions), and the building design: specifically the number of window and door openings and offsets in the walls which involve interior corners. However, a conservative average would be 5.0 man-hours per 100 blocks for stacking and 2.5 man-hours per 100 blocks for surface bonding.

NOTE FROM MORTARSPRAYER.COM
The above steps are for hand trowelling. The stucco sprayer we offer will cover your surface bonded block project many times faster than hand trowelling. And the labor involved is much less!