



Subject: MORTAR AND POINTING PROCESS FOR THE DESANA BRICK RAINSCREEN SYSTEM

The mortar for the Desana Brick Rainscreen System is a proprietary blend of lime, silica sands and natural aggregates together with additives to provide water resistance, thixotropic (flow) properties, workability, and color.

Please refer to the Data Sheet for mixing instructions and general data. As with any mortar, it is dependent on weather conditions including temperature, wind, humidity, and sunshine. The mortar should be installed at 40 °F (4 °C) and rising for a minimum of 48 hours. If temperatures fall below 40 °F (4 °C) while mortar is curing, those areas should be protected during the cure time. Do not install the mortar while it is raining.

As with any mortar some small cracking is possible. Care should be taken at all steps to assure proper mixing, installation, and tooling. The mortar is a moisture cure. It is dependent on the extraction of water from the mix. Therefore the curing will be affected by the weather as noted above. Mortar that is improperly installed, unfilled joint areas, gaps in the mortar, premature tooling can exhibit cracks during or after curing. If cracks do form they should be inspected to determine if they are surface cracks or through cracks. Surface cracks of less than 1/16 - 1/8 in (2-3mm) should be repaired. Through cracks must be dug out and repointed. Small surface cracks, crazing, or checking may be visible but will not affect the performance of the mortar. Through cracks must be repaired.

Mixing

Mortar bags should be weighed occasionally to ensure they contain 50 lbs as specified. The powder/water ratio is 50 lbs Desana mortar to 6 quarts of potable water.



Items you will need to get started:

- (2) Clean 5 gallon buckets
- (1) 1/2" or larger, high R.P.M. drill
- (1) Mixing bit
- (1) Measuring bucket
- (1) Scoop (to load the mortar gun tube)
- (1) 50 pound bag of mortar.

Start with the (2) 5 gallon buckets. One full of clean water and carefully measure 6 quarts of water into the other 5 gallon bucket that you will do the mixing in.

Open the bag of mortar and pour approximately 3/4 of the bag into the bucket containing 6 quarts of water. If using a colorant add it at this time.

Begin mixing immediately with the "turbo mixer" and drill. Be sure to get the corner all the way around the bottom of the bucket. If you don't thoroughly mix the mortar you will have clumps of mortar in the mixture that will cause the mortar gun to plug and jamb which will require reloading and time delays.

Mix for approximately 3 minutes and you should have a bucket full of too wet to use mortar. Add the remaining 1/4 bag of mortar. Stir the added dry mortar into the wet mix. Using the power drill begin thoroughly mixing the mortar for an additional 2 - 3 minutes.

If the mortar is too dry to flow thru the mortar gun, add only a very small amount of water (1 cup or less) and mix for approximately another minute. If the mortar is too wet and runs out the tube too quickly just let it stand undisturbed for about 5 - 7 minutes and try again.

If the mortar is not used quickly enough and it begins to thicken and becomes difficult to use, add a small amount of water and re-temper (re-mix) until creamy and smooth and flows properly thru the mortar gun again. This can be repeated as often as necessary.

Mixed mortar may be kept for up to one hour before use. Depending on weather conditions it may be necessary to cover the bucket/hopper with either damp hessian or polythene sheeting.

Mortar can be applied with a mortar tube or icing bag. Some hydraulic pumps may be suitable. Peristaltic will provide more consistency than auger pumps.

Filling Gun

Fill mortar tube to within 3/4 in of the top and shake to dispel air pockets. Full tubes may be stored upright in a bucket with 3/4 in of water in the bottom to prevent the mortar in the nozzle from stiffening. In hot weather the bucket and tubes should be covered.



The tube should be placed in a gun so that it is supported on the three bars of the frame and so that the chamfer of the nozzles faces upwards.

The gun works by fingertip pressure on the trigger. If greater pressure is required, then probably either the gun is blocked, or the washer is too tight and needs adjusting or cleaning.

Installation and Joint Filling

Divide the wall into workable grids so the mortar can be methodically applied in both vertical/horizontal joints, this will ensure each area cures evenly.

Vertical joints should be mortared prior to horizontal joints. Starting at the lowest point and moving upwards so the mortar has a base to work from, this will ensure the vertical joints are filled to the full depth of the trays.

Hold the gun with the barrel tilted down to the nozzle to help the mortar flow and keep the nozzle just clear of lightly resting on the bricks.

Start each area by filling vertical joints from the lowest course to the highest. Fill each joint from the bottom of the joint to the top. When the joint is full, tilt the barrel of the gun down below the nozzle and 'cut' the mortar from the nozzle on the underside of the brick above.

Fill the horizontal bed by drawing the nozzle across each joint in a constant smooth motion to ensure the cavity between the brick slips are completely filled with an overspill protruding from the face of the brick by approximately 1/4 - 3/8 in. The gun should be kept at a constant angle to the joint to promote an even fill. The trigger should be squeezed with confidence so that mortar is injected to the back of the joint and slightly overfilled rather than under filled.

Attention should be paid to complete and continuous filling of the joints to be sure that the mortar fills the voids and no gaps are visible. This is also true for corners, etc. so that weak points and cracks are avoided. It is recommended that the joint is filled by running the nozzle around the corner rather than up to and away from the corner at each side. Full penetration can be measured by periodically removing a small section of mortar from a joint with a small narrow spoon/spatula for a visual inspection.

Tooling/Striking

If the mortaring process is done neatly the wall will not need cleaning, however if the striking is begun too early and the mortar is too wet when the brush down is done there will be mortar smeared on the face of the brick and additional cleaning will be necessary.

If mortar overflows the joint and runs onto the face of the brick when pumping in the mortar- LEAVE IT ALONE until the time you are striking that area and it should fall right off of the brick, if you try to scrape it off while it is still very wet it will smear on the face of the brick.



The tooling-off process is designed to further compress the mortar deep into the joints and fill the void between brick and the trays, this is achieved by pushing the tool along the bed at the same time creating a small wave of mortar filling and pressing the mortar more effectively into the joint and cutting off the excess mortar at the brick edge.

The most effective joint profile is the half round or “bucket handle”. Using the ‘bucket handle’ jointing tool to press the mortar into the joint ensures that the joint is filled and sealed against the top and bottom faces.

Other joint profiles may be achieved using a pointing trowel or a proprietary pointing tool. Joint profiles which expose the joint to the weather such as “recessed” or “raked back” joints should be avoided as with any type of pointing system they are prone to water penetration.

The mortar must be tooled off only after it has formed a semi dry surface skin, the texture of a soft cookie, but before it is too stiff to work. The time mortar takes to dry to this state varies with the dampness and absorbency of the brick and the weather conditions. In some cases in colder climates this can be as much as 1-4 hours. Refer to previous statement regarding the texture.

Striking of the joints early while the mortar is still moist can lead to shrinkage and cracking which must be avoided.

The tooling-off technique with the “bucket handle” tool is to PUSH the tool rather than pull or drag it when making the first pass. This allows the operator to apply more pressure, carries along a small wave of mortar filling and pressing the mortar more effectively into the joint and “cuts” excess mortar on the top and bottom edge of the bricks above and below.

Corners, details and reveals should be tooled-off so that mortar is pushed or pressed into all the corners rather than pulled away from them. The jointing tool may be “rocked” around external corners to avoid pushing the mortar out.

Brush off with a fibre brush when the mortar has dried enough to be brushed hard without discoloring the brush but before it has cured.

After tooling-off on very dry days it will be necessary to “mist spray” the joint to avoid excessively fast drying which could cause cracks.

Curing

Protect during curing in line with accepted best practices in respect of new brickwork including the provision of protection from rain, frost, direct hot sun and drying winds.

It is recommended that a mockup panel is built and approved so that it can be referred to if any quality issues are raised once the installation on the building commences.



Remedial Repair

Modern angle grinders can cause damage to the masonry during the installation process. Traditional masonry hand tools such as a hammer and appropriate chisel/s etc. should be used to remove affected mortar.

The essential factor is to ensure that new mortar is able to form a good bond with the masonry. The key aim is to fully expose the sides of the brick and the back of the joint. If this is not done then the new mortar is simply bonding to the old defective material.

Joints must be cleared out thoroughly. If mechanical means of mortar removal are being used, then they must be supplemented with hand tools to do the finishing work. For example, chipping out nibs and finally cleaning the sides of the tile within the joint. Care should be taken to ensure there is no damage to the front arris of the tile.

It is essential that all the dust and debris is removed from the affected joint prior to any new mortar being placed.

Joints should be cut out a minimum of 3 in (76 mm) on either side of the affected areas and the end of the existing good mortar feathered to minimize any stitch marks.

The new mortar should be placed to ensure there is no under-filling of the joint so when the joint is struck good compaction is achieved to the back of the joint, the sides of the slips and of course the feathered ends of the existing mortar.

As with any remedial process, care and attention to detail are key to a successful conclusion.

If there are any questions please contact Desana Partners.

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