

## Cleaning Problems - Causes & Remedies

The cleaning of masonry is not normally a problem. However, when it is performed improperly, the remedy can be costly. Improper cleaning can result in one of the following two problems: stains; i.e. primarily light green, brown, or white, or loss of surface sand coating.

### Stains

Most brickwork is hard to stain, particularly brick that has a red body color. Staining will occur more frequently in light body brick or in any body brick when manganese or additives have been added to the body mix. Rarely will brick stain without the presence of an acid. Checking a cube of unused brick away from the building should confirm if the staining occurred before or after installation. Frequently, the job superintendent will watch the brick being cleaned and believe that cleaning instructions are being followed precisely. Without fully understanding what can go wrong, the cleaner may have stained the brickwork.

The larger the mortar smears and the longer the mortar has been on the wall, the more difficult the cleaning. Consequently either stronger cleaners or more rubbing is necessary to clean the brick. Most cleaners contain hydrochloric acid (HCl), i.e. muriatic acid. Commercial cleaners all contain HCl, however some products contain special additives to make the cleaners work more effectively with sensitive brick.

So, what can go wrong to cause staining? Under normal cleaning procedures, as outlined in the Meridian Brick Technical Profile #1A, the wall to be cleaned should be thoroughly wetted before the chemicals are applied to ensure acid is not absorbed into the brick. The cleaner should then be applied and allowed to sit on the brickwork for 3 to 6 minutes to soften the mortar and a bristle brush should be used to scrub the mortar from the brick face. The mortar and cleaner are then to be rinsed off the wall.

However, when improper procedures occur as listed below, cleaning problems will develop.

- Prewetting too large an area, causing part of the wall to dry out before the cleaner is applied.
- Not prewetting the wall below the section being cleaned prior to the chemicals being rinsed off.
- Ignoring hot, dry, windy weather, causing the walls to dry out quickly.
- Using contaminated water.
- Applying too strong a cleaning solution or the incorrect cleaning solution.
- Waiting too long to rinse off the chemicals.
- Not rinsing the walls sufficiently to rinse off all the chemicals.

- Applying the chemicals with high pressure, which will force the acid past the surface water.
- Prewetting under high pressure can break down mortar joints, leading to the chemicals getting deep into the wall.

Remedying stains can be time consuming and costly work, however, major cleaning chemical manufacturers have specialty products for removing most stains. There are precautions that must be considered when correcting these problems.

- Do not reclean brickwork with the same chemicals unless recommended by the cleaning chemical manufacturer.
- If there is deterioration, or suspected deterioration, in the mortar joints, additional water and chemicals needed to remove the cleaning problem may recreate the same problem. Contact your cleaning chemical supplier for recleaning solutions.
- Always test the remedial cleaning procedure on a small, out of the way portion of the building.

Finally, the most important consideration when removing stains from brick is to avoid improper cleaning. Follow the suggestions in Technical Profile #1A to minimize cleaning problems. A critical precaution is to test clean a sample wall area. Allow 3 to 7 days to see if any staining occurs before cleaning the rest of the building. If there is a cleaning problem, test clean another area until you find the proper cleaning procedure before proceeding on the entire building. If a cleaning problem occurs after the test area has been successfully cleaned, it is obviously a workmanship problem. Further evidence is to examine unused brick at the job as verification that the staining problem is a cleaning problem.

### Loss of Surface Coatings

For most residential clay brick, a variety of liquid and solid coatings are applied to the face and headers of the brick during manufacture. These can include slurries, sand, mud and other coatings. Indiscriminate use of a high pressure washer can remove some of this surface coating, which leaves noticeable random streaks when the brickwork is dry. It can also remove some of the mortar. Loss of coating or mortar can be the result of one of the following:

- Excessive pressure. Power-wash pressure should not be in excess of 700 psi (4850 kPa).
- Using a concentrated nozzle. A 25° to 60° fantail nozzle is recommended.
- The power-wash is applied at a distance too close to the brickwork. A minimum distance of 1 foot (300 mm) is recommended.
- The power-wash is applied in an erratic fashion. The power-wash should be applied in consistent horizontal strokes to ensure an even finish.

- The power-wash valve is opened with the nozzle directly on the brickwork. The initial pressure of the powerwasher, when the valve is first opened, is higher than the operating pressure. It is recommended that the nozzle be faced away from the brickwork, or held further back to allow for the initial pressure surge.
- Excessive abrasion with a wire brush during cleaning.

Once the surface coating has been removed, it cannot be reapplied. The best solution is to try and achieve an even finish by recleaning the brickwork using even horizontal strokes and applying the above recommendations.

\*For more information on Prosoco cleaning products, visit their website at [prosoco.com](http://prosoco.com).