

Efflorescence is a crystalline deposit of water-soluble salts on the surface of masonry. Although efflorescence is unsightly and a nuisance to remove, it is not harmful to the brick masonry nor does it affect the structural integrity of the masonry. For efflorescence to occur, a number of conditions are necessary; there must be a source of water into the masonry, there must be soluble salts within the masonry, and there must be early life of the building.

The source of the salts may be from either the cement and/or lime in the mortar, adjacent materials or occasionally the brick.

Building Bloom

In new construction, efflorescence is referred to as “new building bloom”, and the source of the water is the moisture within the building material during the construction period. Once the building is completed and the building components dry out to the ambient humidity level, no further efflorescence should be expected.

Minimizing Efflorescence During Construction

Efflorescence can be avoided, or at least minimized, during construction by limiting the amount of moisture which can enter into the brick and/or masonry. Excess moisture in the brickwork increases the risk of efflorescence.

During inclement weather, the brick cubes should be stored on skids, and covered with board. This will prevent the brick from getting saturated before installation.

During construction, the top of all masonry walls and veneer must be covered at work stoppages, especially during inclement weather. The cover should extend a minimum of 2 feet (600mm) down both sides and should be held securely in place. Also avoid storm water run off, from roofs and slabs above, onto the masonry.

This precaution of covering masonry also applies to openings left in masonry during construction. Typical examples include:

- The brickwork below window sills, prior to the installation of the windows and sills
- Tops of parapet walls, prior to the installation of a cap
- The horizontal movement joint below shelf angles, prior to caulking

These openings are generally addressed by another trade, but due to trade scheduling are sometimes left open for a period of time. These openings are ready entry points for water and can result in extensive efflorescence. In these cases, the top of the exposed brickwork should be suitably covered, as described above.

Dealing With Efflorescence

It is advisable to allow the brickwork to dry out completely before attempting to remove efflorescence. Cleaning efflorescence before the brickwork has had time to dry out will be ineffective, as the efflorescence is still occurring.

The removal of efflorescence is relatively easy. Efflorescence salts are water soluble and generally will disappear of their own accord with normal weathering. This is particularly true of “new building bloom”.

If more immediate removal is required, efflorescence salts can be removed by dry brushing or with clear water and a stiff brush. If this method proves to be ineffective, then the use of proprietary cleaning agents can be considered. Refer to the technical note on “Cleaning Procedures for New Brickwork” for details.

As with all cleaning procedures, it is advisable to try first on a sample panel in an inconspicuous area to ensure that the method will be effective, before cleaning the rest of the building. Always allow at least three days for the wall to dry out before assessing the effectiveness of the method. Note that efflorescence will not be visible if the wall is still wet.

Although difficult to predict, efflorescence is generally associated with wet and cold conditions, typically during winter or early spring construction. It is advisable, particularly in the cold northern climates, to avoid the use of excess water in cleaning masonry after October and before spring, as this practice can increase the risk of efflorescence.

Testing The Brick

If the specifier requests an efflorescence test for brick, it must be run in accordance with ASTM C 67 “Standard Test Method of Sampling and Testing Brick and Structural Clay Tile” or CSA A82 “Fired Masonry Brick made of Clay or Shale”. Upon testing, the brick must rate as “not effloresced”. Sampling and testing should be designated when the purchase order is placed.

The efflorescence test should be regarded as providing information, not as a qualifying requirement, unless specified. Brickwork may show efflorescence even if the brick is rated as “not effloresced”. Conversely, there may be no efflorescence on the brickwork even if the brick is rated as “effloresced”.

Note: The “not effloresced” designation described in ASTM C 67 is the same as the “slight efflorescence” designation described in the Canadian standard CSA A82.

Other Considerations Regarding Efflorescence

In extreme cases of efflorescence, a thin layer of poultice can be applied to the masonry surface after cleaning. This will draw the salts out beyond the brick surface. The poultice can then be washed off with clean water.

Power washing is not recommended to remove efflorescence as this process will drive additional water into the masonry and can result in further efflorescence.

If efflorescence occurs repeatedly, it is an indication of excess moisture entering into the brickwork. Efflorescence can be a useful indicator that roof drainage details are incorrect, or that there is exfiltration of air from the interior. In order to prevent further efflorescence, the source of this moisture must be identified and eliminated. Eliminating this moisture will help reduce further moisture-related problems.

This is a rare phenomenon. Unlike normal efflorescence which is deposited as a thin surface layer, lime weeping builds up to form a thick encrustation in a localized area. It usually occurs at joints, cracks, or base wall flashing level. Lime weeping is more difficult to remove. Contact Hanson Brick for advice in removing lime weeping.