

## Technical Bulletin – Efflorescence Causes, Control, & Removal

The following guidelines are intended to help the homeowner understand the factors that cause efflorescence on masonry walls. These guidelines also include a recommended method for cleaning and treating effloresced walls. The homeowner should contact a qualified mason for assistance in completing these recommendations.

### Efflorescence

Efflorescence is a crystalline deposit of a water-soluble salt on the surface of the brick masonry. Efflorescence is usually white in color. A common source of the soluble salts which cause the efflorescence is in the materials used to make the mortar (cement, sand, water, additives, etc.). For efflorescence to form there must be a presence of free water in the masonry to dissolve the soluble salts. Normal amounts of surface water such as rainfall striking the wall rarely cause problems. Pronounced and continued accumulations of efflorescence is generally an indication that water is entering the wall through avenues which go beyond the surface, causing accumulations of moisture to slowly migrate to the surface depositing the salt deposits.

Efflorescence is generally a cosmetic or aesthetic problem. However, it can also be a warning for more serious problems in the future if sources of water entering the wall are not stopped. If left unchecked, freeze thaw damage and spalling may occur. A common efflorescence phenomenon referred to as “new building bloom” or “new construction bloom” is caused by the presence of elevated amounts of water entering the masonry during construction. This water requires a period to dry out during which soluble salts from the various masonry components dissolve, migrate to the surface, dry and crystallize into white residue called efflorescence.

Efflorescence, especially if it is “new building bloom” will normally disappear on its own with the advent of warm rain and good drying conditions of the summer and should not require cleaning. If the efflorescence persists beyond the new building bloom stage, it is usually a clear sign that excessive moisture is still entering the wall.

### Control of Moisture

The first step in the control of efflorescence should be the elimination of any excess moisture from entering the masonry.

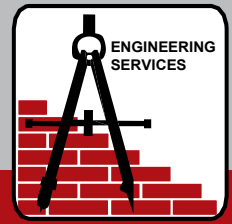
Required weep holes, flashing, coping, chimney caps, etc. must be properly installed and any condensation conditions eliminated. Please refer to General Shale’s RECOMMENDED DETAILS ESSENTIAL TO DURABLE BRICK HOME CONSTRUCTION (attached) for more information.

The following is a checklist of some of the more common detail problems which can cause efflorescence. The homeowner should inspect his home thoroughly to determine if any of these problems exist.

No base flashing and weep holes in masonry walls.

Inadequate chimney cap, no flashing below cap, no drip edge, no caulk around skirt board.

Lack of slope and no flashing below window sills.



## Technical Bulletin – Efflorescence Causes, Control, & Removal

Improper drainage, no weep holes, and no waterproofing behind retaining walls.

No flashing below brick rowlock caps on retaining walls or privacy walls.

Holes in mortar joints, improperly tooled joints, or unfilled mortar joints.

Inadequate frieze board coverage or no caulk (Consider that a wind driven rain can be driven vertically upwards 1” for each 10mph increment in wind speed.)

If any of these problems do exist, the homeowner should contact a mason to have them corrected.

### Treatment & Cleaning

After correction of excessive moisture entry, the efflorescence will normally disappear on its own. If not, dry brushing followed by rinsing while brushing will usually be effective. Heavy or stubborn efflorescence may require the following additional treatment.

The following method should not be used on brick which has been designated as cleaning class C. To determine the cleaning class of the brick on your home you can contact your nearest General Shale sales office.

The walls can be treated and cleaned with a product called **EF-FORTLESS** which is manufactured by the EaCo Chem, Inc.

All cleaning products should be used in strict accordance with the manufactures use instructions.

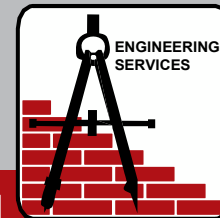
### Further Treatment If Desired

#### General Protection Treatment

Added protection from recurring efflorescence may be obtained by treating the walls with a breathable siloxane-based water repellent such as **Weather Seal Siloxane PD** as manufactured by ProsoCo Inc. The material should be applied in accordance with the manufactures use instructions.

Certain general conditions should be met before applying a water repellent to masonry walls:

- A. Appearance of the walls must be acceptable before application. It will be difficult or impossible to remove dirt, stains, or efflorescence after treatment.
- B. If tuck-pointing is required it must be done before the water repellent is applied. Tuck- pointing mortar will not bond properly to a treated wall.



## Technical Bulletin – Efflorescence Causes, Control, & Removal

- C. The masonry must be dry.
- D. Do not use surface forming or acrylic based sealers on exterior masonry walls.
- E. The application of a water repellent may cause a slight change in appearance to the masonry wall. Treated walls will also appear different or “bead-up” when wet. To ensure satisfaction with appearance a test application should be made in an inconspicuous area.
- F. The application of any water repellent will not be effective if applied over poor masonry work. Mortar joints need to be filled and properly tooled. A water repellent will not bridge holes or fill gaps in mortar joints.

### Spot Treating Problem Areas

If the homeowner determines that proper flashing details have not been used (such as no flashing below window sills or below rowlock caps) the application of a water repellent may provide an alternate, less expensive repair than installing flashing.

For sport treating applications a brush or small roller can be used to apply the material to the top of window sills or the top of brick wall caps. **Weather Seal Siloxane PD** or **Block Guard and Graffiti Control** by Prosoco can be used for spot treating. All the conditions above also apply. In particular when spot treating keep in mind item E above.

If the efflorescence and/or moisture problems persist proper flashing will have to be installed. The homeowner should understand this recommendation is based on cost considerations. Although the application of a water repellent can sometimes be effective in this situation it is not a true substitute for proper flashing.