

WATER REPELLENTS

The technology of waterproofing masonry materials has improved considerably in the last few years and many durable water repellent materials are available which can reduce water intrusion through brick, stone and mortar joints. Proper application of waterproofing materials can be a long lasting minimizer of efflorescence, mildew, staining and dirt. Many materials are offered with 5-10 year warranties. Some studies indicate that water repellents can reduce freeze-thaw damage to masonry products and prevent loss of insulation value.

The most popular and time-tested water repellents include silicones, acrylics, silanes and siloxanes. Silicones are relatively inexpensive, only provide a surface film, and usually, only last a short time. Silicones are mainly used to keep Cast Stone clean during construction operations and they make the finished installation easy to clean. Many types of acrylics are available but most have poor vapor transmission, low penetration and inadequate resistance to ultraviolet light. Some acrylics have been known to turn yellow or produce gloss. The Cast Stone Institute® recommends the use of silane or siloxane (or blends containing each) for weatherproofing Cast Stone when a water repellents desired.

Silanes and siloxanes work by penetrating the exterior surface and then undergoing a chemical reaction with the moisture to form a water-repellent silicone resin within the void structure of the Cast Stone. Since they react with water, walls may be slightly damp but if water is contained in the pores, penetration may be limited. Do not apply the product within two days of rainfall or building washdown. Air temperature should be at least 50F for most materials and not below 40F for 24 hours.

The application must be dry before the wall is allowed to get wet. Water repellents are not a remedy for water absorption problems which are caused by poor details such as the improper use of flashing, lack of weep holes, non-ventilated wythe, failure of joint materials or the use of hard mortar joints where sealant joints should be used. Cast Stone has a natural permeability, which is approximately equal to natural limestone and architectural concrete. The purpose of a water repellent should be to prevent water intrusion through the outer surface of the brick, mortar or Cast Stone, while allowing sufficient vapor transmission to let moisture out of the wall cavity, thereby improving weathering qualities and the ability to easily clean the surface if it becomes dirty.

Proper evaluation of suggested water repellents should include inspection of similar installations where the proposed material has been used under similar exposure conditions. The manufacturer or the applicator not to discolor the Cast Stone should guarantee the application. Water repellents should be applied after all pointing, touch and repair, cleaning and inspection operations are completed.

This Technical Bulletin addresses generally accepted practices, methods and general details for the use of Architectural Cast Stone. This document is designed **only as a guide** and is **not** intended for any specific application or project. It is the responsibility of design and construction professionals to determine the applicability and appropriate application of any detail to a specific project based on professional judgment, specific project conditions, manufacturer's recommendations and solid understanding of product characteristics. The Cast Stone Institute makes no express or implied warranty or guarantee of the techniques or construction methods identified herein. Technical references shall be made to the edition of the International Building Codes for the location of the structure, the latest edition of the TMS 402/406 Masonry Standards document and TMS 404, 504, 604 Standards for Design, Fabrication and Installation of Architectural Cast Stone.

The Cast Stone Institute (CSI) is a not-for-profit organization created to advance the design, manufacture and use of Architectural Cast Stone. To further this goal, the CSI continually disseminates information to targeted construction industry audiences through presentations, programs and technical publications.