Stucco can be used to reduce the permeability of old and new masonry walls, and is a popular finish on concrete block. A two-coat application of portland cement stucco may prove to be the most economical and satisfactory method for treatment of leaky walls where repointing and exterior wall treatment costs would be excessive. Good bond between the stucco and masonry depends on mechanical key and suction, and the texture of concrete masonry provides an excellent substrate. Lime may be added to the cement-sand mixture for plasticity, but should not exceed 10% by weight or 25% by volume of the cement. Total thickness of the stucco application should be a minimum of ⅝ in. Walls that are not reinforced against shrinkage and movement cracks can transmit excessive tensile stresses to monolithic stucco coatings and cause cracking of the finish surface as well.

Clear water repellents are often advertised as a cure-all for masonry moisture problems, and they are often incorrectly referred to as "sealers" or "waterproof" coatings—which they are not. Water repellents generally change the capillary angle of pores in the face of the masonry to repel rather than absorb water, but they will not bridge hairline cracks or separations at the mortar-to-unit interface. Clear water repellents can reduce absorption through the face of the masonry and prevent soiling on light-colored units while still permitting the wall to breathe.

There are three types of clear water repellents: stearates, acrylics and silicones. No single type is equally suitable or effective on all masonry substrates, because the physical and chemical properties of clay brick, concrete masonry, and stone vary so widely. Compatibility of substrate and surface treatment should always be evaluated on an individual basis.

Stearates, acrylics, and some silicone resins form a protective film on the masonry surface through resin deposition. The percent of solids content varies and should be selected on the basis of the porosity of the substrate to which it will be applied. A dense material treated with a high-solids compound will have a greatly reduced moisture vapor transmission (MVT) rate and will not breathe properly. Conversely, a porous material treated with a low-solids compound will not repel moisture effectively. Stearates and modified stearates generally have about 5% solids and are used for dense clay brick and stone surfaces. Acrylics range from 7.5% to 25% solids and are more suitable for concrete masonry. All acrylics will darken the masonry and change the natural matte finish. When solids exceed 10%, acrylics will leave a noticeable glossy sheen on the surface.

The most widely used water repellents are silane and siloxane compounds, which impregnate the masonry surface and react chemically with water to form silicone resins. Although the extremely small molecular structure permits penetration to a depth of about ⅜ in., the substrate pores are not completely blocked, so moisture vapor transmission remains high. Silanes and siloxanes also rely on a chemical bond to silicate minerals in the masonry, so they are not appropriate for application to limestone and marble. Silanes require the catalytic action of substrate alkalis to form the active silicone resin, so they are not appropriate on clay brick or natural stone. Siloxanes, on the other hand, are polymerized compounds which react independent of the substrate composition. Some proprietary water repellents are blends of silane, siloxane, stearates, and other compounds.

Many manufacturers currently market concrete masonry units made with an integral water-repellent admixture. The mortar used with these units must also be treated with an integral water-repellent admixture, but no integral or field-applied water repellent, regardless of its chemical composition, will solve the problems of poorly designed or constructed masonry

walls. Water repellents and other coatings are not a substitute for flashing and weep hole systems in cavity wall or single-wythe designs. If a surface treatment is determined to be desirable on repair or renovation projects, defects such as leaky copings and roof flashing, defective sealant joints, and hairline cracks at the mortar-to-unit interface must be corrected before the treatment can be applied. Efflorescence must also be removed and the source of water which caused it found and repaired before applying either surface coating or penetrating treatments. Even though the moisture vapor transmission rate of the wall may be relatively unaffected by water repellents, if the masonry is effloresing and the source of moisture has not been addressed, concealed interstitial salt crystals may be formed within the masonry. The partially obscured capillary pores allow moisture to evaporate through the surface, but block the natural escape of the salts, which are deposited behind the treated area, where they recrystallize. The continuing action of this "subflorescence" gradually increases the salt concentration, and the expansive pressure of crystallization can be sufficient to spall the face of the masonry. Although a clear water repellent may initially appear to stop efflorescence, it may only be burying the problem below the surface.

Since water repellents cannot bridge even very small cracks, and since the primary path of moisture through the face of a masonry wall is through cracks, it is misleading to say that they "protect" the wall from moisture infiltration, as many manufacturers claim. Depending on individual substrates and conditions, clear water repellents can help shed water from the face of masonry walls, decrease the absorption of porous units, and protect the materials from staining and from excessive absorption of acid rain. They will not, however, "waterproof," nor will they "seal" the surface. Water repellents, when used, should serve only as a single component of the total system design, and should never be relied upon as the first or only line of defense.