



HOW DOES THE *PENETREXX*[®] *ANTIMICROBIAL* TECHNOLOGY WORK?

The active ingredient in the *PENETREXX*[®] *ANTIMICROBIAL* forms a colorless, odorless, positively charged, polymer, which chemically bonds to the treated surface, think of it as a layer of electrically charged swords. When a microorganism comes in contact with the treated surface, the “quat” or “sword” punctures the cell membrane and the electrical charge shocks the cell. Since nothing is transferred to the now dead cell, the antimicrobial doesn’t lose strength and the sword is ready for the next cell to contact it. Normal cleaning of treated surfaces is necessary to prevent buildup of dirt, dead microbes, etc. which could cover the “swords”, prohibiting it from killing microorganisms.

WHAT IS THE PURPOSE OF THE SILANE PORTION OF THE MOLECULE?

Silanes are extremely efficient bonding agents which can be coupled to other molecules and then used to permanently bond those molecules to a target surface. This process modifies surface properties of building materials and transforms them to a material that will not support microbial growth. In other words, it is the “glue” that holds the “spike” to the surface.

IS THE *PENETREXX*[®] *ANTIMICROBIAL* TECHNOLOGY A QUATERNARY COMPOUND?

PENETREXX[®] *ANTIMICROBIAL* is an organosilane, but part of the molecule is a quaternary amine. Unlike traditional quats, which have a very short effectiveness and a limited kill spectrum, *PENETREXX*[®] *ANTIMICROBIAL* provides long-term protection, and controls a very broad spectrum of microorganisms (including Gram (+) and Gram (-) bacteria). As an added benefit, it is easier to use.

WHAT IS THE DIFFERENCE BETWEEN *PENETREXX*[®] *ANTIMICROBIAL* AND OTHER *ANTIMICROBIALS*?

Conventional products are absorbed into living cells and kill by way of poisoning the organism. They are designed to act quickly and dissipate quickly to avoid adverse effects to humans and animals due to their toxic ingredients. Most commercial antimicrobials used for treating building surfaces do a great job of getting a quick kill on bacteria and fungi, although most have a limited spectrum of effectiveness. The *PENETREXX*[®] *ANTIMICROBIAL* technology takes a totally unique approach. It provides an effective initial microbial kill when applied, like the conventional methods but it also provides long-term control of growth on treated surfaces.....that basically lasts for the life of that surface. The surface itself is modified to make it actively antimicrobial for the normal life of the substrate onto which it is applied.

The microorganism is attracted to the treated surface and punctured by the long molecular “sword.” This is a physical rupture of the cell membrane, *PENETREXX*[®] *ANTIMICROBIAL* is not consumed by the organism and stands ready to defend the surface from the risks of cross contamination.



***PENETREXX*[®]**

*Active Antimicrobial Barrier
bonds to treated surfaces for
long-term protection*

IS *PENETREXX*[®] *ANTIMICROBIAL* PERMEABLE TO MOISTURE?

Yes, moisture that is in or on the treated material or surface passes through the treatment. After curing, the treatment is somewhat hydrophobic (water repellent) but it should not be considered a replacement for commercial water repellents.

DOES *PENETREXX*[®] *ANTIMICROBIAL* GIVE OFF GASES DURING OR AFTER APPLICATION?

No, *PENETREXX*[®] *ANTIMICROBIAL* does not volatilize, dissipate, or leach onto other surfaces or into the environment. *PENETREXX*[®] *ANTIMICROBIAL*'s chemistry polymerizes where it is applied and forms a permanent bond that lasts for the life of the treated surface.

HOW LONG DOES THE TREATMENT LAST?

Since the cured antimicrobial is non-volatile, insoluble, and non-leaching, the treatment should last for the life of the treated surface. A treated surface's life span depends on a number of factors, not the least of which is surface preparation. Treating a dirty or unstable surface decreases the effectiveness of the antimicrobial. Abrasive or caustic (pH 12.0) cleaners can shorten the effective life of a treated surface. Our professional applicators have seen effectiveness for the life of the substrate under normal cleaning conditions.

WHAT KIND OF PREPARATION IS NEEDED FOR TREATMENT?

Clearstream recommends disinfecting surfaces with an EPA registered quaternary disinfectant prior to application of *PENETREXX*[®] *ANTIMICROBIAL*. However, *PENETREXX*[®] *ANTIMICROBIAL* can be applied to any clean surface.

HOW DO YOU HANDLE CONTAMINATED SURFACES?

Microbes can be extremely hazardous. Severe contamination with hazardous organisms may require extreme cleaning protocols similar to those for asbestos removal. For normal decontamination: solid surfaces should be thoroughly cleaned before applying *PENETREXX*[®] *ANTIMICROBIAL* to the surface.

HOW IS *PENETREXX*[®] *ANTIMICROBIAL* APPLIED?

For everyday applications Clearstream's[®] *PENETREXX*[®] *ANTIMICROBIAL* can be applied with our easy to use 32 oz. surface spray. When you require treatment of facilities or larger surface areas Clearstream[®] has trained and certified technicians which match the latest application techniques to the specific projects scope.

Whichever application process is used, the treated surface is protected by *PENETREXX*[®] *ANTIMICROBIAL*.



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