

BioDefense 24/7[®]

Food Contact Surface Coating

Technical Memorandum

Nano-SiO₂/TiO₂/ZnO Fusion Protected with Silane Quat

“Quats” or Quaternary Ammoniums are disinfectants, registered by the U.S. EPA as pesticides. Their efficacy may last up to 48 hours. They are susceptible to being neutralized by high pH cleaners, temperature variance and other chemicals. 35-plus years ago Corning Chemical, now part of DOW, working to extend efficacy time and strengthen Quats durability, found and patented a method to chemically bond Quats with Silane molecules to accomplish the goal. This method also formed a covalent bond with surfaces to which it was applied to further enhance durability and efficacy for up to ninety days, plus it afforded some additional protections to the surface. Over the history of “SiQuats”, as they are now commonly known, many efforts to circumvent the patent by modifying the method were met with failed efficacy and rejected for their claims by the EPA.

Today, EPA registered silane quats used in formula with other surface coatings, such as paints, soaps and cleaners, fall under a category termed “Treated Article” exemption from registration (EPA treated article exemption - **40 CFR 152.25(a)**). While the **COATING** is protected from odor-causing bacteria, mold and mildew, it may NOT claim any protection for people like Si Quats registered as pesticides for that purpose.

DevMar BioDefense 24/7[®] Food Contact Surface Coating falls under this category. The coating is bacteriostatic, and protected against growth of Odor causing bacteria, Mold and Mildew; while the proprietary Nanotechnology based fusion in water with the EPA registered, patented Si Quat and multiple nano-sized metals and minerals invisibly seal and protect any surface, hard or soft, from a whole range of contaminations and degradation – rust, corrosion, UV damage, fading, static causing dust accumulation, soil adhesion, atmospheric pollutants, like acid rain and exhaust gases staining.

Non-stick, it is hydrophobic and oleophobic. Working with natural and man-made light, these technologies degrade and neutralize VOCs, NO_x, CO₂ and other gases harmful to your assets and the environment. The Nano components, common to sunscreens, repel and refract the sun to help reduce HVAC costs. Another feature of these components make glass “self-cleaning” with Photo Catalytic Oxidation (PCO) as reaction to light changes the surface from hydrophobic to hydrophilic, causing soil to “sheet off” in the rain, or even morning dew. The PCO phenomenon works like photosynthesis in plants to help eliminate CO₂ and cool the earth. This is calculable, so you will know how protecting your buildings and other assets help protect the environment.

BioDefense 24/7[®] Nano components are tested by independent laboratories to 21 CFR 175.300 protocol for food surface and packaging safety. Every surface made of any material, indoors or out, are sealed and protected more thoroughly than ever before possible; furniture, fixtures, bath fixtures, kitchen appliances and work surfaces, serving lines and sneeze guards, as well as elevator surfaces, reception areas and cashier stations – everywhere above the floor. Vehicles, warehouse and distribution fixtures and equipment as well as manufacturing, food processing, cold storage and clean room surfaces benefit. Treated surfaces are repeatedly shown to save money by reduce cleaning time, materials and routine frequency requirements. Required cleaning protocols are enhanced and assured by properly protected surfaces.

This memo provides clarity of the role of silane quat protected BioDefense 24/7[®] and highlights the multiple added benefits available from utilizing this new Nanotechnology application beyond an ordinary silane quat...BioDefense 24/7[®].