



THE INNOVATION

The dilemma and challenge for the antimicrobial coating industry is the delivery of antimicrobial agents for the effectiveness. The antimicrobial activity in most products is through **biocidal** action achieved by leaching of antimicrobial agents from polymeric matrix such as paints. For an efficient biocidal action, polymer matrix in such coatings should be softer and not dense to release the chemical agents. Such softer polymer matrices are incapable of providing long term surface adhesion and service life.

We have developed a unique organometallic bioceramic **biostatic** and **quasi-biocidal** coating **INVESIL®** that does not contain hydrocarbon backbone. Of-course, the use of organic antimicrobial coatings has been commercialized earlier but without much success due to the following issues:

- (i) Organic coatings contained hydrocarbon in backbone and have limited adhesion capabilities to surfaces
- (ii) Due to low surface energy, such compounds have exceptional ability to encapsulate ingredients added to the coating matrix thereby limiting/inhibiting the surficial antimicrobial activity
- (iii) The insufficient antimicrobial activity observed through the organic antimicrobial coatings was due the slippery polymer surface rather than from antimicrobial agents (as these remain mostly encapsulated and not available for action)

In **INVESIL®**, we have developed unique organometallic chemistry that helps in achieving the maximum antimicrobial activity from the utilized antimicrobial agents. The antimicrobial agents are self-aligned and distributed homogenously throughout the coating matrix. The antimicrobial agent defies low surface energy of matrix and imparts maximum antimicrobial activity. The low solution viscosity helps **INVESIL®** macromers to seep hard to reach places and adopt coated surface contours. The high reactivity, and significantly high adhesion capability of coating to wide varieties of surfaces insures the long-term stability of coated surface. The solidified **INVESIL®** coating is transparent, thin and creates hard impervious barrier without adding weight or sacrificing the original surface appearance. The solid coating has a bioceramic structure without hydrocarbon backbone and leftover functional groups. *This coating can be used indoor as well as outdoor and in advanced healthcare setups.* The **INVESIL®** coating deemed to offer unmatched antimicrobial activities to coated objects through following mechanisms:

- a) Not allowing the adhesion of pathogens to the surface through self-cleaning action
- b) Not a hydrocarbon feeding due to bioceramic backbone
- c) Safer biostatic antimicrobial activity without leaching off active agents
- d) Effective and unique antimicrobial action on surface and throughout the coating thickness
- e) Exfoliation of coating surface during service life imparts unique antimicrobial action
- f) Exceptional long-term service life through invisible coating thickness and strong adhesion tendency

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