AgION™ Antimicrobial Coated Steel

SUPPRESSING THE GROWTH OF MICROBES IN HVAC APPLICATIONS
With increasing public attention focused on concerns about bacteria, fungus and mold, consumers and businesses alike are looking for answers. Researchers have been working to develop solutions for hospitals, schools, restaurants and even our homes — and manufacturers have been creating products based on their findings.

Whether it's preserving a sterilized environment, protecting food from contamination, safeguarding equipment, or keeping our classrooms and homes cleaner, the growing demand for antimicrobial products is well-documented. And now, a new technology has made possible a whole new approach to deterring the growth of harmful microorganisms.

AgION antimicrobial compound is the revolutionary substance behind this technology. It's an inorganic compound that uses the natural protective qualities of silver (Ag) as an active ingredient to inhibit the growth of microbes. The compound can be incorporated into fibers, fabrics and molded plastics, or applied as a coating on metals, such as stainless steel.

**Multiple Applications**

AgION antimicrobial-coated steel is being used successfully in a wide variety of applications, ranging from medical devices to food processing equipment to HVAC products. And that's where Carrier comes in. Antimicrobial coating technology has exciting potential for HVAC systems in hospitals, schools and anywhere else bacteria, molds and fungi are a concern.

**Carrier Innovations**

Through an exclusive agreement, Carrier is now designing HVAC equipment with antimicrobial-coated steel, giving our customers simple and economical access to the protective benefits of antimicrobial treated products. Carrier's 39M Aero air handling unit is now available with the AgION antimicrobial coating as an integral material in its pre-painted steel inner liner — the inside cabinet surface that's exposed to the airstream. This material can also be selected for our Racan custom air handlers, as a tinted coating applied to their inside galvanized steel panels. And we look forward to applying this new technology to an expanded range of Carrier products.
The Steps to Protection

The AgION antimicrobial coating uses the controlled release of silver ions to provide continuous suppression of microbial growth on the product to which it's applied. Here's how it works.

The AgION antimicrobial compound is blended into a paint system, which reside in zeolite’s open molecular structure.

When ambient moisture is present, the zeolite acts as an “ion pump,” slowly releasing silver ions into the air.

When the silver ions come into contact with bacteria and other microbes, their chemical interaction disrupts electron transfer and respiration, suppressing microbe growth on the product.

As the air becomes more humid (and the more favorable for microbial growth), more silver is released. However, there is a maximum release rate, so even under very wet conditions, the silver ions are released slowly, for long-term protection.

Coating the Steel

The AgION antimicrobial compound is blended into a paint system, which is applied to the steel using a continuous-roll coil coating process. The coating is cured at more than 400°F, eliminating VOC (volatile organic compound) emissions.

The compound can be applied to either carbon or stainless steel, coated on one or both sides.

Understanding the Technology

Silver Through History

The protective properties of silver have been recognized for thousands of years. As early as 4000 BC, Egyptians used silver-lined vessels to keep water pure during long-term storage. The ancient Phoenicians did the same for water stored during sea voyages. In the 8th century, the Chinese emperor used silver utensils. And an 11th-century Vatican decree mandated the use of silver for communion chalices. More recently, silver has been used in a host of medical applications, including:

- Silver Nitrate eye drops for newborns
- Bandages and salves for burn treatment
- Catheters
- Heart valve suture rings
- External fixation pins

There are currently more than 58 FDA-approved silver-based products.
A Proactive Antimicrobial Technology

AgION antimicrobial-coated steel inhibits the growth of microbes on treated products. Carrier has already incorporated this antimicrobial solution into our Aer and Racan air handlers. And this breakthrough technology will enable Carrier, as well as manufacturers in a broad range of industries, to build more protection than ever before into future products.

Learn More about AgION Antimicrobial Coatings

Q: How long does the coating last?
A: Salt spray, water soak and humidity testing indicates that the antimicrobial benefit will be present for the life of the coating. Durability and longevity can vary depending on the specific environment and wear and tear conditions.

Q: Has it been approved for HVAC systems by any regulatory agencies?
A: The AgION antimicrobial compound has been registered by the Environmental Protection Agency (EPA) for use in heating, ventilating and air-conditioning components.

Q: How should consulting and specifying engineers specify this coating for Carrier 39M and Racan air handling units?
A: Along with typical steel-specific information, specify “AgION antimicrobial-coated steel.”

Learn more about the benefits of using AgION antimicrobial-coated steel by calling 1.800.CARRIER or visit us on the Web at www.carrier.com. And check back often to learn about new Carrier applications for this exciting, evolving technology.

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