



A new prescription  
for your faucet...



**CARE+GUARD**<sup>®</sup>

with built-in  
**AgION**<sup>™</sup>  
Nature's antimicrobial

**NEOPERL**<sup>®</sup>

flow, stop and go<sup>®</sup>

# Faucets in Healthcare environments: What are the issues?



Every time a faucet is turned off a few drops of water are trapped inside the aerator (or laminar device) where they stagnate, warm up and eventually evaporate, leaving a film of scale, source of food for biofilm. While insignificant in a residential or commercial environment, such areas where bacteria could possibly thrive and multiply due to biofilm are a concern in healthcare facilities (hospitals, senior care, medical labs).

## What factors can enhance colonization and amplify bacterial growth in faucets?

### Water stagnation

Water droplets are trapped inside the faucet aerator. Traditional laminar devices constructed with a thick pile of wire mesh screens trap water droplets even more (Fig. 1).

### Warm water

Warm room air (65-80°F) keeps trapped water droplets warm.

### Food

Sediment and scale building up on traditional wire mesh screens provide the foundation and food supply for biofilm (Fig. 2).

## Is removing all spout-end devices a better alternative?

No spout-end device means no water stagnation in the faucet spout-end (all the water drains out) but...

- the water flow is unrestricted (no flow rate control) and can reach over 5 gpm: water and energy are wasted,
- even if a separate flow regulator is installed, without a flow straightener at the end of the spout, the stream splashes and spreads contamination when washing hands or equipment,
- the inside of the spout is open to direct contamination by splashes when fluids are poured into the lavatory or sink.

## What about low flow sprays?

While well-adapted to public bathrooms for hand-washing (where they save water and energy), faucet sprays are not recommended for use in patients rooms or nurse stations because, among other things, they make filling a glass or a vessel a difficult and lengthy process.

## Laminar devices: A better choice for hospital environments

To produce an aerated stream with up to 50% air, white and soft to the touch, air and water are mixed in the faucet aerator's mixing chamber (Fig. 3).

While drawing air from the room around the faucet is not a problem in residential and commercial applications, it can be a concern in healthcare institutions (hospital, senior care, medical labs). The room air can then contain bacteria that are best kept out of the drinking water and the fine droplets produced by the aerator can add to the risk of contamination by inhalation.



Fig. 3



Fig. 4

Laminar devices do not draw air into the water stream and produce a non-aerated crystal clear stream of 100% water (Fig. 4).

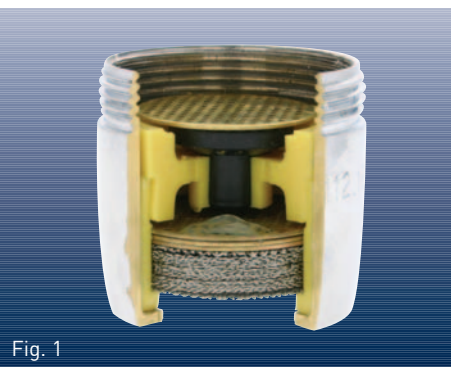


Fig. 1

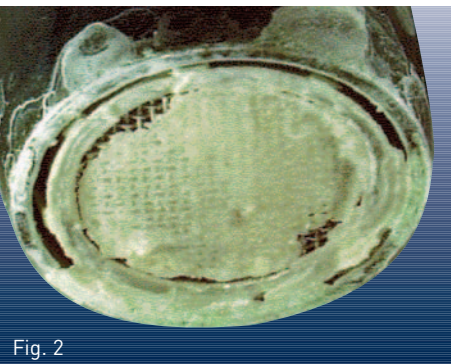


Fig. 2

### Did you know?

The VHA Directive 2002-073 requires VA hospitals to "remove aerators in plumbing fixtures" and "replace with laminar flow devices" in an effort to limit the risk of *Legionella* contamination in VA hospitals. For more details, visit [www.va.gov](http://www.va.gov)

# Innovative laminar solutions

# CARE+GUARD®

with built-in  
**AgION®**  
 Nature's antimicrobial

## Careguard® combines unique hygienic features

- A splash free crystal clear (non-aerated) stream.
- Built-in AgION® antimicrobial product protection.
- Water and energy saving (1.5 gpm max).
- Unique screenless 100% plastic Cascade® construction to prevent lime build up (no wire mesh screens).
- Virtually unbreakable single piece insert to ensure a longer useable life.
- Available for OEM as well as retrofit applications.
- Recommended for use in healthcare facilities.

## Careguard® certifications for use with drinking water in plumbing products

- ANSI/NSF 61
- ANSI/ASME A112.18.1M
- CSA B125

## Conserving water and energy with Careguard®

Water is a precious resource and upgrading your faucet spout-end devices can conserve water and energy. Compared to standard 2.2 gpm aerators, the 1.5 gpm Careguard® provides a flow rate reduction of 30% and meets the guidelines of the LEED® program (LEED® is a trademark of the USGBC, for more details visit [www.usgbc.org](http://www.usgbc.org)).



**Careguard® Inserts**



**Regular Male**



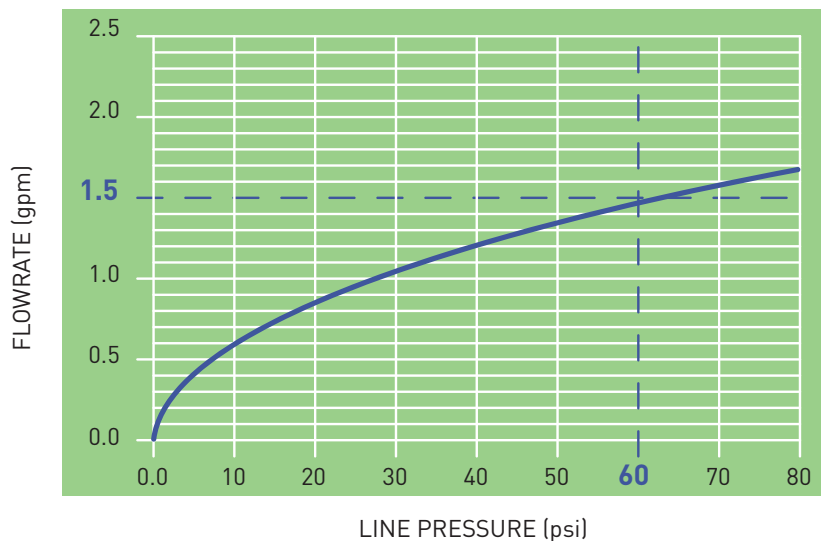
**Regular Female**



**Vandal Proof Male**



**Vandal Proof Female**



NEOPERL's antimicrobially protected Careguard® laminar faucet attachments incorporate the natural protection of Silver, which prevents the growth of a broad range of microorganisms. By utilizing AgION® antimicrobial technology, which is FDA listed and meets all applicable EPA standards, Careguard® delivers built-in protection to help reduce the growth of bacteria, mold and mildew within the faucet attachment. Careguard® is not designed to protect the consumer through sanitization, disinfection or elimination of bacteria in the water delivered by the spout. Careguard® is not intended to be an alternative to water treatment systems or established procedures for infection control.

# AglON<sup>®</sup> Antimicrobial: How does it work?

## Bacterial colonization starts with the formation of biofilm

Biofilm is a community of microbes that attach to surfaces. After initial colonization, the biofilm creates a "barrier" to protect the bacteria's environment thus allowing microbes to thrive and multiply.

Various factors can increase the risk of colonization and bacterial growth: warm water, water stagnation (dead legs) and nutrients (scale, sediment).

## AglON<sup>®</sup> helps prevent the formation of biofilm on spout-ends

To prevent biofilms from forming, the AglON<sup>®</sup> compound within Careguard<sup>®</sup> inhibits the initial colonization with a tri-modal efficacy unique to Silver:

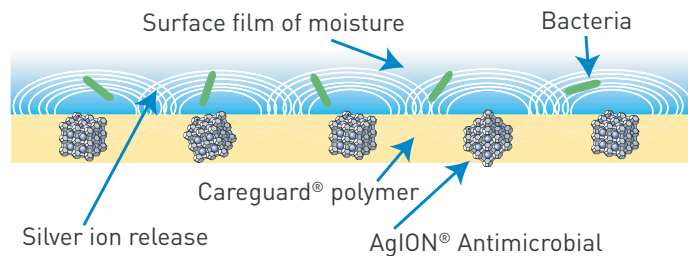
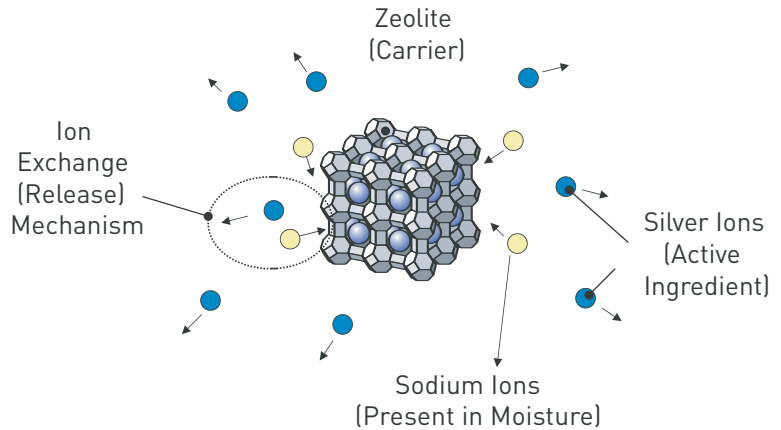
- attacks bacterial cell wall,
- interrupts cell metabolism,
- prevents bacteria reproduction.

The controlled release of silver ions by the zeolite carrier has been engineered to provide continuous antimicrobial protection. Products protected by AglON<sup>®</sup> antimicrobial have been proven in laboratory tests to reduce bacteria growth and population on a treated product by as much as 99.999% (log 5 reduction).

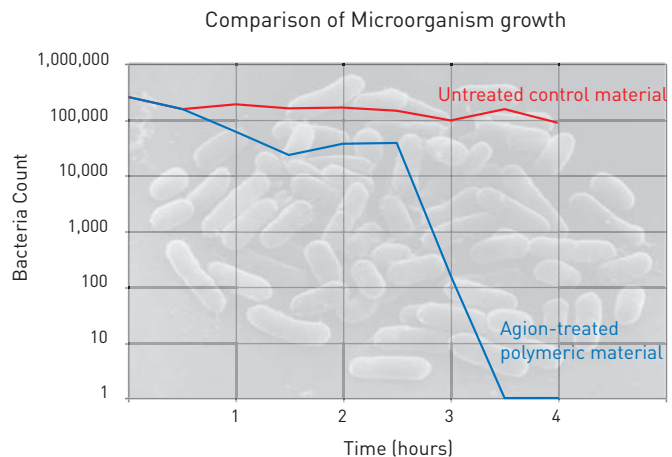


AglON<sup>®</sup> is a trademark of AglON Technologies, for more details visit [www.agion-tech.com](http://www.agion-tech.com).

## How is the Silver released?



## How quickly is microorganism growth affected?



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## Why AglON<sup>®</sup> antimicrobials?

NEOPERL<sup>®</sup> considered many antimicrobial technologies. AglON's natural silver-based technology was selected because it is safer, more effective, and longer lasting than any synthetic antimicrobial, Triclosan included.

# Silver ions: How Safe is AgION® Silver Zeolite?



AgION's natural Silver is not toxic to humans or animals. Studies have shown the AgION® compound to be less toxic than table salt.

An natural silver-based compound, AgION® antimicrobial materials have NOT been linked to the adaptive resistance seen with natural materials like antibiotics.

## **EPA**

AgION® antimicrobial is registered for broad range of uses including food contact, water contact, HVAC, building products, appliances, textiles, cosmetic and personal products.

## **FDA**

AgION® antimicrobial is listed under the FDA Food Contact Substance Notification for use in all types of food-contact polymers under §21 CFR 176.170.

## **USDA**

AgION® antimicrobial is on the USDA list of non-food compounds maintained by NSF for food processing plants.

## **NSF**

Products using AgION® antimicrobial have received certification to:

- NSF Standard 51 for food processing/food service equipment,
- NSF Standard 42 for potable water carbon block filter systems,
- NSF Standard 61 for faucets, spray valves, kitchen/bar devices and spout-end devices (Careguard®).



*The theater in the sanctuary of Apollo Pythios in Delphi (Greece, 4th century BC)*

## **Silver throughout the Ages**

Silver has been used for centuries in medical applications and to protect drinks from spoilage.

Ancient Greeks and Egyptians lined their drinking vessels with silver to prevent contamination and for long term storage of water. Hippocrates (460 - 377 BC) the "father" of modern medicine wrote about the beneficial properties of Silver.

In 14th century Europe, a time of plague, wealthy parents gave their children silver spoons to suck on, hence the expression "Born with a silver spoon in your mouth".

American pioneers placed a silver dollar into a jug of milk to keep it from spoiling.

In the 1880's, doctors started to put a mild silver solution in a babies' eyes at birth to help prevent eye infections.

Today, airline companies often use silver treated carbon water filters to protect their passengers and NASA uses an advanced silver-based system to purify drinking water for the space shuttle.



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Established in 1944 NEOPERL, Inc is a key supplier to the North American faucet industry. Based in Connecticut, NEOPERL, Inc.'s plant is certified to ISO 9001-2000 and registered with NSF International (NSF), Underwriters laboratories, Inc. (UL) and the Canadian Standards Association (CSA).

Serving Original Equipment Manufacturers (OEM) from various industries in North America as well as Wholesalers and Distributors, NEOPERL, Inc. provides a complete range of faucet aerators, laminar devices and low flow sprays (including pressure compensating and vandal proof models) ideal for all residential, commercial and institutional applications.

The Faucet Aerator brochure provides a comprehensive product overview of the NEOPERL's product range and covers general topics such as working principles, product design and features, Standards and Codes. To request your copy of the Faucet Aerator brochure, or simply if you have any questions please call or e-mail your NEOPERL<sup>®</sup> Customer Support team.

**For more information on Careguard<sup>®</sup>, please also visit [www.careguard.us](http://www.careguard.us)**



flow, stop and go<sup>®</sup>

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