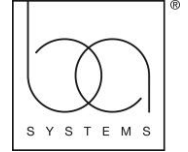




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## Cleaning & Maintenance

VBA99 surfaces are a supplement to, and not a substitute for, standard infection control practices and users should continue to follow all current infection control guidelines, including those related to cleaning and disinfection of environmental surfaces.

Copper and many other copper alloys are active surfaces and will develop an oxide called a patina over the course of 2 – 4 weeks if washed and cleaned and with general handling and touching. VBA99 is a metal that maintains its natural colour for a lot longer than general copper and copper alloy surfaces. Even so, however, depending on the location of the rail the metal could develop an oxidised patina layer with regular cleaning and maintenance protocols. Once established, the patina is stable and protects the component from further oxidation unless it comes into contact with strong reagents.

The developed patina does not reduce efficacy according to results from laboratory testing and clinical trials.

There are three types of cleaning products to consider – see below. For any product specific information, it is recommended that the manufacturer is contacted.

Disinfectant products containing metal-ion chelators, such as EDTA, should be avoided, as these partially and temporarily inhibit the metals biocidal efficacy.

VBA99 Cleaner is the preferred cleaner for general cleaning and disinfection. The product is an odourless liquid that cleans and disinfects and maintains the bright finish of the metal.

1) **Detergents** – these will clean grease and other soil from surfaces and should always be used prior to disinfection.

- Most cleaning products are proprietary and will have instructions for use – always refer to manufacturers' instructions.
- Items should be cleaned, dried (disinfected as necessary) and inspected before use.
- If applying disinfectant after normal cleaning, it is common to wash with clean water and dry between these steps to ensure
- optimum activity of disinfectant.
- Cleaning wipes are single use products and should be disposed of after use.
- Some products may combine disinfectants with detergents and allow single-step use.

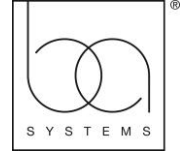
2) **Disinfectants** - these will disinfect the surface of the material and generally contain:

- Alcohols - not corrosive to VBA99, but not active against all microbes.
- Bleaches - containing chlorine or with the active ingredient sodium hypochlorite; the solution is not corrosive to copper alloys when used correctly.
- Quaternary ammonium – such compounds do not damage copper alloys.



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- Ammonium chloride - is of little concern for copper when used in normal dilute formulations.
- Phenol and ammonia - are rarely used organic chemicals and are not harmful to copper.
- Other disinfection techniques:
  - Hydrogen peroxide (solution or vapour - HPV) has no long-term effect on copper alloys.
  - Steam may be used for cleaning or disinfection and will not harm copper alloys.
  - Formaldehyde is sometimes used for laboratory disinfection and fumigation and is not deleterious to copper or copper alloys.

**3) Metal polishes and cleaners** - these will brighten the appearance of the copper and copper alloys.

- Mild Acid-based cleaners are preferred as they disinfect and remove tarnish without leaving a residue.
- Proprietary polishing products, such as Brasso, will clean the copper but are not recommended as they may leave a residual film which inhibits the antimicrobial effect of the metal for a period of time. Removal of this residue can be difficult but may be achieved with alcohol wipes.

Strongly acidic or alkaline cleaners should never be used on the VBA99 surface as this will cause oxidation and discoloration. Abrasive pads and abrasive cleaners should also not be used as these will cause scratching and marking of the surface of the metal.