

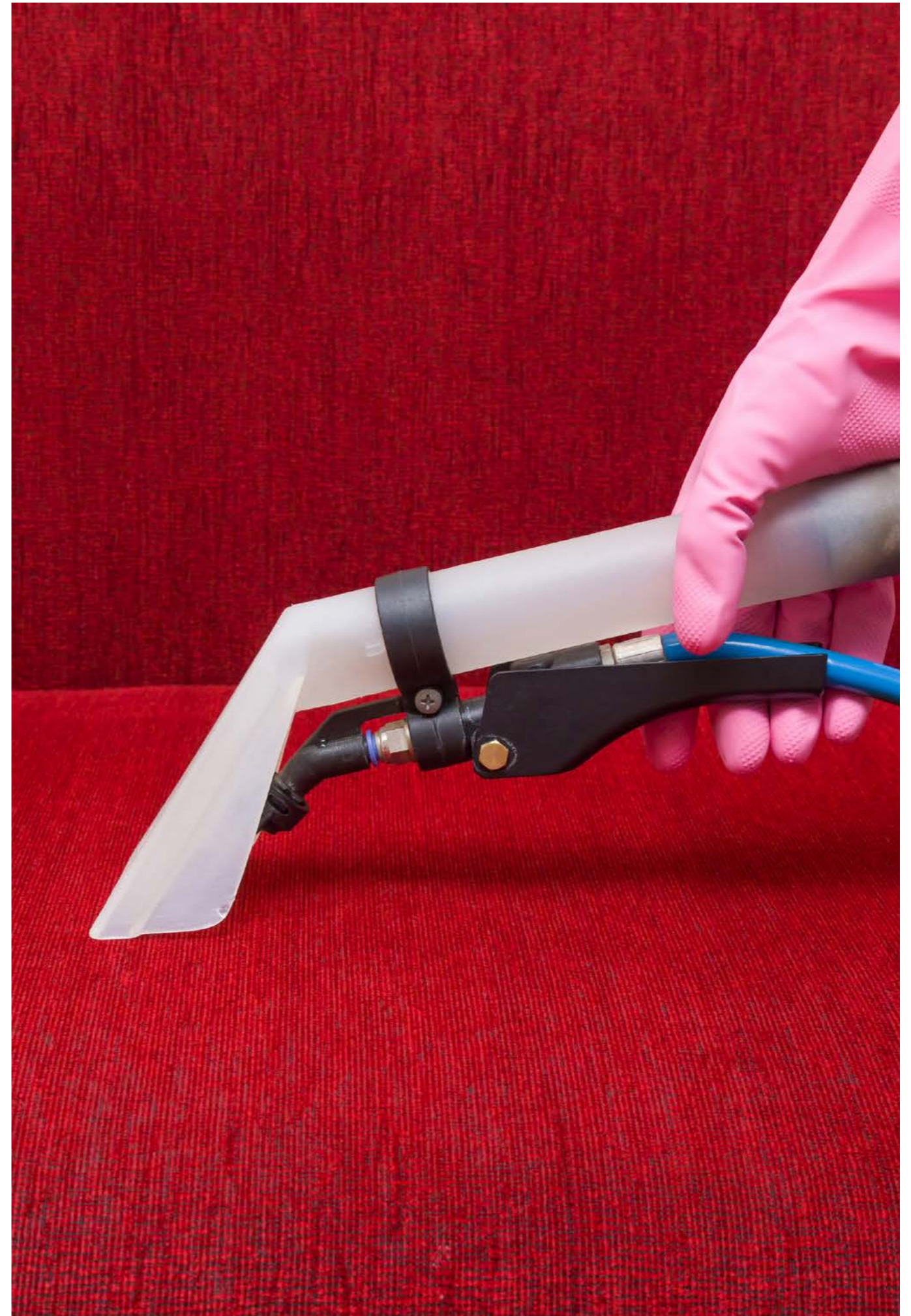
# Transport Fabrics. Guide to cleaning and disinfecting fabrics and vinyls.



**camira**

Cleaning and disinfection have become hot topics in the wake of Covid-19, with new emphasis on hygiene as an important way in which to help prevent the spread of the virus. Remember that cleaning and disinfection are not the same:

- Cleaning is the process of removing dust, dirt and staining from the surface of a fabric or vinyl to maintain the material's appearance and prolong its life
- Disinfection is intended to kill germs – microorganisms such as bacteria, viruses and fungi – which can cause infection and spread disease.
- Some methods, such as using soap and water, bleach or steam – are effective at both cleaning and disinfecting, but certain methods can only be carried out on specific fiber/material types.



# A word about bacteria, viruses and fungi

All three are all around us, many harmless, others harmful and can cause infection and disease. So what's the difference?

## Fungi:

A fungus can live as a single celled yeast or as a larger multi-cellular mould. It lives by absorbing nutrients from organic matter, which is why it's important to remove food remnants and spills from upholstery. Fungi can cause infections which affect the skin, lungs or bloodstream.



May be visible to the naked eye.

## Bacteria:

A bacteria is a single celled organism that can survive and reproduce on its own, multiplying by cell division, thriving in diverse environments including soil, the sea and in the human digestive system. Several species are pathogenic and cause infectious diseases such as meningitis, tuberculosis, cholera and leprosy. Antibiotics can often kill harmful bacteria.



Visible under a light microscope.

## Virus:

A virus is a microscopically small parasite which multiplies inside the living cells of a host, rather than surviving independently. A virus is made up of genetic material, either DNA or RNA, surrounded by a protective coat which in turn can be surrounded by an additional spikey envelope, like the much seen Coronavirus image. Viruses cause common infections such as colds and flu, as well as many serious diseases such as ebola, HIV, rabies and now COVID-19. Antibiotics do not work against viral infections.



Visible under an electron microscope only.

# In perspective – the spread of the virus and personal hygiene

When panic spreads during a pandemic, it's good to keep in mind that so far evidence suggests that textiles are not seen as a major carrier of the virus, as it does not survive as well on soft surfaces, such as fabrics, as it does on frequently touched hard surfaces such as plastics, laminates, metal and glass. Paying particular attention to disinfecting those high frequency touch points - such as grab handles, stop request buttons, windows, plastic seating and seat trays - can have a profound impact on transmission rather than treating those rarely touched soft surfaces. On textiles, viruses can get trapped and therefore have reduced likelihood of spreading.

And by far the best way to help stop personal infection - picked up from an infected surface - is through improved hand hygiene by washing hands thoroughly using soap and warm water.

While textiles aren't the biggest risk factor, we can minimise any risk yet further through cleaning and disinfection protocols and even look to soap and water as one of the solutions.



# Guidelines for cleaning and maintenance of fabrics

**Regular cleaning** has always been recommended as a way to keep fabrics looking good for longer, with a few straightforward guidelines:

**Vacuum fabrics** regularly to prevent build up of dust and dirt on the fabric surface or within the pile of plush moquette, which can act as an abradant and lead to fabrics wearing out before their time. Weekly industrial vacuuming is recommended.

**Get to stains quickly**, mopping up any excess liquid, before they have time to soak in or dry out. If need be use upholstery shampoo or liquid soap and warm water. Be careful not to over wet fabrics, especially wool, so always make sure a clean cloth soaked in soapy water is well squeezed out.

**For deeper cleaning**, wool, polyester and Trevira CS can be steam cleaned or dry cleaned. Polyester and Trevira CS can be machine washed if fabrics – such as anti-macassars or curtains - are removable. Polypropylene should not be dry cleaned, steam cleaned or machine washed (but is bleach cleanable, likewise polyester and Trevira CS).

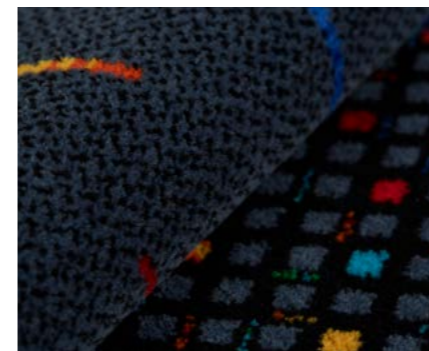


**Note – please refer to the cleaning matrix on page 10 for specific recommendations by fiber and material type. For ease of reference a separate matrix is provided by fabric name on page 12.**

# Disinfecting fabrics and vinyls

We have extended our long-standing cleaning advice to include a wider range of disinfection methods across different fiber and material types. Some, like with deep cleaning, are applicable to certain material types only. Fabrics and vinyls should be cleaned before being disinfected:

Quick reference tips:



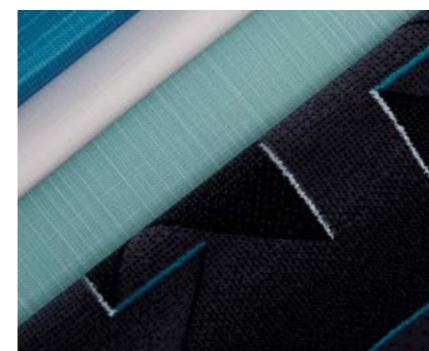
## Wool loves steam

All natural, no chemicals. High pressure, high temperature water vapour not only disinfects, but also revives the inherent spring and elasticity of wool, so it looks far superior to other types of fabric when steamed. Remember it's nature's ultra-intelligent fiber type, with in-built health properties making it allergy and asthma safe, and improving interior air quality.



## Vinyl loves bleach

So do synthetics such as polyester, Trevira CS and polypropylene. Bleach is an everyday cleaner and disinfectant made from a solution of sodium hypochlorite, a chemical compound based on salt. It can be used at different concentrations for wipe down disinfection, killing all known germs – quick, convenient, safe.



## Everything loves soap and water

Simple for both cleaning and disinfection. Gentle but effective. Not only good for hand hygiene, but equally good for upholstery, even on wool.

**Note – please refer to the disinfection matrix on page 11 for specific recommendations by fiber and material type. For ease of reference a separate matrix is provided by fabric name on page 13.**

# Disinfecting fabrics and vinyls



## Soap and water

**Suitable for all types of fabric and vinyl.**

Soap works so effectively because its chemistry prises open the Coronavirus's exterior envelope and causes it to quickly degrade.

- Use liquid soap in warm water. To wipe down by hand, use a clean cloth, squeeze out well and don't over wet the upholstery. Alternatively, injection extraction cleaners will deep clean, rinse and remove excess water at the same time. Leave the upholstery to dry.



## Bleach

**Use on polyester, Trevira CS, polypropylene and vinyl.  
Do not use on wool or leather.**

Bleach is a powerful oxidising agent which oxidises molecules in the cells of microorganisms and kills them. It comes in a range of concentrations and is normally further diluted before use.

- General disinfection – use a household bleach (containing ~ 0.2oz/4.5g per 3.5oz/100g of sodium hypochlorite), diluted at 1:10 dilution factor.
- High level disinfection – use a more concentrated 1:4 dilution factor to create a solution which will contain ~ 1% sodium hypochlorite as a highly effective disinfectant

Follow the instructions of the brand you're using; soak a white or lightly colored cloth in the solution, squeeze out any excess liquid and gently wipe the fabric, before leaving to dry. Observe any manufacturer safety guidelines and wear appropriate PPE.



## Steam

**Use steam on wool, polyester and Trevira CS. Do not use on polypropylene, vinyl or leather.**

Steam cleaning and disinfection is chemical free, using a combination of temperature and pressure to remove dirt and stains, and to kill microorganisms. Temperatures typically reach up to 356F and pressures up to 150 psi, with steam vapour penetrating the fabric surface, then a vacuum applying pressure to lift away the moisture along with dirt and any germs.



## Alcohol

**Use on polyester, Trevira CS, polypropylene and vinyl.  
Do not use on wool or leather.**

Alcohol and ethanol based disinfectants are rapidly effective against bacteria, viruses and fungi. We have carried out tests using both spray and wipes, using 75% alcohol solution. Always follow the specific manufacturer's instructions.



## Anti-bacterial spray / wipes

**Use on polyester, Trevira CS, polypropylene and vinyl. Do not use on wool or leather.**

Anti-bacterial sprays and wipes are typically based on Benzalkonium chloride solutions (0.02oz/0.4g per 3.5oz/100g) and are fast acting biocidal agents effective against bacteria, some viruses and fungi.

Use anti-bacterial wipes to wipe down the upholstery to disinfect, or apply as a spray and wipe.

# Matrix by fiber and material type

## Cleaning

Fabric/fiber type	Cleaning method						
	Vacuum	Soap and water	Upholstery shampoo	Dry clean	Steam	Washable to 140F	Bleach cleanable*
Wool	✓	✓	✓	✓	✓		
Polyester	✓	✓	✓	✓	✓	✓	✓
Trevira CS	✓	✓	✓	✓	✓	✓	✓
Polypropylene	✓	✓	✓				✓
Vinyl	✓	✓	✓				✓
Leather	✓	✓	✓				

\* See also Disinfection matrix for different concentrations of bleach.

## Disinfection

Fabric/fiber type	Disinfection method					
	Soap and water	Steam	Bleach – general disinfection: diluted 1:10	Bleach – high level disinfection: diluted 1:4	Alcohol / antibacterial spray / wipes	Washable to 140F
Wool	✓	✓				
Polyester	✓	✓	✓	✓	✓	✓
Trevira CS	✓	✓	✓	✓	✓	✓
Polypropylene	✓		✓	✓	✓	
Vinyl	✓		✓	✓	✓	
Leather	✓					

# Matrix by product

## Cleaning

Fabric/fibe type	Vacuum	Soap and water	Upholstery shampoo	Dry Clean	Steam	Washable at 140°	Bleach Cleanable
Aura Classic	✓	✓	✓	✓	✓		
Aura Twist	✓	✓	✓	✓	✓		
Classic	✓	✓	✓				
Fusion	✓	✓	✓	✓	✓		
Hybrid	✓	✓	✓	✓	✓		
Lucia CS	✓	✓	✓	✓	✓	✓	✓
Manila	✓	✓	✓				✓
Micro Trim	✓	✓	✓	✓	✓		✓
Orient	✓	✓	✓	✓	✓		✓
Premier Trim	✓	✓	✓				✓
Rhino	✓	✓	✓				
Super Trim	✓	✓	✓				✓
Track	✓	✓	✓	✓	✓	✓	✓
Vigor	✓	✓	✓	✓	✓		
Vision	✓	✓	✓	✓	✓		
Vita	✓	✓	✓				✓
Wired	✓	✓	✓	✓	✓		

## Disinfection

Fabric/fibe type	Soap and water	Steam	Bleach – general disinfection: diluted 1:10	Bleach – high level disinfection: diluted 1:4	Alcohol / antibacterial spray / wipes	Washable at 140°
Aura Classic	✓	✓				
Aura Twist	✓	✓				
Classic	✓					
Fusion	✓	✓				
Hybrid	✓	✓				
Lucia CS	✓	✓	✓	✓	✓	✓
Manila	✓		✓	✓	✓	
Micro Trim	✓	✓	✓	✓	✓	
Orient	✓	✓	✓	✓	✓	
Premier Trim	✓		✓	✓	✓	
Rhino	✓					
Super Trim	✓		✓	✓	✓	
Track	✓	✓	✓	✓	✓	✓
Vigor	✓	✓				
Vision	✓	✓				
Vita	✓		✓	✓	✓	
Wired	✓	✓				

# Multiple fabric and material types in transport interiors

In coach interiors in particular there is often a mixture of different material types and compositions – for example, the seats may be upholstered in a plush wool moquette (such as Aura or Vigor), while seat backs could use the polypropylene Super Trim or Premier Trim, curtains might be in Trevira CS (Lucia CS) and the vehicle headliner material in polyester (Micro Trim). Moreover, combination seats are popular, comprising dual fabric and vinyl or fabric and leather. So it's important to try and know the materials which are used to avoid using the wrong method of cleaning or disinfection.



# Alternative methods of cleaning and disinfection

## Fogging

Infection control fogging is the process of dispersing a disinfection agent in the form of a fine mist spray to eradicate bacteria, viral and fungal infections that may present in the air and on any surface. The process most commonly uses chemicals such as hydrogen peroxide or hypochlorous acid.

## UV light

Ultraviolet technology is a non-chemical approach to disinfection using short wave length UV-C light to provide the rapid inactivation of micro-organisms. UV-C light is germicidal, which means it deactivates the DNA of bacteria, viruses and other pathogens and ultimately destroys them.

**Beware – any type of textile, vinyl or leather may be at risk of damage from fogging or UV light disinfection. These methods can potentially lead to the accelerated degradation of material strength, color loss (lightfastness), and – in the case of vinyl – surface cracking. We currently have no long-term test data which examine their effects over prolonged periods of time.**

## Please note:

Camira's range of fabrics and vinyls have all been developed to withstand regular cleaning maintenance and this now extends to disinfection where reasonable regime protocols are adopted. Please follow manufacturer instructions on cleaning and disinfection agents, and we recommend spot testing on an inconspicuous part of the material first. The above information and advice provided is based on technical research and testing which we have undertaken ourselves or by using third party certified technical laboratories. Cleaning and disinfection can typically affect textiles in three main areas - color fastness, flammability performance and weakening of material – all of which could be impacted by the frequency at which cleaning / disinfection is carried out, therefore, care and cleaning / disinfection methods outside of this guidance may invalidate any warranty.



