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wipe-clean  
**micrAgard** PLUS<sup>TM</sup>  
By  
**openhouse**<sup>TM</sup>





## INFECTION CONTROL

Infection Control has always been a challenge. Together we can minimise cross-contamination of bacteria and the spread of bacteria. This can be achieved using **micrAgard PLUS**.

This booklet will show you how much of a difference you can make by using **micrAgard PLUS** and how PVC materials can cause a large part of the spreading of infections.

As **Openhouse** supplies the Airline Industry, the same regulations apply but to a much higher standard.

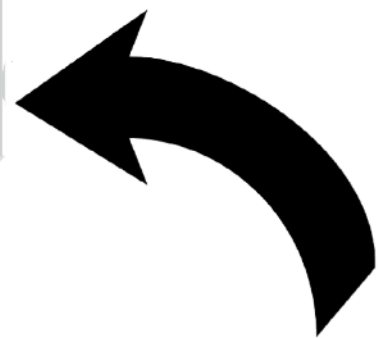
As a result, as well as all of our **micrAgard PLUS** products being anti-microbial to prevent the cross-contamination of bacteria, also meet the CAA and EASA standards for being flame-retardant if required.

## LEGISLATION AGAINST THE USE OF PVC

### The Care Quality Commission

It is a requirement, as of 1st of April 2009, for all government and private funded hospitals, medical centres, ambulance services and dentalsurgeries to register and comply with the Care Quality Commission standard. This involves implementing procedures registering to confirm compliance.

The environmental act of 1999 DH/PHLS starts the ball rolling with guidance which became enshrined in law under the section 20 (5) of the health and social care act 2008.



## THIS BASICALLY MEANS:

All institutions need to look at the control that can be offered from their entire supplier base, to prevent infections happening at the point of entry and to minimize the overall problem. **micrAgard** fabric was developed with this in mind.

# PVC

And the dangers...



## A quick lesson in PVC

PVC (both soft and hard) is one of the most widely used types of plastics. Around the home, in day to day life you'll see numerous of examples from cling film and credit cards to imitation leather and window blinds. Also, manufacturers use it for car interiors and medical disposables to name just a few examples.

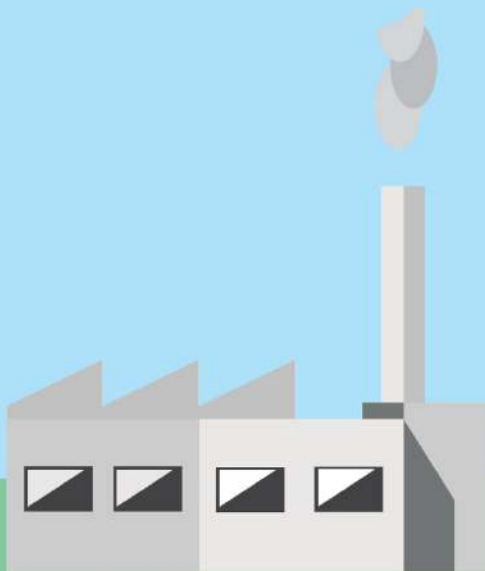
During the production of PVC, dioxins, some of the most toxic chemicals known, are created and released. Over their lifetime, PVC products must be either burnt or buried. However, burning creates and releases more dioxins and other chlorine-containing compounds that contaminate our land and waterways. Attempts to recycle PVC have proven difficult, so much of it ends up in landfills.

## And that's where we come in...

# The Environment

## & PVC

- Chemicals, such as phthalates are added to PVC to make it soft and flexible. Laboratory studies in animals show that some of these chemicals are linked to cancer and kidney damage and may interfere with the reproductive system and cognitive development.
- PVC manufacturing facilities have poisoned workers and fenceline neighbours, polluted the air, contaminated drinking water supplies, and even wiped entire neighbourhoods off the map.
- Greenpeace says PVC recycling is less than 1% of consumption and it is not even practical for 70-85% of PVC waste. Hundreds of thousands of tonnes of PVC waste needs to be disposed of by incineration or in landfill sites each year.
- The PVC industry is rapidly expanding in Latin America and Asia so that eventually a growing waste mountain will be generated in these parts of the world.
- Additives may comprise up to 60% of a PVC product's weight. Of all plastics, PVC uses the highest proportion of additives.
- The world is facing a waste crisis from PVC. Short-life PVC products, disposed of within a few years, have caused serious PVC waste problems, especially when incinerated. The average life span of durable products, which make up more than half of PVC consumption, is around 34 years.

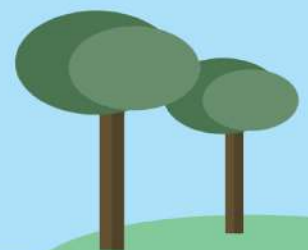


Incineration is not a sustainable option for dealing with waste. When plastic is burnt, less energy is generated from it than was used to make it. Incineration also means that carbon contained within it is emitted as carbon dioxide (CO<sub>2</sub>), which is a greenhouse gas. Toxic substances, such as dioxins, are also emitted and large amounts of solid waste are produced such as slag, ash, filter residues, and neutralised salt residues.

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PVC does not readily decompose and additives from PVC in landfills can contaminate soil and groundwater.

Considerable quantities of PVC are present in landfills as a result of the disposal of municipal solid wastes (MSW) and construction and other wastes. Almost one million tonnes of PVC was sent to landfills in Europe as MSW in 1994. This does not even include PVC waste from other sectors such as agricultural, automobile industry, construction and distribution. So the exact figure will be considerably higher.





# micrAgard PLUS



**is fully recyclable and free  
from the harmful components  
which are used in PVC.**

# WHY MICRAGARD PLUS OVER PVC?



## Anti-microbial

Prevents the cross-contamination and growth of bacteria.



## Thermo Care

Washable with mild soap and water and can be wiped clean



## Intrinsically Safe

Protection technique for the safe operation of electronic equipment



## Fluid Repellent

**micrAgard PLUS** repels fluids, helping to keep the internal equipment safe and dry.



## Durable Zips

Hardwearing lockable YKK zips with a water repellent coating to help keep the contents safe and dry.



## Heavy Duty Fittings

High quality durable fittings for use in the most demanding environments.



## ISO Standard

For maximum quality assurance, all our products are made to UKAS standard.



## Hi Visibility

Maximum visibility achieved with high quality reflective coverage which is designed to last the lifetime of a bag.



## Comfort Straps

Carry it off in style and comfort! Securely fastened grab handles and strapping system engineered for maximum comfort when carried.



## Hand-Finished

The external solid reflective piping and internal non-rot binding, finishes and protects the edges to perfection.



## Non-Rot Material

Non-rot, UV stable meaning your bag can be recycled.



## Impact Resistance

The high tenacity of the material provides best in industry impact, protection & build quality.



## Under-Protection

Option for rubber base feet to protect the base of the bag from being damaged when in use.



## Quality Guarantee

We have every faith in the high quality of our products to allow a limited lifetime guarantee



## Lockable Zips

Added security thanks to the facility to lock the zips through our trademark easy-pull T-zip



## Custom Branding

In-house graphics produced to the highest quality standards using Weld-able Reflective Badges, and Reflective Printing; it looks great and stays with the products for life.



## Fire Retardant

Engineered to withstand flames leaving the surface slightly burnt with discolouration. micrAgard PLUS has been tested to CAL117 fire retardancy spec.



wipe-clean  
**micrAgard** PLUS<sup>TM</sup> VS. PVC

**Numerous tests have taken place on both micrAgard and PVC to analyse their reactions. They clearly show the better material.**

**LATEST TEST RESULTS ARE FROM JUNE 2019**



# TEST 1

## TEAR STRENGTH

100m width samples of both **micrAgard PLUS** and an equivalent thickness of **PVC** materials were tested to see how much weight they could withstand before tearing.

### micrAgard PLUS

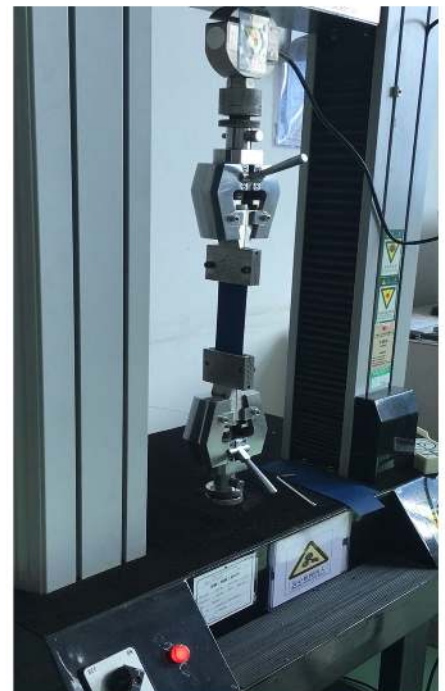
### PVC

Six Breaking Strength Tests were done using six samples, all of the same width, on both the warp and weft direction of the weave in the fabric. On average **micrAgard PLUS** reached the following before tearing:

Warp Test – 157.5KG  
Weft Test – 133KG

Six Breaking Strength Tests were done using six samples, all of the same width, on both the warp and weft direction of the weave in the fabric. On average **PVC** reached the following before breaking:

before breaking:  
Warp Test – 96.5KG  
Weft Test – 84KG



# TEST 2

## WEIGHT COMPARISON

A one meter square sample of both micrAgard PLUS and PVC were weighed and compared.

micrAgard PLUS

Weighed  
**360g** / SQ.M

PVC

Weighed  
**540g** / SQ.M

PVC is nearly twice as heavy as micrAgard PLUS.

Paramedics are restricted to carrying 15kg on their back so the use of a heavier material immediately restricts what equipment they can carry.

# TEST 3

## REACTION TO SHARP IMPLEMENTS & ROUGH SURFACES

Both materials were tested with the same controlled conditions to see the effect.

### micrAgard PLUS



**micrAgard PLUS** was scraped vigorously with a sharp implement. The surface of the material was barely marked and remained intact keeping its anti-microbial and flame retardent properties.

### PVC



**PVC** was put under the same test as **micrAgard PLUS**. The surface of the material was scraped off and it lost all of its properties as the surface had been tampered with. Once the surface is damaged, bacteria can infest the material and remain there for its life-time.

This is a massive problem for infection control.

# TEST 4

## WATER RESISTANCE

Both materials were tested for water resistance and were monitored to see if the water had soaked into the material.

### micrAgard PLUS



On **micrAgard PLUS**, both a new sample and the sample we had scraped in the previous test, water remained on the surface. Both a brand new sample and the sample that was scraped in test 3 remained water resistant.

### PVC



On normal, non-damaged **PVC** water remained on the surface. However, the scraped sample we used in test 3 lost its water-resistant properties during testing. Water soaked through the damaged fabric.

# TEST 5

## FIRE RETARDANCY

Both materials were placed directly into a controlled flame and tested with the same conditions to see the effect.

### micrAgard PLUS

**micrAgard PLUS** withstood the flame and the surface of the material was slightly burnt and left discoloured with a shiny surface.



### PVC

In the same conditions, the **PVC** sample could not withstand the flame. The material surface burnt away quickly and released a variety of fumes, including atmospheric chlorine. The fabric was also deformed and unusable.



# TEST 6

## PROTECTION AGAINST BACTERIA

micrAgard PLUS

PVC

Polyester



Results show micrAgard is 99.3% effective against bacteria.



Tests showed that the amount of bacteria applied would multiply over a 24 hour period.



### Laboratory Conclusion

The test fabric **Red MicrAgard Plus Wipe Clean** has shown a **2.13 log reduction (99.26%)** against *S.aureus* and a **2.53 log reduction (99.7%)** against *K.pneumoniae*, following a **24 hour** contact time.

Untreated control fabrics 600D red polyester and Red PVC showed no reduction in bacterial counts, both fabrics showed an increase in *S.aureus* and *K.pneumoniae* within the 24 hour contact time.

Full set of results available on request.



# TEST 7

## PROTECTION AGAINST SUPERBUGS

micrAgard PLUS

PVC

Polyester



Results show micrAgard is 99.12% effective against superbugs



The same test was conducted with PVC and polyester. Both showed no reduction, and an increase in bacteria was recorded over the 24 hour contact period.



### Laboratory Conclusion

The test fabric **Red MicrAgard Plus Wipe Clean** has shown a **2.05 log reduction (99.12%)** against **vancomycin resistant enterococcus**, following a 24 hour contact time.

Untreated control fabrics 600D red **Polyester** and red **PVC** showed no reduction in bacterial counts. In fact, both fabrics showed an increase in vancomycin resistant enterococcus within the 24 hour contact time

Full set of results available on request.

# TEST 8

## PROTECTION AGAINST FUNGUS

micrAgard PLUS

PVC

Polyester



Results show **micrAgard PLUS** exhibits 0% growth



The same test was conducted on **PVC** and **polyester**. **PVC** was shown to partially support the growth. **Polyester** was also shown to have minor growth on the surface.



### Laboratory Conclusion

The product **Red PVC** has partially supported the growth of *Aspergillus brasiliensis*, no zone of inhibition was observed around the sample but growth is evident on the sample surface.

The product **600D Red Polyester** has not supported the growth of *Aspergillus brasiliensis*, a partial zone of inhibition was observed around the sample and some fungal growth is evident on the surface.

The product **Red MicrAgard Plus Wipe Clean (Test)** has not supported the growth of *Aspergillus brasiliensis*, a partial zone of inhibition was observed around the sample.

*See raw data tables below for test results.*

Figure 1: Red PVC



Figure 2: Red MicrAgard



Figure 3: 600D Red Polyester

















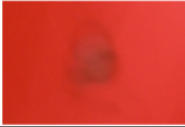










# Conclusion

**PVC** is not as strong as **micrAgard PLUS**.

If the surface of PVC is damaged in any way, bacteria can enter the substrates in the material and cannot be removed, they will remain in the material for its lifetime.

This has supported the increase of MRSA and c.Diff. **micrAgard PLUS** has superior properties to **PVC** and is seen to be a stronger and more environmentally friendly material. **micrAgard PLUS** withstood the vigorous tests and the material remained intact, keeping all of its properties.

	micrAgard PLUS	PVC
Tear Strength	 Reached 427kg before ripping.	 Reached 353kg and split.
Weight	 Weighed 360g/SQ.M	 Weighted 540g/SQ.M
Abrasion		 
Water Resistance	 	 
Water Resistance When Damaged	 Water stayed on surface	 Water soaked into the fabric
Fire Retardancy	 	 
Effectiveness Against Bacteria	 99.26% effective against bacteria	 Supported the growth of bacteria
Effectiveness Against Superbugs	 99.12% effective against superbugs	 Supported the growth of superbugs
Effectiveness Against Fungal Growth	 Does not support the growth of fungus	 Partially supported the growth of fungus

# Custom Bag Properties

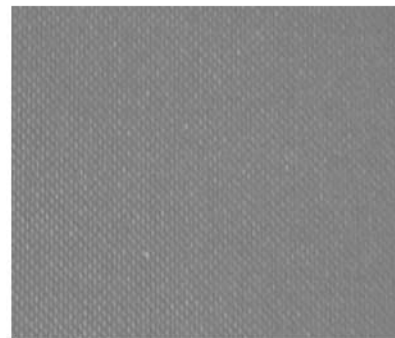
## External Materials



**micAgard PLUS** is a high tenacity system with exceptional mechanical properties. **micAgard PLUS** is an extremely durable dual-faced TPU coated nylon fabric which is antibacterial, fire-retardant, wipe-clean and FDA approved with improved chemical, oil and abrasion resistance as well as upgraded protection from external temperature changes.

## Internal Materials

**micAgard PLUS** silver lining is a high tenacity system with exceptional mechanical properties being entirely antimicrobial. It is washable, intrinsically safe, fluid repellent and rot proof. Despite being lightweight, it is both tear resistant and insulating.



## Handles & Straps



Carry it off in style and comfort. The Openhouse comfort grab handles are securley fastened through to the silverlining; "history tells us they don't come off."

The silver reflective nonrot, waterproof webbing provides the core strength whilst the internal padded handlebar system prevents the handle crushing the hand, for safe and comfortable carrying.



The Openhouse shoulder and backpack straps have been carefully engineered to afford maxium comfort when carrying. On a backpack, comfort can be enchanced by fitting the optional adjustable lumber support and waist harness.

## Perimeter Protection

External solid reflective piping and internal non rot binding finish and protect the edges to perfection. **micrAgard PLUS** specification has been purposefully designed to remove the necessity for ugly detachable base panels. The high tenacity exterior finish, together with the deep layer of integral high density foam and extra base protection plates, is no match for any type of handling.



## Zips

YKK zips and easy-pull zip runners have a water repellent coating and are easy to open without those fiddly storm flaps which also mean they are easier to clean and quicker to open. The zip runners are also lockable enabling any highvalue or dangerous contents to be protected.



## Graphics



### Weld-able Reflective Badges - The Wipe-Clean Solution

Our weld-able reflective badges are the ultimate solution in wipe-clean products. The badges are impregnated into the fabric so there are no "sewn on" reflective strips that can rip off.



### Reflective Printing

Printed with high quality reflective coverage which will last the lifetime of the bag. Offers maximum visibility even when the bag is open and in use.



### Embroidery

Our embroidery is produced in-house to the highest quality using the maximum amount of stitches possible for each design, ensuring it looks great and stays with the product for the whole of its life. However, we would not recommend this graphic solution within the health industry as the product would lose its wipe-clean properties.



For more information, call 0151 647 4044  
Visit our website at [www.openhouseproducts.com](http://www.openhouseproducts.com)  
or contact us via email: [sales@openhouseproducts.com](mailto:sales@openhouseproducts.com)