microbial

microbial free by decal

Overlaminate & Protection Film

Lamination films that protect(s)
both printings and people

microbial free by decal

Decal Microbial free lamination films were created to protect both printings and people from bacteria and germs. An adequate solution for present and future challenges, with a guarantee of efficacy attested by laboratory results and following the ISO 22196:2011 normative.

Decal Microbial free can be easily applied to surfaces of all types and sizes. Its adhesion is reinforced with the high tack (HT) and smooth surface (SS) adhesives, permanent or removable, and the aesthetics enhanced with the clear glossy and clear matte finishing options.

Discover the properties and performance of the products in this range which ensures permanent protection in your customers´ spaces.

1 why protect?

The appearance and proliferation of bacterial communities occurs on all types of surfaces and humid environments, creating microbial biofilms.

Regular cleaning does not prevent the multiplication of microorganisms harmful to health, which continue between cleanings and increases the risk of cross contamination.

bacteria increase

2 how does it work?

Microbial free products contain an innovative zinc antimicrobial agent, which is incorporated in the PVC composition. This generates a barrier against moisture and ensures the antimicrobial properties are active not only on the surface, but throughout the film.

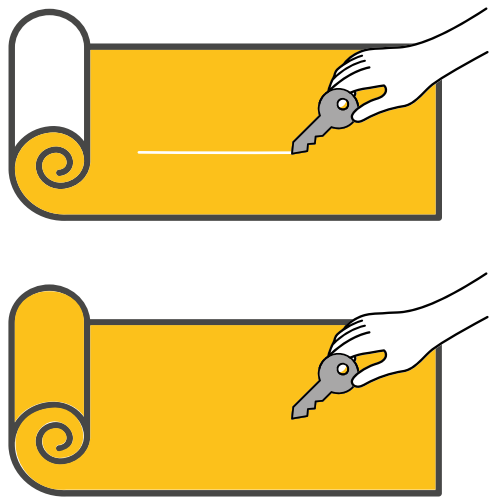
Manufacture with antimicrobial additives and not with antimicrobial coating guarantees increased resistance to scratching and abrasion, including spaces with a great movement of people.

coating only

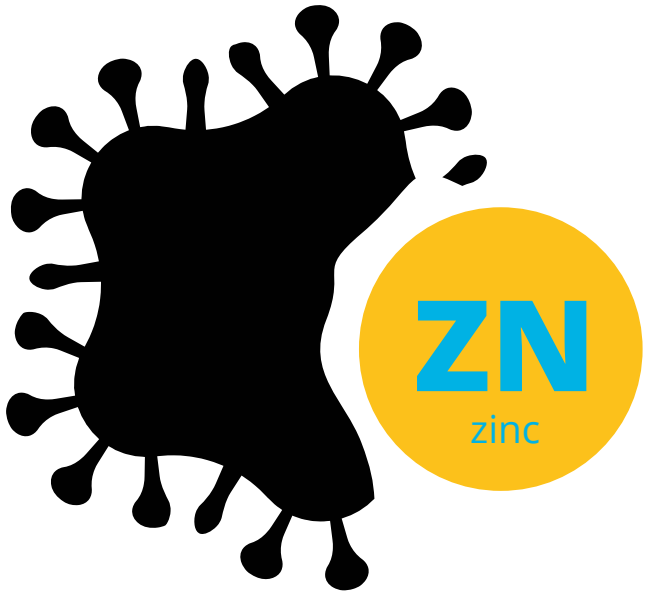
without microbial

whole film

with **microbial free**



zinc antimicrobial agent



3 is zinc effective in permanent protection?

The development of cell populations of microorganisms such as bacteria has several phases: latency, exponential growth, deceleration, stationary and death.

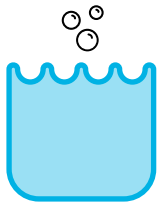
Zinc, releases blocks bacteria´s metabolism during cleaning procedures and in the presence of moisture, and interrupts the process of cell multiplication, eliminating them.

4 is it resistant to abrasive products?

Microbial free range products are compatible with the cleaning protocols defined by the World Health Organization (WHO). PVC is waterproof, washable and resists regular contact with abrasive cleaning products, including those recommended by the mentioned entity against the SARS coronavirus (5% benzalkonium chloride, 70% ethanol and 0.1% sodium hypochlorite).

stress test

1



cleaning products

2

1 min

total submersion

3

weekly cycles

The antibacterial activity was confirmed by stress tests (intensive), performed in laboratory, which simulated 50 weekly cleaning cycles. Manufacturing with microbial additives and not coating contributed to the data obtained: resistance guaranteed for one year.

5 what types of bacteria are controlled?

Laboratory results prove that microbial free lamination films are resistant to:

	clear glossy		clear matte		PVC only	
bacterial species	bacterial reduction in%	logarithmic decrease	bacterial reduction in%	logarithmic decrease	bacterial reduction in%	logarithmic decrease
staphylococcus aureus - ATCC 6538	99,00	2,12	99,00	2,27	99,00	2
escherichia coli ATCC 10536	99,00	3,24	99,00	3,07	99,99	5,08
klebsiella pneumoniae – ATCC 4352	99,00	2,02	99,00	2,27	99,99	6,2
enterococcus faecalis – ATCC 19433	99,00	2,72	99,00	3,44	99,99	4,5
listeria monocytogenes - ATCC 13932	99,99	3,97	99,99	4,01	99,98	3,9
salmonella enterica - ATCC 14028	99,00	2,77	99,00	2,82	99,99	4,9
pseudomonas aeruginosa – ATCC 15442	99,00	2,16	99,00	2,48	99,90	3

6 are the products certified?

Microbial free lamination films respect international standards established by ISO 22196: 2011 for measuring antibacterial activity on plastics and other non-porous surfaces.

They also follow the Regulation of the European Parliament No. 852/2004, on hygiene issues regarding food contexts.

sample id	bacteria species	parameter	results (uncertainty)	requirements
002	staphylococcus aureus - ATCC 6538	% reduction	99.00% (2,27 log)	no requirements
	escherichia coli - ATCC 10536	% reduction	99.90% (3,07 log)	
	klebsiella pneumoniae - ATCC 4352	% reduction	99.00% (2,27 log)	
	enterococcus faecalis - ATCC 19433	% reduction	99.90% (3,44 log)	
	listeria monocytogenes - ATCC 13932	% reduction	99.99% (4,01 log)	
	salmonella enterica - ATCC 14028	% reduction	99.90% (2,82 log)	
	pseudomonas aeruginosa - ATCC 15442	% reduction	99.00% (2,48 log)	
			conclusion	--

online certification

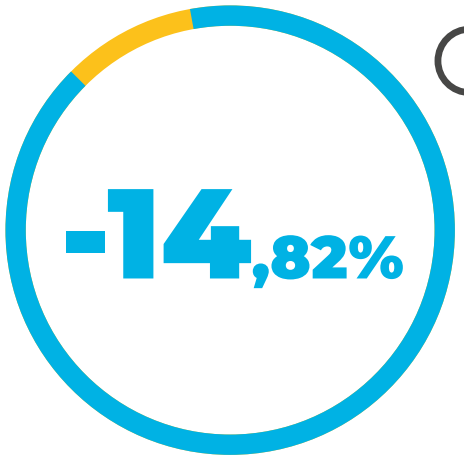
Access our website and check the certification of our microbial free products in the “documentation” tab.

7 how does it act against Corona Virus 229E?

Laboratory results have proven the effectiveness of the antiviral activity of microbial free lamination films against CORONA VIRUS 229E.

After a 24-hour contact period, there was a 14.82% reduction when compared to unprotected surfaces according to the assessment established by ISO 21702:2019 and NF EN 14476:2013 + A2:2019 standards.

laboratory results:



reduction on laminated surfaces

microbial free

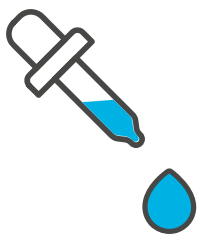
8 how does it act against Listeria?

The effectiveness of the antimicrobial action of the microbial free range can also be seen in the protection against Listeria, associated with diseases resulting from contaminated food.

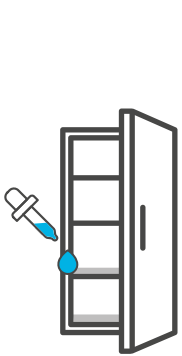
Tests done with the CFU/cm3 (Colony-Forming Units) counting method involved introducing a colony of this bacterium inside a refrigerator, at 4oC. This demonstrated rapid proliferation on unprotected surfaces.

Listeria test

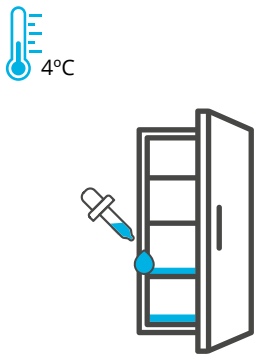
CFU/cm^3 (Colony-Forming Units)



1
deposit



unprotected surface



microbial free

2
sampling

counting
(D 0 / D 7 / D 28)

3
counting

CFU/cm3
(Colony-Forming Units)

how are laboratory tests performed?

ISO 22196:2011 , for instance, requires that the measuring of antibacterial activity has to be done with tests to measure the evolution of the number of colonies on unprotected surfaces and laminated surfaces.

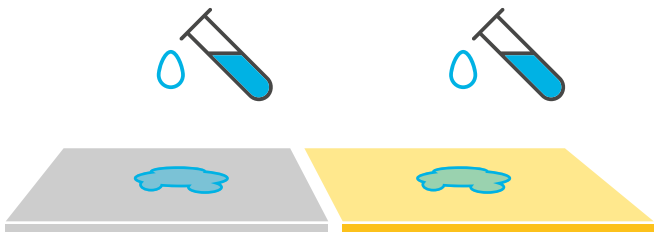
The comparison of the results, after an incubation period of 34 hours at 35°C, showed the number of colonies remained the same on the unprotected surface (10^6 colonies) and was reduced on the microbial free laminated surface (10^2 colonies).

measurement test

1

deposit

10^6 colonies



unprotected surface

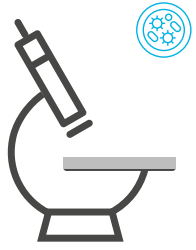
microbial free

2
incubation

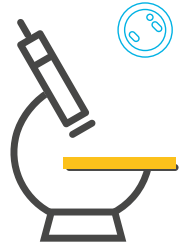
24h

35ºC

3
counting



10^6 colonies



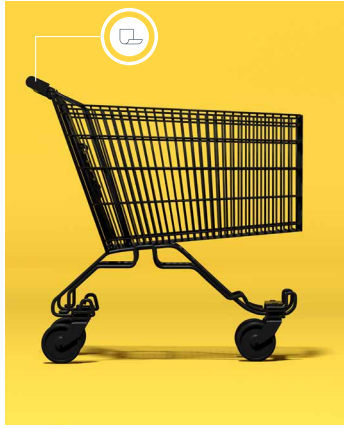
10^2 colonies

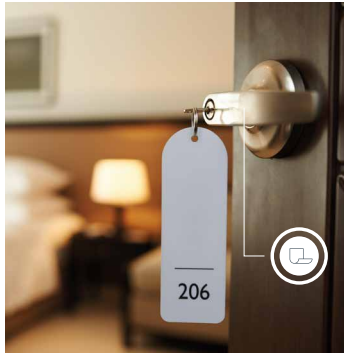
result

bacteria reduction up to 99.99%

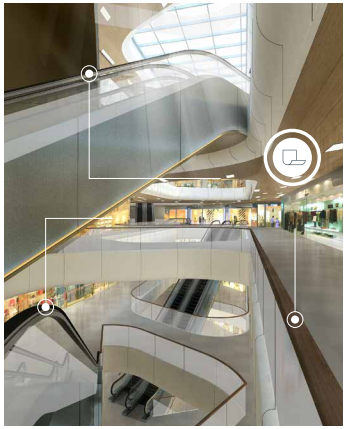
10 where can they be applied?

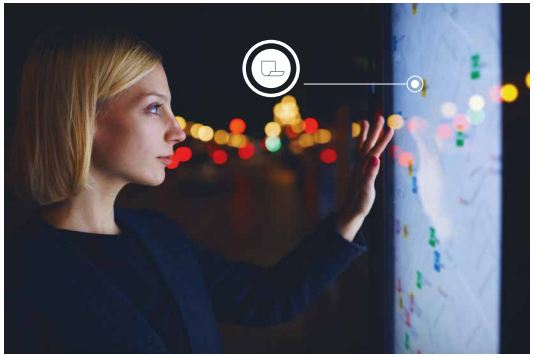
Microbial free range products can be easily applied to printed objects and all types of flat or slightly curved surfaces, both in public and private spaces.

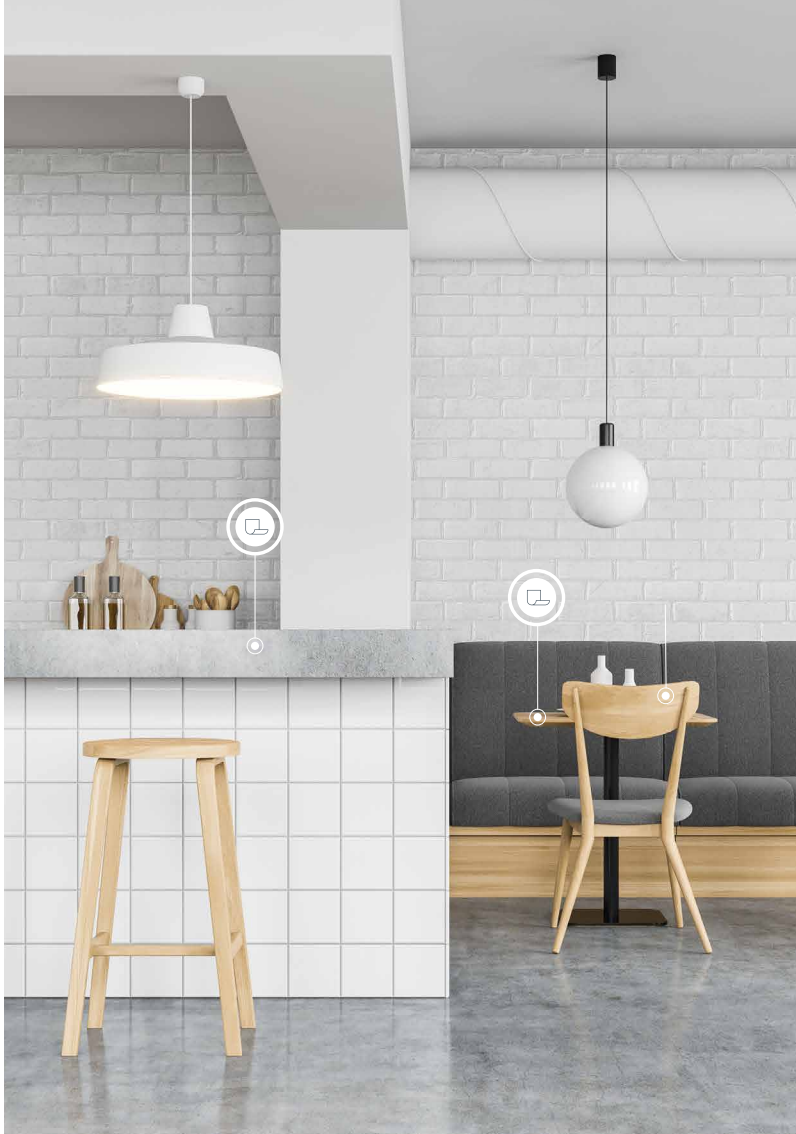




Protection covers floors and walls as well as elevator buttons and escalators from supermarkets, schools, companies, restaurants, airports, industrial facilities and public transport.







11 can they be used in more sensitive environments?

Zinc is a vital substance for the immune system and is present in human skin in order to fight bacteria and viruses.

Its use in microbial free lamination films allows applications in places with more demanding hygiene criteria, such as hospitals, clinics and food preparation spaces.

12 what is the Hygiene+ seal?

The effectiveness of microbial free lamination films is proven to customers through the Hygiene+ seal.

Decal created this certification with serial numbers that come with the materials delivered and are evident on the protected locations, proving the distinction of our products.

When applying products from decal´s microbial free range, you are applying security.
Meet them and place your order.

microbial free

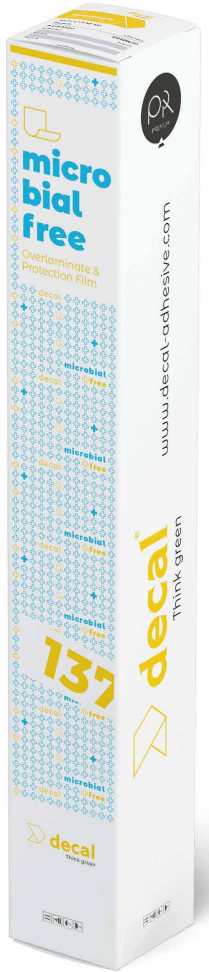
Overlaminate & Protection Film

decal overlaminate microbial free **P HT 80** *clear glossy*

decal overlaminate microbial free **P HT 80** *clear matte*

decal overlaminate microbial free **R SS 80** *clear glossy*

decal overlaminate microbial free **R SS 80** *clear matte*



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