

Prime Antibacterial laminate - specifications

The effectiveness has been validated by ISO Accredited laboratory in compliance with International Standard. ISO 22196:2011 specifies a method of evaluating the antibacterial activity of antibacterial-treated plastics, and other non-porous, surfaces of products (including intermediate products).

ISO 21702:2019 Measurement of antiviral activity on plastics and other non-porous surfaces

The Prime Antibacterial laminate films have been designed and developed to reduce bacterial presence by 99.9 % in combination with good hygiene and cleaning practice.

Determination of antibacterial activity (R) % > 99.9 based on ISO 22196:2011

By these analyses, we have established that our film are resistant to

- Escherichia coli ATCC 8739
- Enterococcus faecalis – ATCC 29212
- Listeria monocytogenes - ATCC 13932
- Klebsiella pneumoniae – ATCC 4352
- Staphylococcus aureus - ATCC 6538
- Pseudomonas aeruginosa – ATCC 27853
- Salmonella enterica - ATCC 14028
- Staphylococcus aureus Methicillin resistant – ATCC 33591
- Legionella pneumophila

The film shows an antiviral activity of + 15% compared to a film not treated according to ISO21702: 2019.

Antiviral activity: this film against CORONA VIRUS 229E, after a time of contact of 24h, shows an antiviral activity (R) of $R = 0.59 \pm 0.16$, with a percentage of reduction of 14.82% with respect to the non-treated pieces, when the activity is evaluated according ISO 21702:2019 and NF EN 14476:2013 + A2:2019 standard guidelines.

Antiviral activity is confirm as well for PVC film based on Silver salts – certifiable **Food grade** - against CORONA VIRUS 229E. After a time of contact of 24h, shows an antiviral activity (R) of $R = 0.33$, with a percentage of reduction of 11.8 % with respect to the non-treated pieces, when the activity is evaluated according ISO 21702:2019 and NF EN 14476:2013 + A2:2019 standard guidelines.

Here below a summary table of the antiviral activity of the two treated PVC film:

Antiviral activity according ISO 21702: 2019 e NF EN 14476: 2013 + A2: 2019	$R = U_t - A_t$ ($TDIC_{50}/cm^2$)	% of virus reduction in LOG_{10} scale in comparison with standard film (U_t)	% of virus reduction in comparison with standard film (U_t)
Version based on Zinc salt	0.59	14.9	74.3 %
Version based on Silver salt	0.33	11.8	53.6 %

U_t = Log_{10} of viral concentration on standard untreated PVC film after 24 h

A_t = Log_{10} of viral concentration on antiviral PVC film after 24 h

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FILM FEATURES

	Value	
Thickness (µm):	55-500 µm (ASTM D 1593)	
Shrinkage at 70 °C	MD ≤ - 4 % MD ≤ +1% (ASTM D 1204)	
Plasticizer	Monomeric: DIDP, DOTP, PEVALEN DINCH	Indoor exposure: up to 3 years
	Polymeric	Vertical outdoor exposure: up to 5 years
Colour	White, clear, colored	
Finishing	Glossy or Matt*	*Available also with DUNE embossing design for ANTISLIP FLOOR

USE

Overlamination (coat): signage /advertisement o vertical (finishing glossy e matt);

- horizontal (antislip floor Dune R9 and R10)
- Plotter and Glass Decor

Stationary: copybook covers; book covers, transparent and coloured folders

Coil protection

GDO

DURABILITY

Prime antibacterial & antiviral PVC films are based on an innovative antimicrobial agent which is incorporated into the whole PVC matrix so, in comparison with other antimicrobial treatments achieved by paints and coatings, it protects the surfaces for extended periods of time, easily resisting to scratch actions also when applied in areas subject to repeated abrasion like floor and wall covering.

An accredited laboratory with a designed protocol shared with cleaning expert has tested the antimicrobial durability:

- Shelf life : **5 year**
- Resistant to cleaning procedure for 50 intensive washing cycles simulated week cleaning so 50 weekly aging with disinfectants recommended by WHO (World Health Organization) against SARS coronavirus:
 - **Ethanol 70 %**
 - **Sodium hypochlorite 0.1%**
 - **Benzalkonium chloride 5%**

Prime antibacterial & antiviral PVC films are easy to clean, hygienic and highly durable materials – thus becoming an excellent surface to use in clinical and medical spaces and providing an answer to one of today's greatest challenges: cross contamination in hospital (and generally public) buildings.