



BV-Stop

surface protection

Nanotechnology evolution:
Antivirus-Antibacterial surfaces



Nanoprom Antivirus-Antibacterial coating



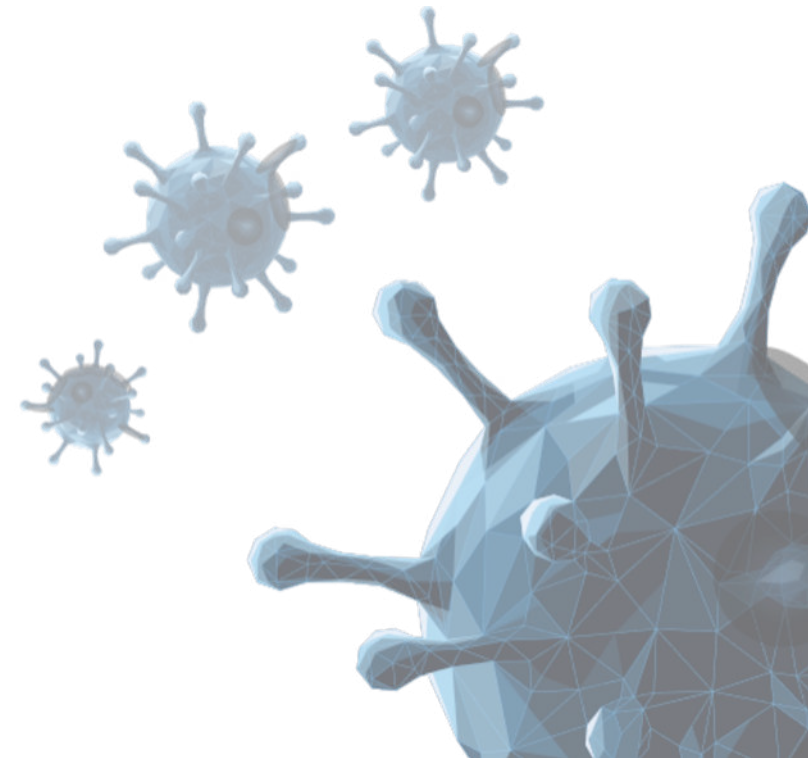
Nanoprom is an Italian company, pioneer in research and industrial application of nanomaterials.

Since the late '90s, the company is active in research of nanomaterials based on silica and develops Polysil®.

In this context, Nanoprom has developed a coating with high antibacterial and antiviral properties, applicable on any surface.

The **BV-Stop** coating was created to protect surfaces from virus and bacteria. A solution adapted to present and future challenges, with guaranteed effectiveness proven by laboratory results in accordance with ISO 22196: 2011 and ISO 21702: 2019.

BV-Stop is a water-based product that can be easily applied to surfaces of all types and sizes.



BV-Stop Antiviral Activity on SARS-CoV-2_COV2019

Laboratory results have demonstrated the efficacy of BV-Stop coating's antiviral activity against the SARS-CoV-2_COV2019 viral strain responsible for the current Covid-19 pandemic.

The results, according to ISO 21702:2019, are impressive:

- After a 2-hour contact period, there was a 99.88% reduction;
- After 6 hours, the reduction was 99.97% compared to surfaces not protected with BV-Stop.

	Tempo	Media Log TCID ₅₀	TCID ₅₀ /1 ml	N (TCID ₅₀ /cm ²)	At	R Ut-At	[% riduzione verso T0]
Campione trattato	T2	2.08	10 ^{2.08}	7.57 x 10 ²	2.88	2.75	99.88
	T6	1.50	10 ^{1.50}	1.98 x 10 ²	2.30	3.00	99.97

BV-Stop Antiviral Activity



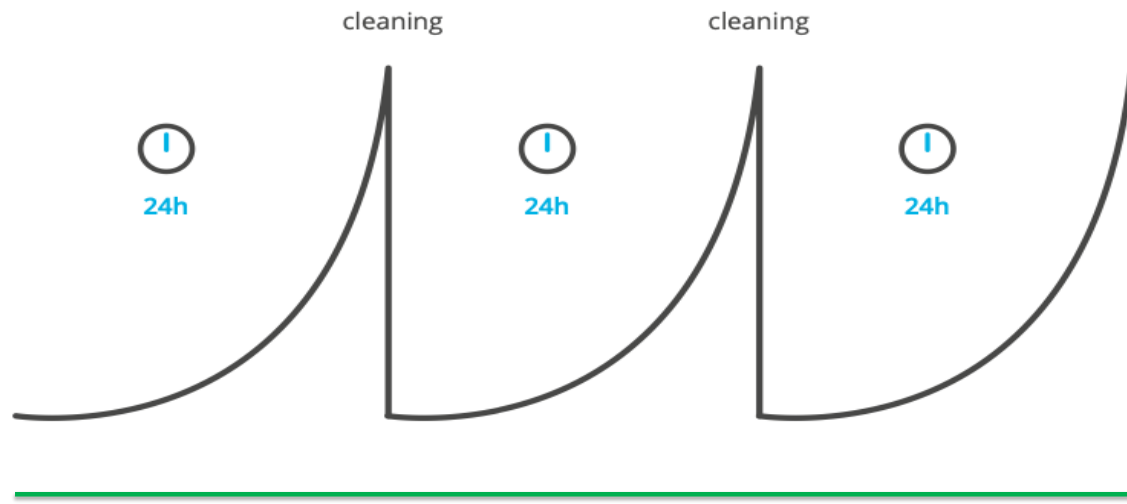
Further laboratory results demonstrated the effectiveness of the antiviral activity of the BV-Stop coating on the Human Coronavirus HCoV-OC43 and Adenovirus-5 (AdV-5).

- After a contact period of 2 hours, there was a 95% reduction on HCoV-OC43 (Human Coronavirus) compared to unprotected surfaces.
- After a contact period of 2 hours, there was a 99.90% Adenovirus-5 reduction compared with unprotected surfaces.

VIRUS Family	Virus reduction %
HCoV-OC43	95.00
AdV-5	99.90

Proliferation of bacteria on surfaces

- The emergence and proliferation of bacterial communities occurs on all types of surfaces and wet environments, creating microbial biofilms.
- **Regular cleaning does not prevent the multiplication of health-damaging microorganisms, which continue occur between cleanings and increases the risk of cross-contamination.**



Without BV-Stop

With BV-Stop

BV-Stop antibacterial activity

Antibacterial activity on escherichia coli and staphylococcus aureus at **2h**:

even after only 2 hours, antibacterial activity shows a significant reduction in bacterial load of about 93%

Risultati 2h con Escherichia coli

Conta iniziale (ufc/cm ²) U_o	Conta 2 h su provini non trattati (ufc/cm ²) U_t	Conta 2 h su provini trattati (ufc/cm ²) A_t	Attività antibatterica R= U_t – A_t	Abbattimento (%)
7.7 x 10 ³ Log = 3.88	1.7 x 10 ² Log = 2.23	1.1 x 10 ¹ Log = 0.98	1.25	93.98

Risultati 2h con Staphylococcus aureus

Conta iniziale (ufc/cm ²) U_o	Conta 2 h su provini non trattati (ufc/cm ²) U_t	Conta 2 h su provini trattati (ufc/cm ²) A_t	Attività antibatterica R= U_t – A_t	Abbattimento (%)
8.0 x 10 ³ Log = 3.90	1.8 x 10 ² Log = 2.25	1.3 x 10 ¹ Log = 1.11	1.14	92.67

Tests performed in compliance with ISO 22196:2011

BV-Stop antibacterial activity

Antibacterial activity on escherichia coli and staphylococcus aureus at **24h**:
after 24 hours the antibacterial activity shows an excellent 99,99% reduction in bacterial load

Risultati 24h con Staphylococcus aureus

Conta iniziale (ufc/cm ²) Uo	Conta 24 h su provini non trattati (ufc/cm ²) Ut	Conta 24 h su provini trattati (ufc/cm ²) At	Attività antibatterica R= Ut – At	Abbattimento (%)
8.0 x 10 ³ Log = 3.90	6.5 x 10 ⁴ Log = 4.78	7.3 x 10 ⁰ Log = 0.85	3.93	99.99

Risultati 24h con Escherichia coli

Conta iniziale (ufc/cm ²) Uo	Conta 24 h su provini non trattati (ufc/cm ²) Ut	Conta 24 h su provini trattati (ufc/cm ²) At	Attività antibatterica R= Ut – At	Abbattimento (%)
7.7 x 10 ³ Log = 3.88	5.5 x 10 ⁴ Log = 4.15	5.3 x 10 ⁰ Log = 0.46	3.68	99.99

Tests performed in compliance with ISO 22196:2011

BV-Stop durability



The BV-Stop coating is cleaning compatible, washable and withstands regular contact with aggressive cleaning products.

The test was carried out by simulating aging with 300 weekly cleaning cycles with a alkaline detergent (Ph 9.5), specific for removing organic dirt and stains from kitchen tops.

After aging cycle the BV-Stop coating still guarantees high efficacy with a 99.8% reduction of bacteria at 24h.

Laboratory tests show that the product can maintain its effectiveness up to 5 years after application.

Tab.1: Risultati ottenuti con Escherichia coli

Conta iniziale (ufc/ml) Uo	Conta 24 h su provini non trattati (ufc/ml) Ut	Conta 24 h su provini trattati (ufc/ml) At	Attività antibatterica R= Ut – At	Abbattimento (%)
4.2 x 10 ⁵ Log = 5.62	9.9 x 10 ⁵ Log = 6.00	1.2 x 10 ³ Log = 3.08	2.92	99.88

Tab.2: Risultati ottenuti con Staphylococcus aureus

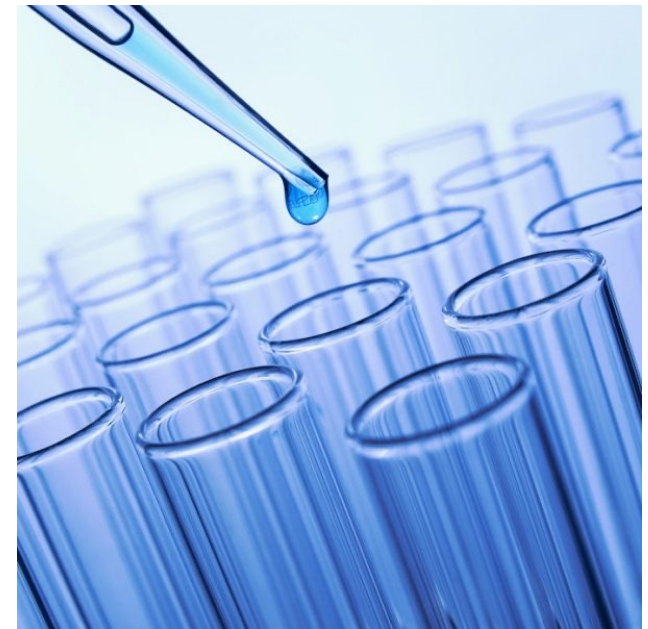
Conta iniziale (ufc/ml) Uo	Conta 24 h su provini non trattati (ufc/ml) Ut	Conta 24 h su provini trattati (ufc/ml) At	Attività antibatterica R= Ut – At	Abbattimento (%)
3.6 x 10 ⁵ Log = 5.56	8.6 x 10 ⁵ Log = 5.93	1.6 x 10 ³ Log = 3.20	2.73	99.81

Tests performed in compliance with ISO 22196:2011

BV-Stop safety



- In addition to being effective, the product Nanoprom BV-Stop is also safe: cytotoxicity tests performed several times in accordance with the ISO10993-5:2009 standard, allowed to confirm that the product is not cytotoxic and, therefore, also safe. to be used on surfaces in contact with people.
- Furthermore, the weighted dimensions of the polymers and particles involved in the coating are not such as to make the product fall within the scope of nanomaterials.



BV-Stop application



- BV-Stop is a transparent coating with a thickness of a few microns that can be applied by spray, cloth or roller on any surface.
- A specific UV reagent has been added to verify the correct application of the coating.





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