Zschimmer & Schwarz

PAINTS & COATINGS

ZSCHIMMER & SCHWARZ
LEFATEX

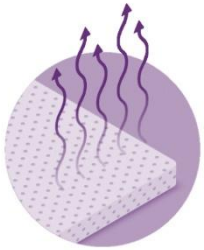
Paints & Coatings

PROTECTIVE FINISHING

Barrier protection

- **Outer layer:** antimicrobial properties + impregnation (water/ oil-repellent)
- **Middle layer:** antiviral (ISO 20743 / 18184)
  ➔ reduces coronavirus by 99.9%

Triple effect

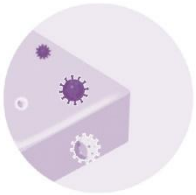


Air-refreshing

- Harmful and volatile gases are broken down

Antimicrobial

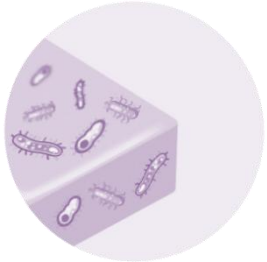
- Antibacterial technologies are effective against a wide range of harmful bacteria



Antiviral

- Destroys viruses

ANTIMICROBIAL



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Antimicrobial vs. antibacterial

- What is the difference?
  The main difference between antibacterial and antimicrobial substances is in the microorganisms they target.

- Thanks to their broad-spectrum effect, antimicrobial substances are ideally suited for use in environments in which hygiene must be observed, e.g. in schools, hospitals and commercial kitchens.

Antimicrobial – antibacterial

BACTERIA	FUNGUS	YEAST
Escherichia coli	Aspergillus niger	Candida albicans
Pseudomonas aeruginosa	Penicillum notatum	
Salmonella typhimurium	Trichophyton mentagraophytes	
Staphylococcus aureus		
Streptococcus faecalis		

Antimicrobial MTB 90001-1$_{C6}$ / MTB 90004-1$_{fluor\text{-}free}$

Characteristics

- C6 antimicrobial
- Water/oil-repellent
- PFOS- and PFOA-free
- MTB 90001-1$_{C6}$ 20 x 40°
- MTB 90004-1$_{fluor\text{-}free}$ 5 x 40°

Application

- Padding / kiss roll
- Spraying (only MTB90004-1)

End use

- Protective textiles, for example face masks

Antimicrobial MTV 99001-1

Characteristics

- Antimicrobial
- High wash resistance
- For all fibres
- 100 x 

Application

- Padding / kiss roll / spraying
- Exhaust

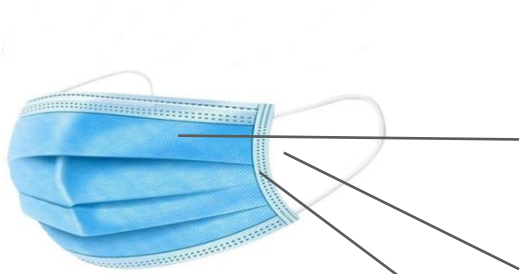
End use

- Protective textiles
- Garment

Each article must be tested for its properties.

3-layer antimicrobial and antiviral mask

	RECIPE (PADDING)
60–90 g/l	MTB 90001-1
	pH 5
	Drying at 120° C
	Curing at 160° C



MTB 90001-1 (outer layer)
MTB 90004-1 spray

unfinished (inlay)

MTV 99001-1 (middle layer)
MTV 13002-1 (middle layer)

COATING

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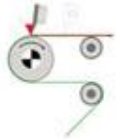
Antimicrobial MTB 45001-1PUR / MTB 16001-1AC

Characteristics

- Antimicrobial
- Waterproof coating
- MTB 45001-1PUR multiple 

Application



- Coating
- Printing 40 mesh

End use

- Protective textiles

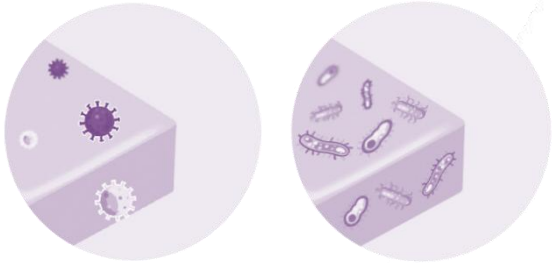
Each article must be tested for its properties.

Products for coveralls

COATING	MTB 16001-1	MTB 45001-1	VD 383/1
Watercolumn	x	x	x
Antimicrobial	x	x	x
Antiviral over finish with MTV 13002-1 or 13002-2		x	x
Breathable	x low	x low	x
WR / Oil	x	x	x
ASTM 1670		x	x

Each article must be tested for its properties.

ANTIVIRAL – ANTIMICROBIAL



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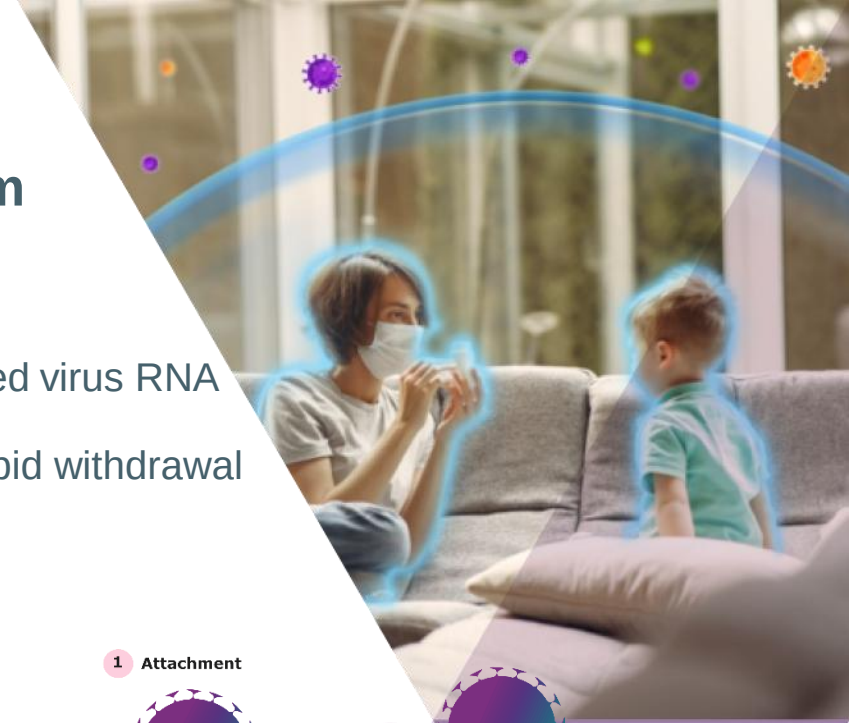
Why antiviral / antimicrobial finish?

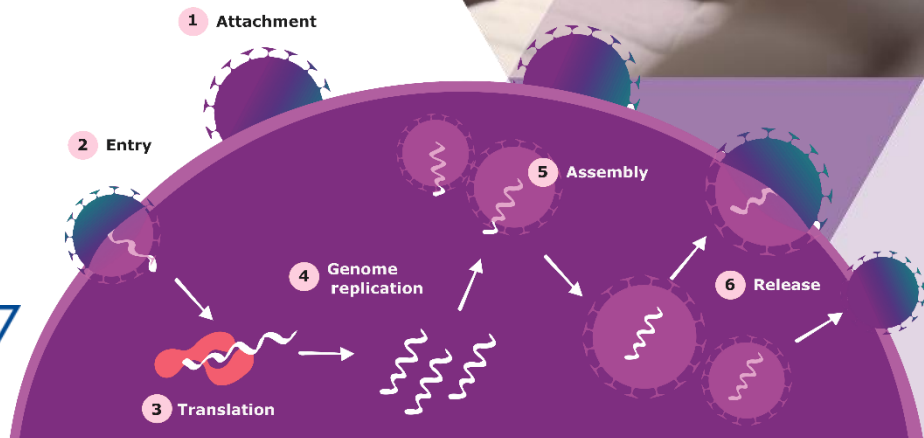
Any kind of textile can harbour bacteria and viruses

- These textiles can be clothing, seats, couches, coveralls, workwear, military materials, carpets, seat covers, sheets, curtains, etc.
- Basically, all textiles can get contaminated by an infected person (touching, coughing / sneezing, ...)
- Viruses stay active on a surface, but their activity declines over time (half life)

Rapid and intense oxidation reactions irreversibly damage the microorganism

- The outer lipid envelope of the virus is destroyed
- Oxidation of the core capsid and the single-stranded virus RNA
- Virus surface (outer envelope): decay caused by lipid withdrawal
- Protein modification of the envelope proteins
- Nucleic acid (genome): destruction of the H-bonds (collapse of the secondary structure) or chain breaks of the nucleic acid through modification of the base





Antimicrobial – antibacterial MTV 13002-1

Characteristics

- Antimicrobial (BFR528/2012)
- Antiviral (ISO 20743/18184)

Each article must be tested for its properties.

99% reduction of coronavirus

Antimicrobial ISO 20743, AATCC 100, ASTM 2149, JIS 902 Antiviral ISO 18184:2019, against Influenza A virus (H3N2), Influenza A virus (H1N1), Feline calicivirus – strain F-9 ATCC VR-782, Feline coronavirus (FCoV) – strain Munich (identical to COVID-19, same realm, order, family), Bovine coronavirus (BCoV) (identical to COVID-19, same realm, order, family, genus)

Application

- Padding for all fibres
- Kiss roll
- Multiple 

End use

- Protective textiles

Antimicrobial – antibacterial MTV 13002-2

Characteristics

- Antimicrobial (BFR528/2012)
- Antiviral (ISO 20743/18184)

Each article must be tested for its properties.

99% reduction of coronavirus

Antimicrobial ISO 20743, AATCC 100, ASTM 2149, JIS 902 Antiviral ISO 18184:2019, against Influenza A virus (H3N2), Influenza A virus (H1N1), Feline calicivirus – strain F-9 ATCC VR-782, Feline coronavirus (FCoV) – strain Munich (identical to COVID-19, same realm, order, family), Bovine coronavirus (BCoV) (identical to COVID-19, same realm, order, family, genus)

Application

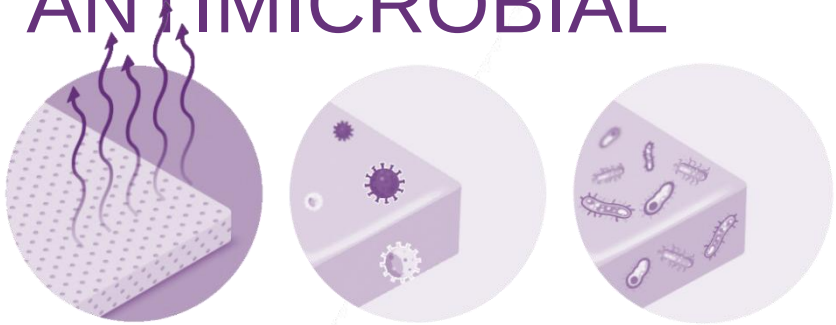
- Padding for all fibres
- Kiss roll
- Spraying

Multiple 

End use

- Protective textiles

3-in-1 effect
AIR-REFRESHING
ANTIVIRAL
ANTIMICROBIAL



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Why use a triple-protective finish?

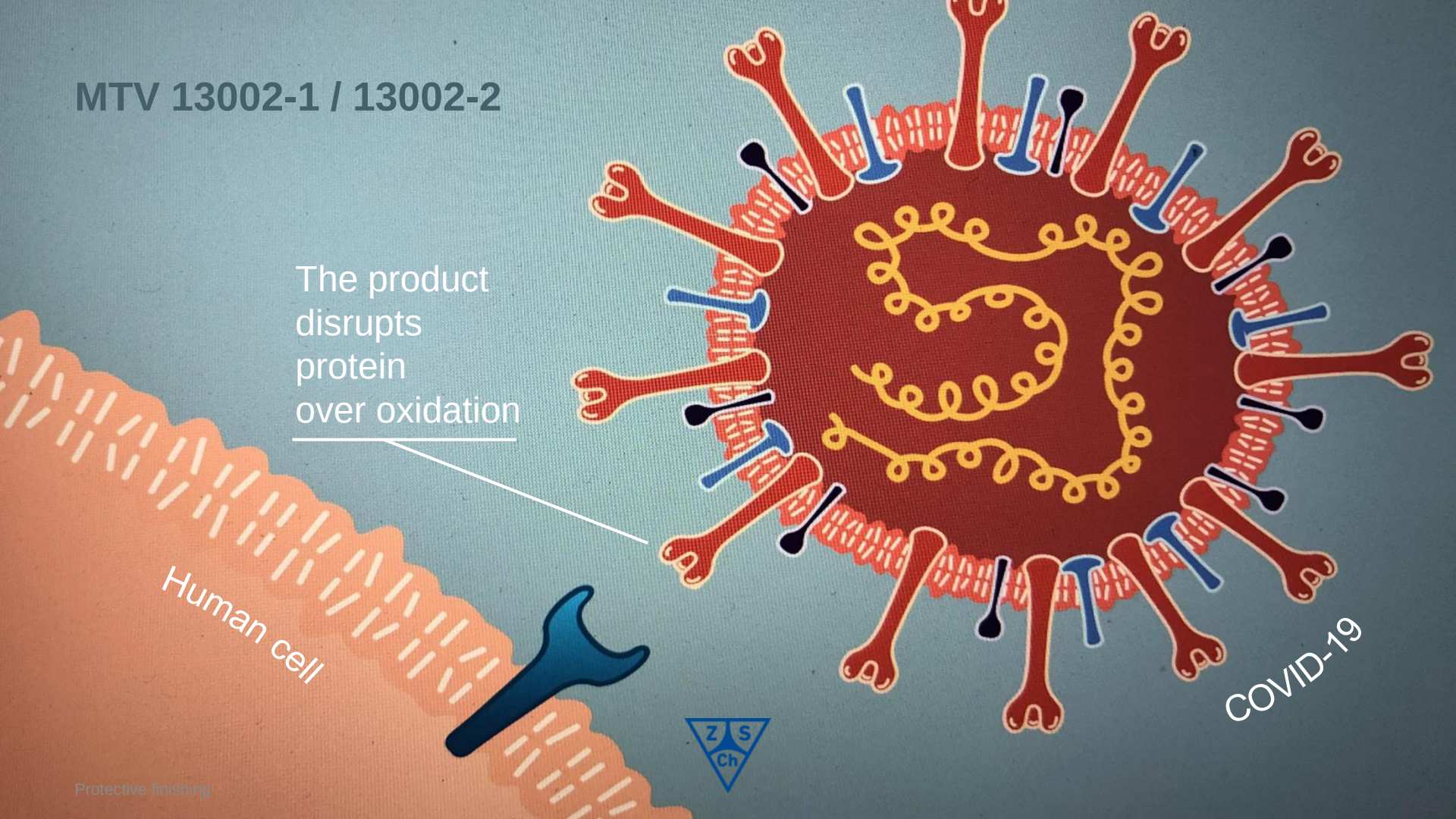
AIR-REFRESHING EFFECT: Harmful and volatile gases are broken down and eliminated

- More than 50 different dangerous gases diffuse into the room from furniture, wallpaper, floor, plastic products, etc. every day!
- More and more disinfectants are used nowadays. These cause high concentrations of VOCs and alcohols in indoor air.
- Ammonia-containing gases in the air come from the kitchen, toilet and pets.

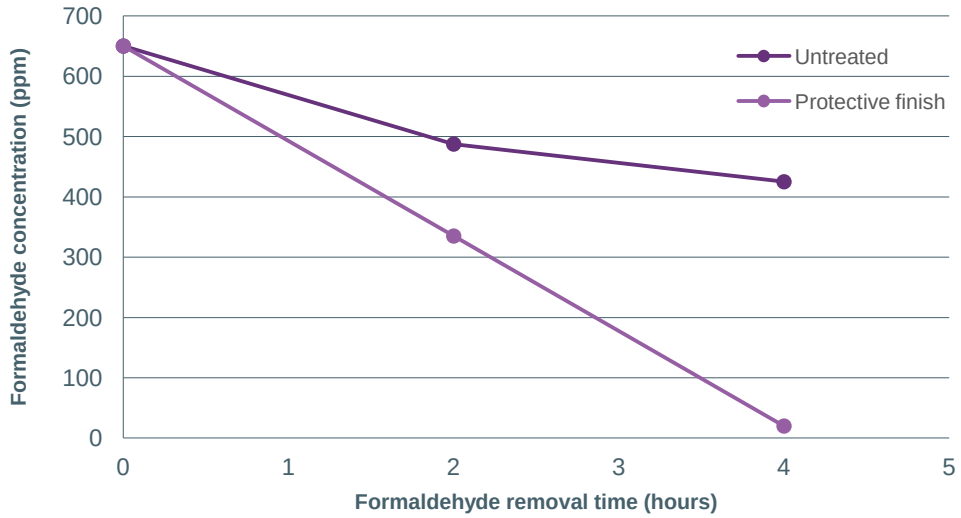
ANTIMICROBIAL PROTECTION: Textile surfaces will be protected against microorganisms and bacteria

VIRAL PROTECTION: Textiles are effectively protected against viruses, especially the coronavirus

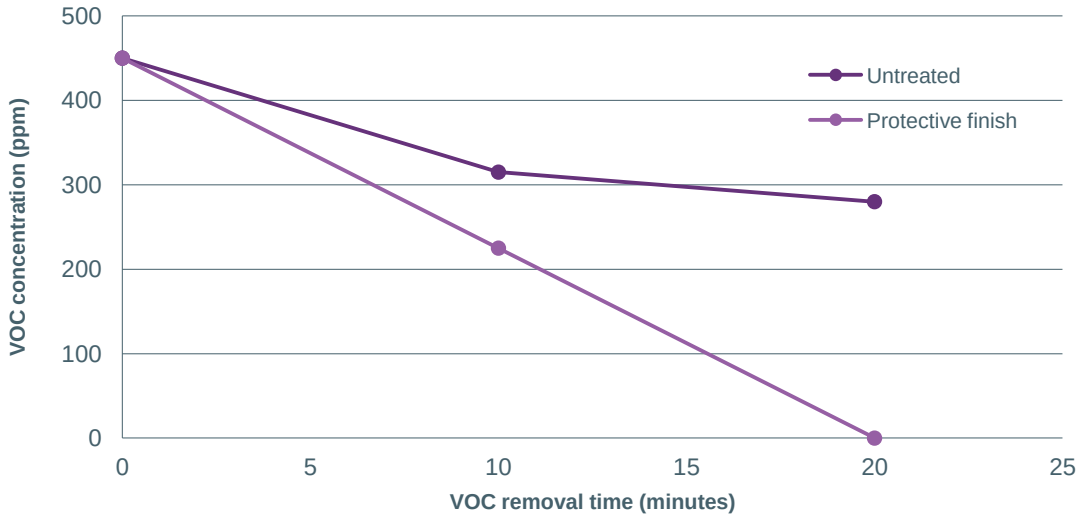
MTV 13002-1 / 13002-2



Test results for CH_2O removal rate



Test results for VOC removal rate



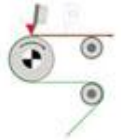
3-in-1 effect: air-refreshing – antimicrobial – antiviral Coating MTV 13005-1

Characteristics

- Antimicrobial (BFR528/2012)
- Antiviral (ISO 20743/18184)
- Air-refreshing

Each article must be tested for its properties.

Application

- Foam coating 
- Printing 40 mesh

End use

- Protective textiles
- Cloth / home textiles / automotive

3-in-1 effect: air-refreshing – antimicrobial – antiviral
MTV 13004-2

Characteristics

- Antimicrobial (BFR528/2012)
- Antiviral (ISO 20743/18184)
- Air-refreshing

Each article must be tested for its properties.

Application

- Padding for all fibres
- Kiss roll

End use

- Home textiles
- Automotive
- Aviation industry

PRODUCT SUMMARY / TEST RESULTS

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Product summary

PRODUCT NAME LEFASOL	FUNCTIONS	END USE	APPLICATION METHOD
IMPREGNATION			
MTB 90001-1	C6-based, oil/water-repellent, antimicrobial finish	Face mask / protective textiles	Padding / kiss roll
MTB 90004-1	Fluor-free / WR	Mask	Spraying / padding / kiss roll
MTV 99001-2	Antimicrobial finish	Face mask / protective textiles	Padding / exhaust / kiss roll / spraying
COATING			
MTB 45001-1	PU with antimicrobial finish	Protective textiles / coveralls	Coating
MTB 16001-1	AC with antimicrobial finish	Protective textiles / coveralls	Coating
ANTIVIRAL			
MTV-13002-1	Antimicrobial – Antiviral	Face mask / protective textiles	Padding / kiss roll
MTV-13002-2	Antimicrobial – Antiviral	Face mask / protective textiles	Padding / kiss roll /Spray
MTV 99001-1	Antimicrobial – Antiviral		
3:1 AIR-REFRESHING – ANTIVIRAL – ANTIMICROBIAL			
MTV-13004-1	Antimicrobial – Antiviral – Air-Refreshing	Home textiles / protective textiles	Padding / kiss roll
MTV-13005-1	Antimicrobial – Antiviral – Air-Refreshing	Home textiles	Coating

All products certified by	REACH	ZDHC	Ökotex	BFR (EU)

MTV 13002-1, MTV 13002-2, MTV 13004-1
Test passed

	TEST STANDARDS	RESULTS (% AND LOG)
S. aureus, K. pneumoniae, MRSA etc. Gram-positive bacteria Gram-negative bacteria	ISO 20743, ASTM E 2149 JIS 902, AATCC 100, ASTM 2149	99.999%
Feline calicivirus, strain F-9 ATCC VR-782	ISO 18184:2019	99.999% (log 2.92)
Influenza A virus (H3N2), Influenza A virus (H1N1)	ISO 18184:2019, ASTM E2197-11	99.999% (log 2.82)
Bovine coronavirus (BCoV)	ISO 18184:2019	99.999% (log 2.42)

Customer test on such fibre: CO / PES / PA / VISC. / WO

Testing on different coronaviruses and results

MTV 99001-1

MTV 13002-1 / MTV 13002-2

VIRUS CLASSIFICATION	FELINE CORONAVIRUS (FCOV) STRAIN MUNICH	BOVINE CORONAVIRUS (BCOV)	COVID-19 (SARS-CoV-2)
Realm	Riboviria	Riboviria	Riboviria
Order	Nidovirales	Nidovirales	Nidovirales
Family	Coronavirade	Coronavirade	Coronavirade
Genus	Alphacoronavirus	Betacoronavirus	Betacoronavirus
Species	Alphacoronavirus 1	Betacoronavirus 1	COVID-19 expect
LEFASOL MTV Antiviral + antimicrobial + air-refreshing	**95%**	**99.99%**	**99.99%**

Test laboratory

Airmid Healthgroup	Ireland
Dr. Brill + Partner GmbH and Hohenstein	Gemany
IAC	USA
MSL Solution Provider	UK
Guang Dong Detection Center of Microbiology	China
Instituto Valenciano de Microbiología	Spain, Valencia

Thank you for your kind attention. #stayhealthy

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