

# IN-EX

UNIQUE, GREEN, PATENTED SONO-CHEMICAL TECHNOLOGY DEVELOPED AT BAR ILAN UNIVERSITY IN ISRAEL FOR THE MEDICAL INDUSTRY AND ADJUSTED TO THE WORLD OF FILTRATION BY A.L. GROUP

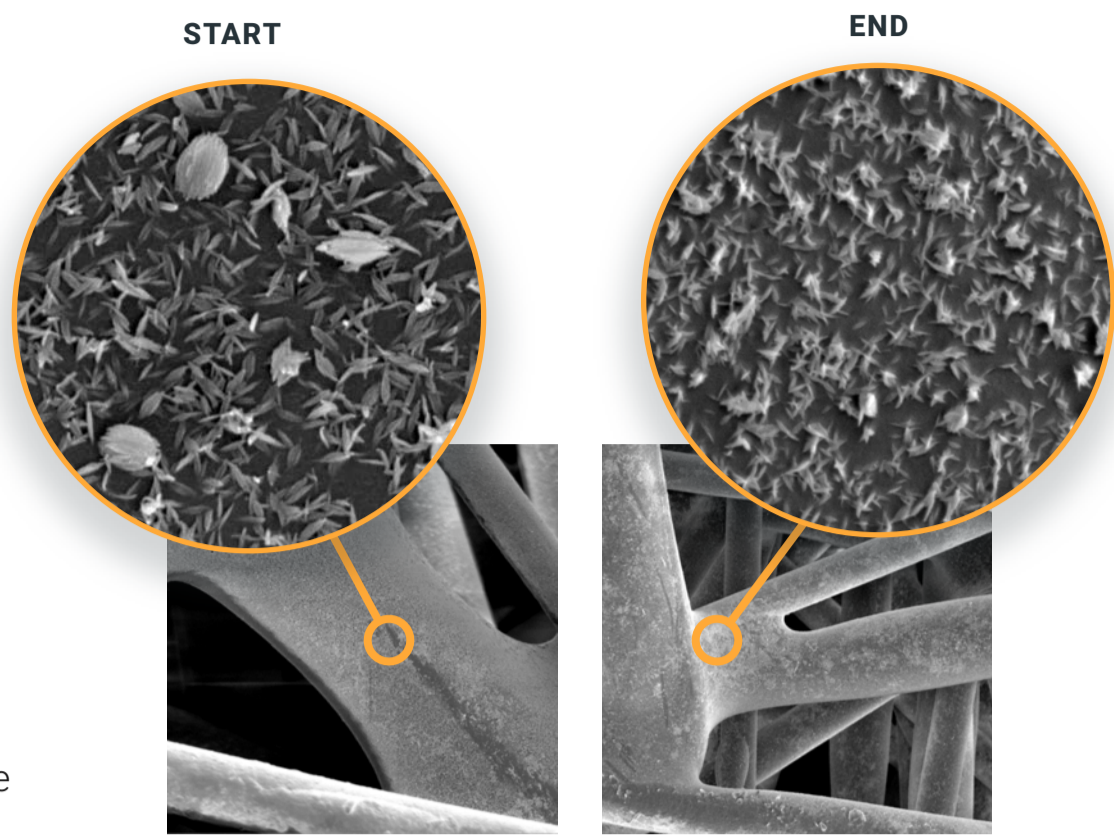
The sonochemical coating technology utilizes the antiviral properties of CuO and is unique in the way the CuO particles penetrate and lock permanently in the media fibers.

The metal oxide remains active even after the media is used and washed at high temperature many times.

IN-EX filters turn any air filtration media into an active purifier that kills airborne viruses and bacteria.

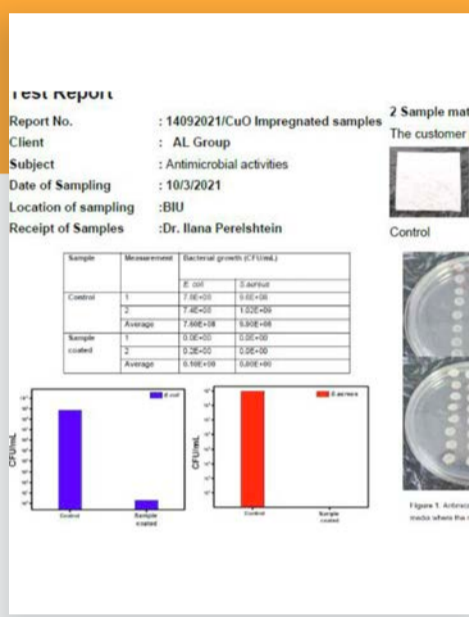
IN-EX filters have been tested in laboratories in Israel and around the world and found extremely effective in neutralizing viruses and bacteria, as well as safe in implementation and every-day use.

Antibacterial and antiviral activity is maintained throughout the entire filter's life and prevents bad odor that develops in air conditioning systems as a result of the presence of bacteria.



MORPHOLOGY OF COATING

## PROVEN EFFICIENCY, EFFECTIVENESS AND SAFETY, TOXICITY AND LEACHING



Year Name	NO	Without IN-EX (%)	With IN-EX (%)	With IN-EX (%)
SARS-CoV-2	1	100	99.15	99.15
SARS-CoV-2	2	100	99.15	99.15
SARS-CoV-2	3	100	99.15	99.15
SARS-CoV-2	4	100	99.15	99.15
SARS-CoV-2	5	100	99.15	99.15

Time	Average Log TCID <sub>50</sub> (Log U)	TCID <sub>50</sub> 1 mL	M <sub>0</sub>	% reduction versus T0	
Treated sample	T6	4.08	10 <sup>7.18</sup>	1.92	98.80

Time	Average Log TCID <sub>50</sub> (Log U)	M <sub>0</sub>	% reduction versus T0		
Treated sample	T6	2.92	10 <sup>6.91</sup>	2.17	99.31

★★★★★  
**99.999%**  
Antibacterial efficiency  
S. Aureus & E. Coli  
Bar-Ilan University  
Faculty of Exact Sciences

★★★★★  
**99.15%**  
Antiviral efficiency  
Sars CoV2  
Internationally Accredited  
ATCCR Testing Laboratory

★★★★★  
**98.8%**  
Antiviral efficiency  
Sars CoV2 The British Variant  
Vismederi Laboratories

★★★★★  
**99.31%**  
Antiviral efficiency  
H1N1 influenza A virus  
Vismederi Laboratories

**The data on which the review was based:**

- An experiment ensured that copper particles did not leave the filter in various air flows, including dust flow, in front of an H13 filter with over 99.97% efficiency catching for particles with a diameter of 0.3 μm.
- The antibacterial efficacy test carried out at Bar-Ilan University showed a significant decrease in the vitality of E. Coli and S. Aureus bacteria compared to the untreated filter.
- A test carried out at VISMEDERI laboratory in Italy demonstrated neutralizing of SARS-CoV-2 virus, the English mutation (98.8% after 6 hours).
- A test carried out at VISMEDERI laboratory in Italy demonstrated neutralizing of H1N1 virus (99.31% after 6 hours).
- Analysis of copper oxide collection in the H13 filter samples by Elcham laboratories.

**Conclusions of the review:**

- This review is submitted at your request to address the safety aspects of people staying in an air-conditioned space, with a filter treated with copper oxide particles by a Sonochemical method installed in the air conditioner.
- The treated filters are made of standard air filtration paper and adapted to the volume and flow of air through them. The filters effectively stop dust particles and liquid droplets and reduce a load of air pollution in the air-conditioned space, both chemically and biologically.
- The coating of filters with copper oxide particles reduces in number of orders of magnitude over time, the vitality of

★★★★★  
"filters treated with copper oxide do not pose a health risk to people. On the other hand, they have an advantage in neutralizing bacteria and viruses."  
Israeli Biohazard

Colony	A type	Incubation
Colony	2 type	Incubation
Colony	3 type	Incubation
Colony	4 type	Incubation
Colony	5 type	Incubation
Colony	6 type	Incubation
Colony	7 type	Incubation
Colony	8 type	Incubation
Colony	9 type	Incubation
Colony	10 type	Incubation

★★★★★  
A 7,500 bacterial growth was sampled on the standard filter versus 225 on the IN-EX filter.  
Institute for food Microbiology

Sample	NO	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU	CFU
Control	1	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
IN-EX	1	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

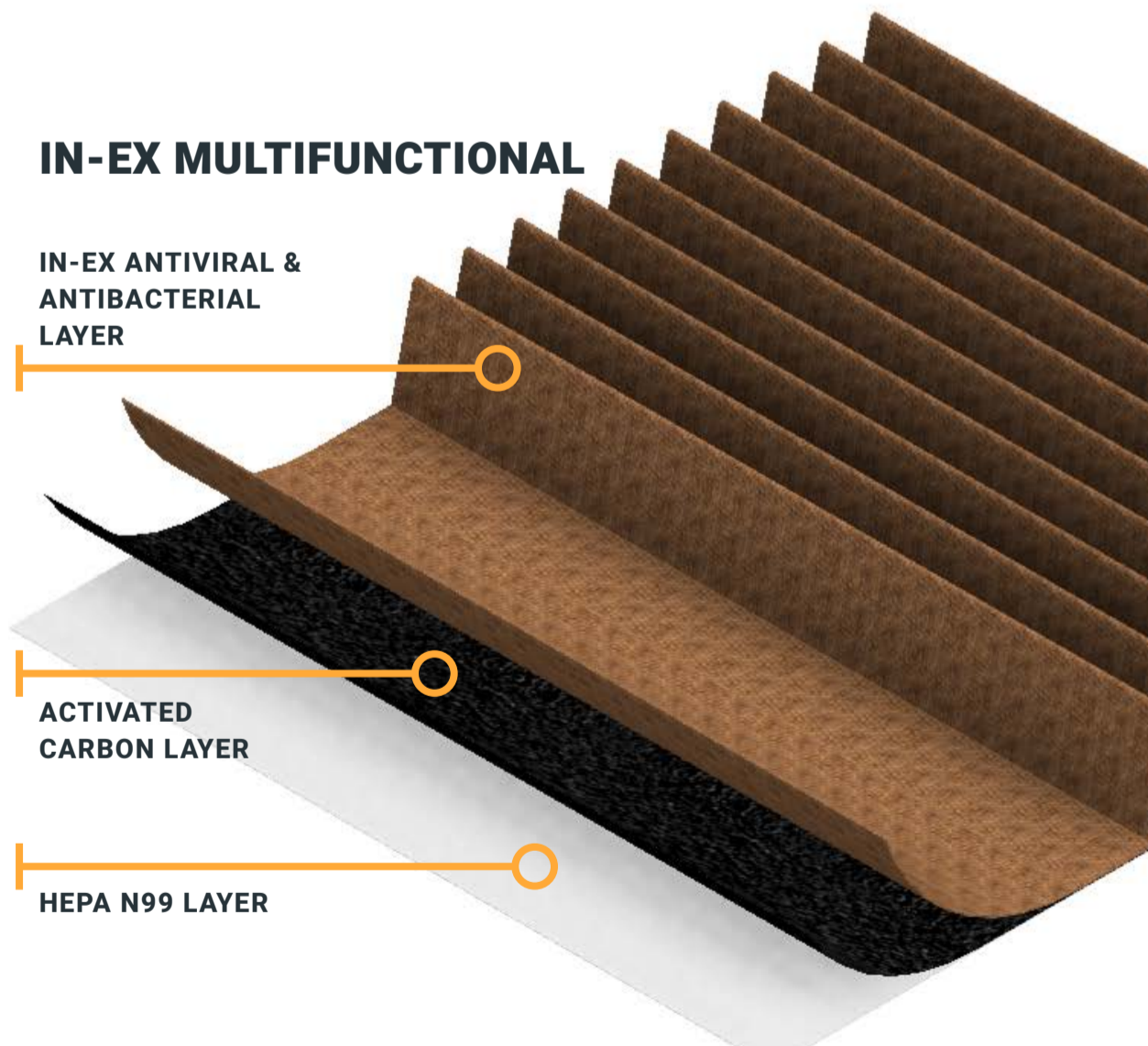
★★★★★  
Passed with great success the toxicity tests of the Israeli Standards Institute.  
MATI - The standards institution of Israel

## LINE OF PRODUCTS:

- IN-EX**  
Particulate filtration - antiviral & antibacterial CuO
- IN-EX Carbon**  
Particulate filtration - antiviral & antibacterial CuO  
Gas adsorption & odor cancelation activated carbon
- IN-EX Multifunctional**  
Particulate filtration - antiviral & antibacterial CuO  
Gas adsorption & odor cancelation activated carbon  
N99 antiallergenic
- IN-EX Prefilter for bus**  
Particulate filtration - antiviral & antibacterial CuO
- IN-EX Home**  
Antiviral & antibacterial CuO filters for domestic A/C
- Sensibo Shield**  
IN-EX pre filter for implementation on existing A/C and Heat Pump filters

## IN-EX MULTIFUNCTIONAL

- IN-EX ANTIVIRAL & ANTIBACTERIAL LAYER**
- ACTIVATED CARBON LAYER**
- HEPA N99 LAYER**



## APPLICATIONS

Reduces the risk of viral infections in closed public spaces such as:



PRIVATE CARS



SHARE-RIDE VEHICLES AND TAXIS



BUSES AND OTHER PUBLIC TRANSPORTATION



RESIDENTIAL A/C



INDUSTRIAL HVAC SYSTEMS