



EnzyMax filter proven to kill bacteria

Last August the effectiveness of the EnzyMax filter developed by Euromate B.V. was tested by TNO (Netherlands Organisation for Applied Scientific Research). It proved the bacteria killing ability of the antimicrobial properties of the EnzyMax filter. This supports our claim, as stated at the introduction in January 2008. Research by TNO is highly valued. At present they are among the top three RTOs (Research and Technology Organisations) in Europe, together with Fraunhofer Gesellschaft in Germany and VTT in Finland. TNO is accredited to certify products and to them quality is important by complying with general and customer-specific quality standards like:

- ISO 9001-2000
- ISO 17025 (STERLAB)
- ISO 14001
- EuroNCAP certified since 1997
- ECE approved testing for certification

We are very pleased to present you the results of the evaluation by TNO in this update.



Summary of the evaluation by TNO

The EnzyMax filter media contains an enzyme which possesses an antimicrobial activity. The evaluation clearly shows its effect on micro-organisms entrapped in the filter media. From the results obtained it can be concluded that the EnzyMax filter plays an active role in the inactivation of viable cells entrapped in the filter matrix.



VisionAir EnzyMax filterset built out of 3 components: Pre filter, EnzyMax filter (HEPA 11 paper filter with natural enzymes) and an activated carbon filter. Tested is the EnzyMax filter in the middle.

Evaluation method

TNO was asked to evaluate the effectiveness of the antimicrobial properties of the EnzyMax filter against our presently used standard MediaMax filter. Two bacteria were tested that are known to endanger our health:

- *Micrococcus luteus*
- *Staphylococcus aureus* (MRSA)

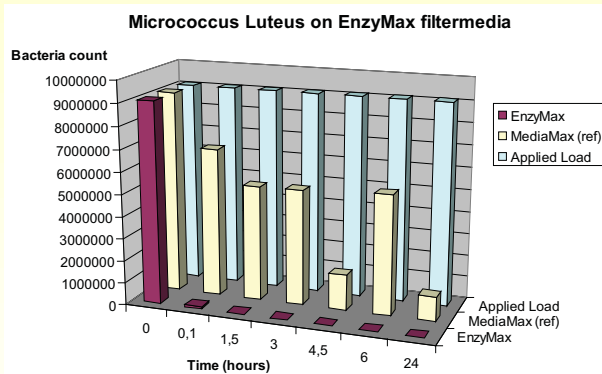
An evaluation protocol was established by TNO and the EnzyMax versus the MediaMax was assessed on the bacteria killing ability of both filters in relation to contact time with filter surface for each bacteria. A controlled load of bacteria was applied on the filter and the effectiveness was measured in a detailed time scale. Six exposure contact time intervals were applied (0, 1½, 3, 4½, 6, and 24 hours).

Results of the evaluation

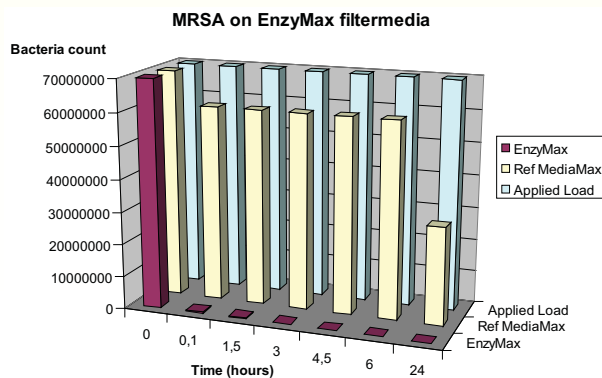
A rapid drop in viable count for the *Micrococcus luteus* was observed shortly after applying on the EnzyMax filter. The detailed exposure times show that the total amount of drop in viable count after 24 hours was already achieved after 3 hours. When the *MRSA* micro-organism were applied on the EnzyMax filter a rapid drop was observed in viable counts at the first feasible measurement moment (0,1h). Further reduction was measured in the subsequent measurement periods.

Hardly any reduction in viable counts were observed when the *Micrococcus luteus* was applied on the MediaMax filter. When *MRSA* was applied on the MediaMax filter no instantaneous drop at the first moment of contact was observed and during the measurement period the total drop in viable cell count was very little.

The results are visualized in the graphics on the next page.



Effect of exposure contact time of *Micrococcus luteus* on the EnzyMax vs MediaMax after applying load



Effect of exposure contact time of MRSA on the EnzyMax vs MediaMax after applying load

Conclusion

TNO concluded the evaluation by stating that the EnzyMax filter plays an active role in the inactivation of viable cells entrapped in the filter matrix for both tested challenge micro-organisms *Micrococcus luteus* and *MRSA*.

Market opportunities

The results of this evaluation emphasize even more the added value of the EnzyMax filter in hospitals, kindergartens, and laboratories. Patients and personnel are increasingly at risk of infection in these surroundings. The VisionAir EnzyMax finally puts an end to micro-organisms and destroys them. Therefore, it highly increases the quality of air in such areas. But also in schools, creches, retirement homes, archives, and the food industry, the dangers of bacteria are lurking.

The EnzyMax filter is made of a natural substance and is very safe in use and environmental

friendly. Any VisionAir can easily be upgraded to a VisionAir EnzyMax because of the interchangeability of the filters.

Order information

The EnzyMax filter can be ordered as:

- A VisionAir¹ EnzyMax
- A VisionAir² EnzyMax
- Spare part, refill EnzyMax filter

Please check the VisionAir & Grace price list for current pricing, article numbers, and options.

Technical specifications

Please refer to the product data sheet of the VisionAir EnzyMax for more technical details. The product data sheet is enclosed with this update.

Colophon

Published by Euromate B.V., P.O. Box 9350, 1800 GJ Alkmaar, Netherlands

T: +31 (0)72 5640634

F: +31 (0)72 5644469

Editor: Simone Luijendijk; E: SLuijendijk@cleanairgroup.nl

I: www.euromate.com