

ViriMASK™

Executive Summary - ViriMASK Project

July 2020

Background: In early February 2020 our company realized that:

- (a) the coronavirus is a dangerous pandemic
- (b) transmission of the virus is through the respiratory system and eyes
- (c) Existing protective masks are not effective in protecting the person wearing the mask (but are good to protect others in the nearby environment)
- (d) this pandemic will not disappear in the near future
- (e) the masks available on the market are not intended to protect against viruses
- (f) our company has the knowledge, experience and operational platform to set up an optimal protection system venture.

Who we are? The company is headed by Prof. Noam Gavriely, former director of the Respiratory Physiology Chair at the Technion's Faculty of Medicine. In recent years he became the CEO of OHK Medical Equipment Company Ltd., which develops, manufactures and sells products for orthopedic surgery (www.hemaclear.com) and emergency medicine (www.hemashock.com) worldwide. Along with him are Larry Murdoch, who specializes in the respiratory system and in marketing in the American and global markets, Leonardo Schwartz, operations manager with a background in production management in the field of elastomers and plastic injection, and Sharon Abadi-Saar, global marketing director.



The Technology: The ViriMASK consists of the mask body, designed for long term use, and a filter, designed for 60 hours of use. The mask has a visor, with excellent optical quality, a flexible piece, which is well sealed around the mouth, nose and eyes, and a customizable harness.

The core of the mask is a H 14 HEPA filter that filters particles bigger than 0.1 micron (the corona virus is 0.12 microns in size and is therefore inhibited by the filter). The zig-zag structure of the filter allows for a very large contact area for the air to pass, offering low resistance despite the

dense filtration. In fact, the flow resistance of the ViriMASK filter is about 65% lower than that of the N 95 mask, even though its filtration level is five times higher (less than 1% penetration versus 5%).

The ViriMASK is manufactured in Tirat Carmel with “blue and white” components, along with the HEPA produced abroad (USA and China). The current production capacity reaches

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about 10,000 masks per week, if needed. The company began exporting its products about a month and a half ago to countries in Europe, North America, South America, Africa and India.

ViriMASK is primarily intended for medical staff exposed to Covid-19. Amongst our first clients (many of them by direct orders), were dentists, people who need to fly, immunodepressed patients, and people with background diseases. The company has also received inquiries and orders from government bodies (e.g. the NHS in the UK and the Illinois State Government in the US) who want to optimally protect their employees.

Key Features:

1. Eye protection

We know that the eye epithelium is an integral part of the respiratory system, and is a gateway to viruses. We also know that the virus spreads in sprays, so a plastic shield tied on the forehead is ineffective.

2. Filtration capacity

The HEPA H14 filters 99% of the particles starting from 0.1 micron, compared to the masks available on the market that filter 95% of the particles over 0.3 microns only (it is worth remembering that the corona virus is 0.12 microns in diameter)

3. Hermetical sealing to the face

Only an airtight mask can optimally protect against the entrance of outside (polluted) air into the respiratory system of those who are at the front, exposed to an environment with a high virus concentration.

4. Two-way filtration

Two-way filtration provides protection for both the wearer of the mask and the environment around.

5. Comfort

The mask was developed with a dedicated technology for long term use – it is highly comfortable and poses no danger to the skin. The respiratory load is also comfortable. What is more, the wearer's voice is heard clearly and powerfully.

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A comparative assessment was done between the features of the ViriMASK and of the N95 mask. The results are shown in the table below:

Parameter	ViriMASK	95N
The protected area	Mouth, nose and eyes	Mouth and nose only, additional eye protection goggles are needed
The Hermetical Seal	Complete sealing	No sealing. Air with aerosols can penetrate through the edges of the mask
Filtration Power	>99%	95%
Size of particles filtered	>0.1 μ	>0.3 μ
Flow resistance	<10 mm of water	25-35mm of water
Fit-Test	Simple procedure, done with the plastic cap	N/A
Comfort	Very comfortable	Not comfortable for continuous use
Length of use (time)	Mask: 18 months Filter: 60 hours	Disposable, 2-4 hours
Cost	< ₪ 1 per hour	> ₪ 2.5 per hour

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