



MEMO:
**Research results of using HME filter for
passive respiration**



3D Printing Limburg

Date: 15-04-2020

Version: 1.0

By: ing. Ton Scheres, CTO, 3D Printing Limburg BV
Rutger van Knippenberg, Print Operator, 3D Printing Limburg BV
Gerald Scheres, Labtechnician, Analyst, 3D Printing Limburg BV

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1. Background

We have received many reports from colleagues that they use HME filters in their work. However, our tests show that HME filters do not pass the test if they are used for passive respiration.

2. Uitgangspunten

- I. We want to set up an experiment where we use the HME filter for passive and active respiration.
- II. As a control we will test the P3 filter, though only for active respiration as passive respiration was thoroughly tested in combination with the full face masks

3. Description of experiment

Test Set Up:



The PortaCount Face Fit tester was fitted up to a T-joint. At the upper side, an HME-filter was connected to the T-joint. A P3 filter was connected to the other side of the T-joint.

The experiment measured 3 aspects:

1. Active respiration across the HME-filter:
The P3 filter is shut off, creating an air flow which pulled air through the HME filter at a speed of 0.3 L/min through the Face Fit tester.
2. Passive respiration across the HME-filter:
The HME-filter is actively respirationed at approx. 10 L/min. To do this, the P3 filter is opened up again so that no pressure can build up in the T-joint. The Face Fit tester

sucks air out at a speed of 0.3 L/min. All surplus air is blown out at the side with the P3 filter.

3. Active respiration across the P3 filter:

The HME-filter is shut off, creating an air flow through the P3 filter of 0.3 L/min.

4. PortaCount Real Time Test results

All results are gained using a PortaCount Pro Face Fit tester.

	Average score
Active breathing over HME-filter	5500
Passive breathing over HME-filter	35
Active breathing over P3 filter	>100000

5. RELEVANT KNOWLEDGE DOCUMENTS

https://www.tsi.com/getmedia/76df3dbb-6d8d-4d78-aa24-5aff19e889e9/8030_8038_PortaCountPro_Manual_6001868?ext=.pdf

See video of this test at

<https://www.3dq.nl/kennisalliantie>