COVID-19 & face masks: What we know, how they contribute and which are the remaining challenges until achieving a Swiss Norm

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The overall aim of each pandemic crisis is to stop the propagation and extinct the disease.

In the case of COVID-19 pandemic, both treatment and vaccination are prohibited.
We can only rely on non-pharmaceutical measures

Hygiene
Distance
Protection
What protects against COVID-19 infection or transmission?
Shortage of facemasks in hospitals and health care

- FFP2 & FFP3
- Surgical masks
- Non-defined mask types «non-medical mask»
A novel face mask type: Community Mask

Surgical masks
EN 14683
EU/2017/745, SR 812.213
(Medizinprodukteverordnung)

Non-medical mask should have:
- similar breathability and
- splash resistance as a surgical mask
- certain filtration efficacy against ultrafine particles
- reusable

Swiss National COVID-19 Science Task Force (NCS-TF)

Title: Recommendations for minimal specifications for the community masks for Swiss manufacturers

Summary of request/problem:
On request of the Swiss governmental Kriensstab, the “RethMask” Expert Group has formulated a recommendation for test methods and minimal specifications for community masks. 22.04.2020 these minimal specifications have been discussed and agreed upon with the Kriensstab and the Task Force VBS. This document complements the document dated 14.4.20, and has received from the Kriensstab (L. Bühler per 22.04.2020) the permission to be published.

Executive summary:
Recommended specifications for Community masks:
Community masks, mostly aimed at source control, should offer a sufficient protection against liquid droplets of different sizes produced during coughing or sneezing and aerosols (particle size down to 1 micrometers). They should have a sufficient air permeability to minimize breathing hindrance and different fitting sizes for adults and children to guarantee an adequate face coverage.
In brief:
Air permeability < 60 Pa·L/cm² according to to ISO 9237
Swiss National COVID-19 Science Task Force
Community Masks Specifications

- **Air permeability**
  - 60 Pa/cm²
  - according to ISO 9237

- **Splash resistance**
  - no liquid penetration
  - following EN 14683

- **Filtration efficiency**
  - FE ≥ 70 %
  - particle size of 1 micrometer

- **Washability**
  - 60°C
  - with detergents
Since May 2020, three Mask types available

Protective masks (FFP)
EN 149
EU/2016/425, SR 930.115,
(PSA-Verordnung)

Surgical masks
EN 14683
EU/2017/745, SR 812.213
(Medizinprodukteverordnung)

Community masks
Recommendation Task Force
(CEN CWA 17553,
AFNOR Spec S76-001)

FFP1, FFP2, FFP3, N95
High filtration efficiency

Type I, Type II, Type IIR
Source control

Non-defined mask type:
«non-medical mask»
Community Mask Prüfprogramm - SQTTS

Die SQTTS bieten ein Prüflabel an, um die Sicherheit und Qualität Ihrer Masken auszuloten.


Folgende Prüfungen werden an den Masken durchgeführt:

- Partikelrückhaltevermögen >70%
- Atmungswiderstand < 60 Pa/cm
- Widerstand gegen Spritzwasser in Anlehnung an die EN 14683:2019 + AC. 2019
- Gute Passgenaueigkeit und sicherer Tragekomfort
- Wachbarkeit (10-30 mal)
- Schweiss- und Speichelechtheit
- Materialbasierte Schadstoffprüfung

Innosuisse ‘ReMask’
Strategies for innovations for Swiss masks needed in pandemic situations

Goals:
- Development of alternative mask systems and designs
- Prolongation of use
- Definition of mask cleaning procedures
- Modelling and simulation of filtration performance of face masks
- Development of alternative virus filtration systems
- Development of analytical tools to determine the efficiency of antiviral treatments
- Pre-normative studies

Research Partners:
EPFL, Lab Spiez, ETHZ, Empa

Industrial partners: SwissMem, Swiss Textiles and about 45 companies

Duration: 1.6.2020 – 31.5.2021
Swiss community masks

- April 2020: ReMask in NC-STF
- April 2020: Recommendation of NC-STF
- May 2020: Test transfer to private institutes, quality label
- June 2020: Start Innosuisse ReMask with 45 companies
- September 2020: Discussions with Stakeholders and SNV about Swiss standard and certification of community masks
Community Mask is a success

High acceptance and credibility in the population

Very good contacts to federal authorities

Interdisciplinary, long-standing and well-functioning team

Strong academic network

Strong industrial network
Unique window of opportunity

- With a Swiss Norm, we define the quality of Community Masks (CM)
- Swiss industries have a significant lead in the production of CM and with a Swiss Norm we further strengthen our industries in this global market
- The National COVID-19 Task Force recommendation is already a consensus document and quite advanced (new updates by end of September 2020)
- Purchase guidance for the Swiss population and reduction of confusion