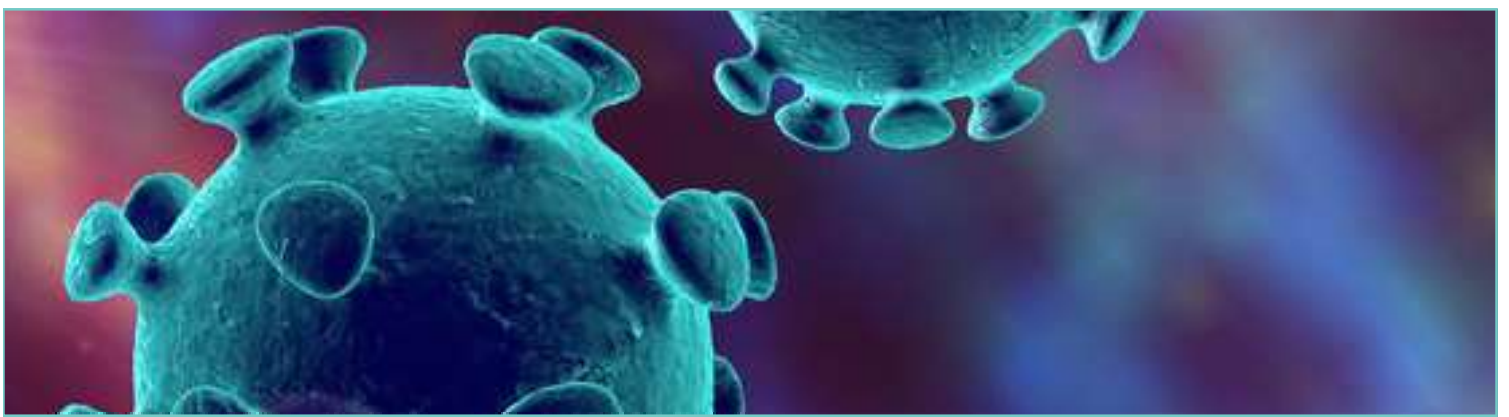


A Guide to Coronavirus

(SARS-CoV-2)

Masks



How does one define a Mask?

Current confusion

With the arrival of the 2019 novel coronavirus, there have been a flood of masks with different levels of protection claimed and confusion is rife, even amongst many medical personnel.

Here we will clarify the function and purpose of masks and indicate which mask will offer the best protection for the wearer. There are two basic types of masks:

A Surgical Mask

This is a disposable medical device that can be bought in pharmacies and that protects against infectious agents transmitted by “droplets.” These droplets can be droplets of saliva or secretions from the upper respiratory tract when the wearer **exhales**.



When worn by a nurse a doctor or other caregiver, this type of mask reduces the possibility that they will contaminate the patient or his/her environment. They are typically disposable and should be disposed of after each patient visit.

A Respirator

This is personal protective equipment that prevents the wearer from **inhaling** aerosols (dust, smoke, mist) as well as vapours or gases (disinfectants, anaesthetic gases) that are health hazards. It reduces the risk to the wearer from airborne infectious agents i.e. against contamination by a virus such as Coronavirus, SARS, H1N1, etc.



Filtering respirators consist of a facepiece and a filtering device.

Depending on the type of filter, the mask will either be effective: only against particles, only against certain gases and vapours, or against particles, gases and vapours.

They are designed to protect the wearer from **inhaling** droplets and airborne particles.

Important to note:

Any virus or bacteria that lands on the mask or respirator will remain alive and the device must be treated as **contaminated** and therefore **disposed of after every use**.

What do Standards tell us?

Minimum standards

Bear in mind that Standards are always minimum recommendations and don't reflect best performance or practice.

Surgical masks are tested in the **direction of exhalation**, i.e. from the wearer to the outside environment whereas Respirators are tested in the **direction of inhalation**, i.e. from the outside environment to the wearer.

In Europe any Surgical Masks (Exhalation protection) must comply with EN 14683

Test	EN 14683		
	Type I	Type II	Type IIR
Bacterial Filtration Efficiency, %	>95	>98	>98
Differential pressure mmH ₂ O/cm (Pa/cm ²)	<3.0 (<29.4)	<3.0 (<29.4)	<5.0 (<49)
Splash resistance/Synthetic blood resistance, mmHg Pass result	Not required	Not required	120 (16kPa)
Microbial cleanliness (cfu/g)	<30	<30	<30

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And Respirators (inhalation protection) must comply with EN 149: 2001 and AI: 2009 R or NR.

EN 149.2001			
FFP I	FFP2	FFP3	Amended 1st August 2010
Aerosol filtration: >80% Leakage to inside <22%	Aerosol filtration: >94% Leakage to inside <8%	Aerosol filtration: >99% Leakage to inside <2%	R - Reusable
Typically used as a dust mask in general use.	Typically used in construction, agriculture and in healthcare for influenza protection	Protection against very fine particulates such as asbestos	NR- Non reusable

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In the USA Respirators must comply with NIOSH (National Institute for Occupational Safety and Health) Standards.

The respirator standard uses a classification based on oil resistance and % concentration of suspended (airborne) particles.

So which mask is most suitable for Coronavirus (SARS-CoV-2) protection?

The best standard respirator available for novel coronavirus 2019 is one that is rated at: -

EN 14683 Type IIR (for splash and blood resistance), with

EN149: 2001 + A1: 2009 R or NR

NIOSH N95 or better.

The problem with any current mask or respirator is that the virus remains alive and active on the mask.

The droplet particle it arrives in may be “caught” by the filtering aspect of the mask, there are thousands and possibly millions of virus present in a single droplet.

A sneeze will typically produce up to 40,000 droplets of between 0.5 – 12 micron.

A cough up to 3,000 droplets (and this is about the same as would be expelled by a person in 5 minutes of talking).

Only Dyna-Mask™ meets or exceeds all these basic criteria (Dyna-Mask™ complies with the categories highlighted in yellow in the tables on page 2) **AND denatures Coronavirus 2019 along with all other viruses and kills all bacteria on contact.**

