

## Brits D15 Filter Elements

This mask is fitted with a Brits D15 Filter element.

Together with hand-washing, good sanitation and social distancing, the wearing of a suitable mask is a valuable weapon in the arsenal of the war against the virus.

### The current challenge

Many people do not know that they have COVID-19, and unknowingly spread the virus through direct and indirect contact. The infection is mostly spread through airborne droplets which contain the virus, produced through talking, coughing or sneezing. These micro droplets then deposit on nearby surfaces, items and other people.

Scientists have measured a pressure level of 6000 Pa in the windpipe of a person who sneezes. These droplets can travel up to 2 metres and land on the faces of people nearby, and can even be inhaled into their lungs.

In order to significantly reduce the virus's ability to spread, it is important that we protect each other. If I wear a mask, I protect you; to protect me in return, you must please wear a mask too.

The World Health Organisation confirms this in their published bulletins. The following is from the WHO website, updated 29<sup>th</sup> March 2020.



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## Modes of transmission of the COVID-19 virus

Respiratory infections can be transmitted through droplets of different sizes: when the droplet particles are  $>5\text{-}10\mu\text{m}$  in diameter, they are referred to as respiratory droplets, and when they are  $<5\mu\text{m}$  in diameter, they are referred to as droplet nuclei.<sup>1</sup> According to current evidence, the COVID-19 virus is primarily transmitted between people through respiratory droplets and contact routes.<sup>2-7</sup> In an analysis of 75 465 COVID-19 cases in China, airborne transmission was not reported.<sup>8</sup>

This information is absolutely critical. What it tells us is that the primary mode of infection for the general population is via droplets. The droplets are greater than 5 micron in size, and are generated by talking, coughing and sneezing.

The airborne state of the virus smaller than  $5\mu\text{m}$  mainly occurs in hospitals, where they have specialised masks to take care of the virus in nuclei or aerosol form.

The risk that you and I face, therefore, is micro droplets of  $5\mu\text{m}$  or larger.

A key to reducing the rate of infection is to disrupt the transport system for the virus. One of the most effective ways we can do this is by controlling and managing the droplets which are the key mechanisms for virus transport.

The filter system for masks that we have created is designed to do exactly that, trapping any particle that is 5µm and above. The mask actually entraps many smaller particles as well, but the real holdout is 95% effective above 5µm.

As there are no standard specifications for face masks for the general population, Brits Nonwoven cooperated with Stellenbosch University to develop an interim minimum requirement that would be suitable for COVID-19 masks to be worn by anyone other than medical personnel. This mask specification and test regime was therefore designed for the public. As the main threat is a respiratory particle which has a known size distribution, the method of testing agreed upon was ISO 14644-1. The reasoning for this was that all hospital cleanrooms and theatres are currently tested for air quality using this method. This method determines the particle sizes that the filter element will entrap, and the particle sizes that will pass through.

## D15 Filter Element Specification

	DESCRIPTION	METHOD	SPECIFICATION	TEST RESULTS
1	Composition	Chemical Analysis	Polypropylene 38 - 42%	Polypropylene 39%
		Chemical Analysis	Polyester 48 - 52%	Polyester 50%
		Chemical Analysis	PAA 9 - 11%	PAA 11%
2	Construction	Physical Analysis	3 Layer sandwich	3 Layer sandwich
3	Mass per unit area	SANS 79	100GR/M <sup>2</sup> ± 5%	103gr/m <sup>2</sup>
4	Breathability	SANS 6163	>4500grms/m <sup>2</sup>	5631grms/m <sup>2</sup>
5	Airflow	ASTM D737	700 - 800cf m	740cfm
6	Thickness	SANS 85	3,0 - 4,9mm	3,8mm
7	Moisture Particle Entrapment	ISO 14644-1	0,5µ - ISO 8 level	Complies
		ISO 14644-2	1,0µ - ISO 8 level	Complies
		ISO 14644-3	5,0µ - ISO 7 level	Complies

### Cleaning procedure

1. Remove mask from your face carefully – do not touch the mask, but remove by the straps only.
2. Place complete unit in a bowl and pour boiling water over it. Make sure it is fully covered with boiling water.
3. Wash your hands using hand-washing protocols for COVID-19.
4. Wash your face using COVID -19 protocols.
5. Leave complete mask in the hot water for at least 5 minutes.
6. Rinse the mask under cold running water.
7. If the mask has dirty masks on it, remove the filter and only then hand-wash the mask gently.
8. Do not squeeze or hand-wash the filter. The delicate structure may be damaged.
9. Leave both filter and mask to air-dry. Once both components are dry, insert filter back into mask – it is now ready to wear again.
10. Once the filter has been sterilised 5 times, discard it after sterilising and insert a new filter which must also be sterilised before use.

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