KN-95 Respirator face mask with 5 layer protection

(Equivalent to FFP-2 European Standard; CE certified)

Product overview

Introduction – When breathing, speaking, coughing or sneezing, a person releases small or large amounts of droplets of secretions from the mucus membranes in the mouth and nose. Those droplets quickly diffuse and leave tiny molecules suspended in the air. If people wear masks, those droplets may be curtailed. Masks also remind the wearers not to touch their mouth or nose, which could otherwise transfer the virus after having touched a contaminated surface.

Filtering face-piece respirators (FFRs) are subject to various regulatory standards around the world, and provide a much higher level of protection. To claim compliance with a particular standard, listed below, these respirators must meet or exceed the required physical properties and performance characteristics, which can vary according to the regulatory bodies of different countries, such as –

- N-95 (United States NIOSH-42CFR84)
- KN-95 (China GB 2626-2006)
- FFP-2 (Europe EN 149-2001)

N-95/ KN-95/ FFP-2 respirators are recommended by the World Health Organization for reducing the spread of coronavirus. The functions of these respirators meeting the relevant standards are very similar.

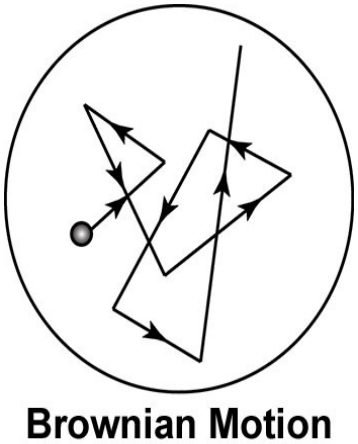
Valved or un-valved respirators? – Valved respirators make it easier to exhale air. This makes them more comfortable to wear, and leads to less moisture build-up inside the respirator.

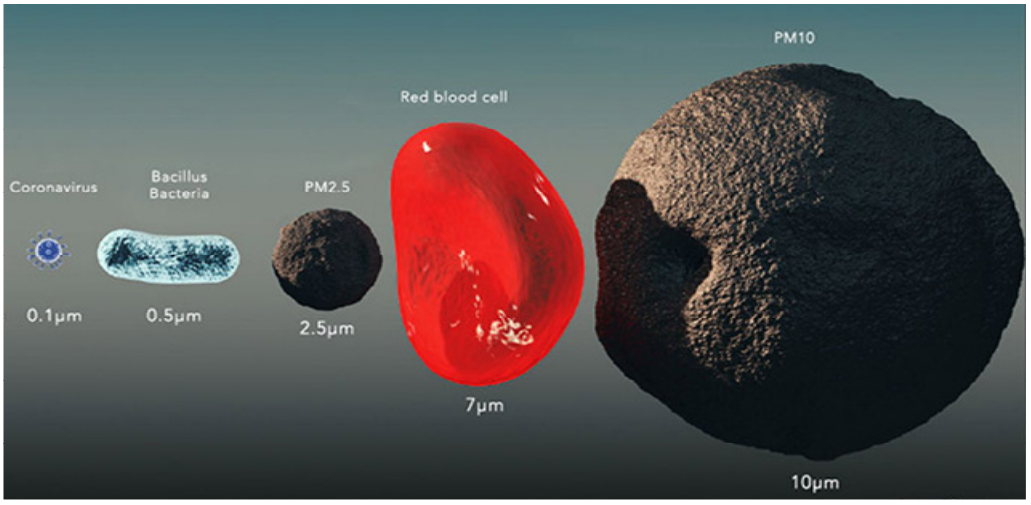
However, the problem with valved respirators is that they do not filter the wearer's exhalation. This one-way protection puts others around the wearer at risk, in a situation like Covid-19. Un-valved respirators provide a good two-way protection, by filtering both inflow and outflow of air.

Can KN-95 respirators filter coronavirus? - Respirators with high efficiency at 0.3 micron particle size (N-95 / KN-95 / FFP-2) can, in theory, filter particles down to the size of coronavirus (which is around 0.1 microns).

The reason for the focus on 0.3 micron is because it is the "most penetrating particle size" (MPPS). Particles above this size move in ways we might anticipate, and will get trapped in a filter with gaps smaller than the particle size. Particles of 0.1 micron exhibit what's called 'Brownian motion' – which makes them easier to filter.

Brownian motion refers to a phenomenon, whereby the particle's mass is small enough that it no longer travels unimpeded through the air. Instead, it interacts with the molecules in the air (nitrogen, oxygen, etc.), causing it to pinball between them, moving in an erratic pattern.





Size comparison of particles - PM10 (10 microns) with Coronavirus (0.1 micron)

Features and specifications of our KN - 95 respirator mask

Technical specifications –

Product Name:	KN- 95 Respirator Face Mask (5 layer, foldable)
Aerosol Type:	Non-oil
Color:	White
Size:	Universal
Exhalation Valve:	No
Ear strap attachment:	Ultrasonic welding
Adjustable metallic nose clip	Yes
Filter material:	2 layers of PP spun-bond fabric; 2 layers of PP melt-blown filter and 1 layer of hot air non-woven fabric
Standard:	KN-95 (China GB 2626-2006), equivalent to FFP-2 European standard
Certification:	CE Certified (test report available)

Features –

- Material : Non-woven, hot air and melt-blown filter fabric
- Mask size : 2 fold; each 15.5 cm x 10.5 cm
- Package : individual package, 20pc/box
- Box size : L 16 cm x W 7.5 cm x H 25 cm
- Comfortable ear loop to safely hold and secure the mask
- Particle Filtration Efficiency (PFE) > 95%

- Comfortable - low breathing resistance
- Anti - virus transmission
- Anti - droplet transmission
- Anti – air pollution
- Anti – dust
- Anti - bacterial

Comparison between N-95, KN-95 and FFP-2 respirators

N-95 is an American standard managed by NIOSH (National Institute for Occupational Safety and Health) – part of the Center for Disease Control (CDC). N-95 is not a specific product name. As long as the product meets the N-95 standard and passes the NIOSH review, it can be called an “N-95 respirator mask”.

N-95 respirator is designed to achieve a very close facial fit and very efficient filtration of air-borne particles. The 'N-95' designation means that when subjected to careful testing, the respirator blocks at least 95 percent of very small (0.3 micron) test particles.

N-95 respirators are considered functionally equivalent to certain respirators regulated under non-U.S. jurisdictions, such as FFP-2 respirators of the European Union and KN-95 respirators of China. However, slightly different criteria are used to certify their performance, such as the filter efficiency, test agent and flow rate, and permissible pressure drop. A recent 3M document quoted that “it is reasonable to consider China KN-95, AS/NZ P2, Korea 1st Class, and Japan DS FFRs as equivalent to US NIOSH N-95 and European FFP-2 respirators.”

In the United States, the Food and Drug Administration (FDA) announced on April 3, 2020 that it has approved the use of KN-95 masks in the country. The CDC also listed KN-95 masks as a suitable alternative, when N-95s are not available.

The following table compares all the available standards for respirator face masks –

Country / Region	**USA**	**Europe**	**China**	**Australia / New Zealand**	**Korea**	**Japan**
Certification / Class (Standard)	**N95 (NIOSH-42C FR84)**	**FFPE (EN 149-2001)**	**KN95 (GB2626-2006)**	**P2 (AS/NZ 1716:2012)**	**1st Class (KMOEL – 2017-64)**	**DS (JMHLW-Notification 214, 2018)**
Filter performance – (must be ≥ X% efficient)	≥ 95%	≥ 94%	≥ 95%	≥ 94%	≥ 94%	≥ 95%
Test agent	NaCl	NaCl and paraffin oil	NaCl	NaCl	NaCl and paraffin oil	NaCl
Flow rate	85 L/min	95 L/min	85 L/min	95 L/min	95 L/min	85 L/min
Total inward leakage (TIL)* – tested on human subjects each performing exercises	N/A	≤ 8% leakage (arithmetic mean)	≤ 8% leakage (arithmetic mean)	≤ 8% leakage (individual and arithmetic mean)	≤ 8% leakage (arithmetic mean)	Inward Leakage measured and included in User Instructions
Inhalation resistance – max pressure drop	≤ 343 Pa	≤ 70 Pa (at 30 L/min) ≤ 240 Pa (at 95 L/min) ≤ 500 Pa (clogging)	≤ 350 Pa	≤ 70 Pa (at 30 L/min) ≤ 240 Pa (at 95 L/min)	≤ 70 Pa (at 30 L/min) ≤ 240 Pa (at 95 L/min)	≤ 70 Pa (w/valve) ≤ 50 Pa (no valve)
Flow rate	85 L/min	Varied – see above	85 L/min	Varied – see above	Varied – see above	40 L/min
Exhalation resistance - max pressure drop	≤ 245 Pa	≤ 300 Pa	≤ 250 Pa	≤ 120 Pa	≤ 300 Pa	≤ 70 Pa (w/valve) ≤ 50 Pa (no valve)
Flow rate	85 L/min	160 L/min	85 L/min	85 L/min	160 L/min	40 L/min
Exhalation valve leakage requirement	Leak rate ≤ 30 mL/min	N/A	Depressurization to 0 Pa ≥ 20 sec	Leak rate ≤ 30 mL/min	Visual inspection after 300 L/min for 30 sec	Depressurization to 0 Pa ≥ 15 sec
Force applied	-245 Pa	N/A	-1180 Pa	-250 Pa	N/A	-1,470 Pa
CO_2 clearance requirement	N/A	≤ 1%	≤ 1%	≤ 1%	≤ 1%	≤ 1%

Compiled by –

GoodRich MAGMA Industrial Technologies Limited

No.704, 4th A cross, HRBR Layout, 1st Block,

Kalyan Nagar, Bangalore – 560043, India

Phone: +91 - 80 – 41138200

Email: goodrichmagma@gmail.com

Website: www.goodrichmagma.com