

The Facts About Masks and Which Ones Are Most Effective

The COVID-19 pandemic continues to make wearing masks essential. It is critical to know that all masks don't offer the same level of protection. Do you know which masks are most effective? Do you realize how vital it is to buy masks from a trustworthy source? The market is currently flooded with counterfeit and low quality masks that do not provide the protection they promise or which is implied. This places users at unknown risk.

Let's first talk about some popular styles:

Medical grade masks meet the requirements set by NIOSH (National Institute for Occupational Safety and Health). These are used by healthcare professionals and include surgical masks, which consist of folded layers of filter medium, and N95 respirators. Both of these protect the wearer from airborne particles and from liquid contaminating the face. The difference is that there are various levels of protection. Surgical masks provide a barrier of protection against basic NIOSH minimums for large respiratory particles including droplets but are primarily designed to protect the environment from the wearer.

An N95 respirator is designed to achieve a very close facial fit and even more efficient filtration of airborne particles. The N95 designation means that the respirator blocks at least 95 percent of very small (0.3 micron or 300 nanometers) particles. How small is 300 nanometers? One nanometer is one-billionth of a meter. By comparison, a human hair is approximately 80,000-100,000 nanometers wide.

There are also cloth masks, which can come with one or more layers of fabric and may, but do not usually, have a melt blown filter material layer. These vary in terms of protection, depending on how closely they fit the wearer's face, how many layers there are, and whether there is also a filter medium layer. But cloth masks have not categorically been proven to be as effective as a surgical or N95 mask.

Now let's talk about filtering effectiveness:

The key ingredient in both surgical and N95 masks for effective filtering of tiny particles such as the ones that carry the COVID-19 virus is the inner layer of melt blown polypropylene. "Melt blown," as it is called, is the critical layer that makes a mask work. It filters efficiently while allowing enough porosity to breathe easily. But not all melt blown is the same.

Typical surgical masks are made of three layers: a front and a back layer of a material called spunbond with one layer of melt blown polypropylene sandwiched in between. Spunbond nonwoven fabric is made by spinning continuous filament fibers, also onto a moving belt. The spunbond continuous fibers may be made from a variety of polymers like polypropylene, polyester, and polyethylene raw material. It is usually a softer layer used to surround the inner layer of melt blown. Spunbond repels moisture but provides no significant particle filtering properties. This is where melt blown comes in. Melt blowing is a manufacturing method that produces micro and nanofibers of a polymer by extruding through small nozzles surrounded by high speed blowing air. The randomly deposited fibers form a web of porous filter

material. Melt blown polypropylene is this critical layer that filters particulates including microbes that can make us ill.

You can see how vital it is that masks and the materials in them, such as the filtering layer of melt blown polypropylene, be manufactured under rigorous quality conditions—and be readily available in sufficient quantities. Unfortunately, the vast majority of this crucial material is currently produced overseas, making it difficult to ensure consistent quality and supply. As Richard Heppell, president and CEO of Showa USA, stated in a recent article in *Industry Week*, “less than 1% of the total global supply of PPE is actually made in the United States. More than 60% of the world’s PPE is made in Malaysia, with the majority of the remaining supply coming from Thailand and China. When the entire world is in high demand for a product that is concentrated through the bottleneck of these east Asian countries, it puts nations like the U.S. in a severely disadvantageous position of paying for a low-supply (and at times low quality) product at a highly inflated cost.”

A reality check:

Speaking of low quality, in early February hospitals in Washington state were told to pull N95 masks for analysis after the discovery that over 2 million fake N95 masks had been purchased and distributed in the state. This is only the latest in a string of discoveries of counterfeit PPE across the country, which the Department of Homeland Security has been investigating since April in Operation Stolen Promise.

This is why it’s important not only to buy masks from a trusted supplier, but also that those suppliers purchase their raw materials from a reliable source. US Meltblown is a new American manufacturer that was created to address this dire need for U.S.-made PPE materials. We began production of melt blown polypropylene at our Florida facility in September of last year to ethically meet the criteria for use in masks rated N95 and higher. Our material is also static charged to provide additional protection. Quality is assured through rigorous and individualized in-house testing of each roll. Now you can get U.S.-manufactured melt blown from a source that stands behind its product.

“We started our company to take control of this crucial component of medical grade masks and gowns so that our country has a reliable, sustained source of material supply for the most effective personal protective equipment,” said US Meltblown Founder and CEO Robert Sires. “We manufacture to tight specifications so our customers can trust that they are getting the protection they need.”

US Meltblown is America’s trusted manufacturing source for critical filter material, setting the standard for this vital material used in personal protective equipment such as medical grade masks. We continue to fulfill our vision to protect families, healthcare workers, first responders, and workers in industry with American-made melt blown nonwoven polypropylene. US Meltblown is proud to provide this top quality critical filtering medium made in Florida from raw materials produced in the United States and processed on equipment that is built in the U.S. and operated by American workers. USMB polypropylene meets criteria for use in masks rated N95 and higher and is static charged to provide additional protection. Quality is assured through

rigorous in-house testing. We sell by the master roll or slitted (175mm or 260mm). For more information, contact Ty Whitacre at 1-260-438-4491 / TWhitacre@usmeltblown.com or visit www.usmeltblown.com.