

# “Mask Science”: Know What You are Buying!

Mask-making, as protection against dangerous pathogens, is both an art and a science because they must block &/or capture the organisms; must minimize how much inhaled or exhaled air can bypass the mask; & must be comfortable to wear for long enough periods of time. If any of these characteristics are not met, the overall effectiveness of masks is lowered. If you are planning on buying a lot of masks to ensure the health of the people in your company or community, we urge you to become a “mask scientist”, by reviewing the following info about what makes masks good or bad in regard to effectiveness and acceptance by wearers.

**COMPETING REGIONAL MASK STANDARDS ARE ALL TRUSTWORTHY:** All regional mask standards primarily define the % of particles of 0.3 microns (or larger) that a complying mask must physically block. Most commonly this is 95% or 99%. Respectively, these US, Euro & Chinese standards are: N95-N99; FFP2-FFP3 & KN95-KN99. We suggest that you should not presume that the foreign standards are significantly less strict than US criteria, which includes the Chinese standards. Previously, the CDC disapproved of Chinese masks as substitutes for US masks. But that was recognition of “junk” Chinese masks that were being imported...not a rejection of the Chinese standards themselves. Since then, the Chinese government has halted the export of uncertified masks to the US, so the quality of Chinese masks, should not be suspect. We would not hesitate to buy KN95 masks equivalent to N95, for example. In addition, please keep in mind that the standards are defined by functionality, not by shape, color, etc. Thus a cup “respirator” N95 mask is not inherently more protective than a folding N95 mask.

**WHAT MAKES FOR GOOD MASK FILTERING ABILITY:** You can't be faulted if you demean the value of masks, since the coronavirus is smaller than the tiny pores in even the best masks...so, theoretically, they could all pass thru even N100 masks! But, keep in mind that the primary reason for wearing masks is to block cough spray & micro-droplets that are physically filtered out by the masks. But, what about the smaller particles? That is where the importance of the middle “melt-blown” filter fabric layer(s) come in: The standard call for these to be an “electret”...treated so that they are imbued with a static electric charge which grabs the smaller particles “like fly paper” as they pass by. These melt-blown filter fabric layers are more expensive than the inner & outer “spun-bond” mask fabric, so bargain masks often omit them. So, what the type of layers there are is more important than how many layers there are!

**MASK FIT VSO FILTERING ABILITY:** The filtering ability of a mask is at least somewhat defeated if the fit is bad. The air you inhale or exhale is going to take the path of least resistance. So, that air will tend to go around the filter if possible. That means virus particles and contaminated breath droplets can go around mask entirely, if they are loose fitting, or they will pass thru the mask if the whole mask doesn't have a filter layer. An issue with masks is how comfortable they are. Respirator masks can be uncomfortable, with tight straps and a rigid rim pressed into the face to ensure a tight fit; disposable 3-ply” masks are inherently loose & “leaky” they, plus all other masks, have elastic ear straps that irritate the ears upon long wearing. Carolen Group's solution is provide free mask adjuster straps (a/k/a “buckles”) which take the ear loops off the ears, increasing comfort for also improving fit and reducing looseness even of civilian “flat” masks,

**WHO'S PROTECTING WHOM & HOW PROTECTED ARE YOU?** This is an important consideration when choosing a mask: Health pros need to be concerned about being infected by their patients, so they should be concerned about what they inhale. Thus, they need masks whose fit forces all air they breathe thru a fine-pore “electret” filter. “Civilians”, on the other hand, are told that they need to be most concerned about infecting others since so many people infected with Covid-19 show no symptoms. Thus, the common advice (which is better than nothing) that limits the spread of those droplets from ourselves to others: “covering your mouth when you cough”; “coughing into your elbow”; or wearing anything over your face, whether it is a bandana, a cloth mask or a “flat” disposable mask. But, the “Feds” are covering their unpreparedness for a pandemic by making “civilians” to feel guilty if they wear N95 masks; health pros are re-using scarce “respirator” masks too many times because they are made to feel that only those meet N95 specs for protection. The result is that astronomical prices are being charged for respirators while the bulk of the population is only partially protected against Covid-19 by “social distancing” & hand-washing, because their masks don't protect them from breathing IN the virus, and only partially protect others from what they breath OUT..

**OUR LAST WORDS TOWARD SAVING MONEY & IMPROVING PROTECTION WHEN MASK SHOPPING:** Recognize worthless mask-marketing ploys: NO copper-infused mask, currently being sold, contains a high enough percentage of copper for it to have any protective effect whatsoever. More mask layers are less important than the quality & layers of “melt-blown” filter. Recognize that the fit is as important as the mask's construction, because loose masks only reduce (but not stop) the spread of the virus outward, while offering little protection against what might be inhaled. Our final advice is: Buy certified masks, even just KN95 masks (...effective & affordable); and use mask adjusters which provide a better fit for all masks, even flat disposable type, if that is all that is available or affordable. In addition, the improved fit afforded by mask adjusters also improve comfort, taking the annoying ear loops off the ears...encouraging mask-wearing.

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**Sars2help.info or our representative:**