How do I choose a cloth face mask?
我如何選擇布質口罩？

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English	繁體中文
Which cloth masks does MIT Medical recommend? My family is trying to find some to purchase, but it's confusing, since there are so many options available. In addition, would you recommend using masks with filters?	麻省理工學院醫學院建議使用哪種布料造口罩？我的家人正打算購買一些布料，但有許多選擇，實在令人感到難以取捨；兼且，你會否建議使用附有過濾層的口罩？
MIT Medical can't recommend specific products, but your question offers a good opportunity to discuss the characteristics that make a cloth mask most effective. Whether you're purchasing a cloth mask or making one yourself, there are three main considerations: fabric, fit, and thickness.	麻省理工學院醫學院不能建議個別的布料產品，不過，這問題帶出了一次良機去探討一個最有效口罩的特性。無論你是購買布口罩，還是自己製作，都要考慮三個主要因素：布料，合適的剪裁與厚度。
Fabric: When it comes to fabric, the tightness of the weave is crucial. At a bare minimum, you want the weave to be tight enough that you don't see the outline of the individual fibers when you hold the material up to light. But tighter is better. A study comparing the aerosol filtration efficiencies of a number of different fabrics found that a high-thread-count (600 TPI) cotton fabric far outperformed a moderate-thread-count (80 TPI) quilter's cotton for particles of all sizes.	布料：至於布料，布的編織密度非常重要。最低限度，將布材放於光線下要密到看不到一條條的纖維；但越緊越好。一項研究將多種不同布料對其氣溶膠過濾效果進行比較，無論顆粒的大小，發現如果要過濾掉顆粒，用高密線數（600 TPI - 每英寸 600 條線)的織布遠遠好過用中密線數（80 TPI-每英寸 80 條線）的織布。
As far as fabric type, filtering experiments show tightly woven 100% cotton outperforming most synthetics. This may	就布料而言，做過濾的實驗中顯示緊密編織的百分百棉布會優於大多數合成的纖維布。這可能是因為合成布纖維在在顯微鏡下相對較光滑，而棉布纖維則具有幾乎立體三維的結構，這可能會對顆粒的穿梭

be because synthetic fibers are relatively smooth at the microscopic level, while cotton fibers have a somewhat three-dimensional structure that likely creates additional barriers to both outgoing and incoming particles.

Another study suggests that you can increase the effectiveness of a multi-layer mask by combining one layer of cotton with a different material. Researchers evaluated the filtering efficiency of masks made from one layer of 600-thread-count cotton and either two layers of natural silk or chiffon (in this case, a 90% polyester–10% Spandex weave) or a single layer of flannel (a 65% cotton–35% polyester blend). Materials chosen for the non-cotton layers were thought likely to provide good electrostatic filtering, a process that traps particles through the same kind of "cling" effect created by static electricity. Not only did the hybrid masks outperform all other two- or three-layer masks made of a single material, they were superior to N95 masks for particles smaller than 300 nanometers and only slightly inferior for larger particles.

Fit: Of course, no fabric or fabric combination will work as intended if your mask doesn't fit properly. Research indicates that leakages around the sides of a mask can degrade filtering efficiencies by 50 percent or more. Lack of such leakage is one reason why properly worn N95 masks work so well.

A well-fitted mask will hug your face,

出入造成額外的障礙。

另一項研究提出，通過將一層棉布與另一種布料混合在一起，可以提高多層口罩的功效。研究人員比較評估了在一層 600 線棉布再加上兩層天然絲或雪紡布（在本例中為 90％滌綸-10％氨綸編織成）或單層毛絨布（65％棉–35％滌綸混紡）所製成的口罩之過濾效果。所選的非棉層材料可能會有靜電過濾，該過程是通過靜電產生的"附著"效應來抓獲顆粒。無論是兩層或三層的口罩，使用不同布料的口罩不僅優於所有其他用單一種布料製成的，而且對於小於 300 納米的粒子，其性能也優於 N95 口罩；至於較大的粒子，其性能只稍稍不及。

合適裁剪度：當然，如果口罩不合適面型，則任何布料或組合布料均會無效。有研究指出，口罩側面周圍的滲漏會使過濾效率降低 50％或以上。正確佩戴的 N95 口罩如此有效，原因之一是它可防止漏氣。

一個合適的口罩會緊貼你的臉，覆蓋鼻子和下巴，沒有明顯的縫隙。每個人的面型都不同，因此你可能要先試戴幾種不同設

covering both nose and chin with no obvious gaps. Everyone is shaped differently, so you might end up trying a few different designs before you find one that fits well and feels comfortable — part of the reason we can't recommend any one product over another. It's also important that your mask stays put, even when you talk, so you're not constantly touching it to readjust. Masks with a bendable metal nose strip may help to create a tight seal and hold the mask in place; this can also help prevent glasses from fogging up.

Thickness: Multiple layers are recommended. A well-fitting cloth mask should have at least two layers of tightly woven fabric. A third layer provides additional protection, as does the addition of a filter. At least one study suggests that filters made from polypropylene material, which is derived from plastic, are particularly effective. While some people are recommending coffee filters for this purpose, this is not something we would advise. As it turns out, it's very difficult to breathe through a coffee filter.

Finally, speaking of breathing, avoid those masks that come with valves at the front. While the valve makes it easier to breathe out, it also releases unfiltered air, so it doesn't protect others if you're contagious.

計的口罩，然後才能找到一種既合適且舒適的設計 - 這也是我們不能隨便推薦任何一種產品的部分原因。同樣重要的是，即使在講話時，口罩也要保持原位，以免要經常觸摸它去調校口罩。口罩裝有可彎曲金屬鼻帶，它有助於形成緊貼面型的密封，並將口罩固定；這亦有助於防止眼鏡鏡片霧化。

厚度：建議用多層的布。合適的布口罩應具有最少兩層緊密編織的織物，而第三層則提供額外的保護，就像添加過濾層一樣。至少一項研究建議，由源自塑料的聚丙烯材料製成的過濾物特別有效。儘管有些人建議使用咖啡過濾層，但我們忠告大家不要用，有證明用咖啡過濾層會令呼吸非常困難。

最後，談到呼吸，應避免使用前面帶閥門的口罩。儘管該閥門會令呼氣變得較容易，但它也會釋放未過濾的呼氣，因此，如果你的呼氣具有傳染性，它不會保護你身邊的人。