

Reusable and Washable Fabric Mask Shell

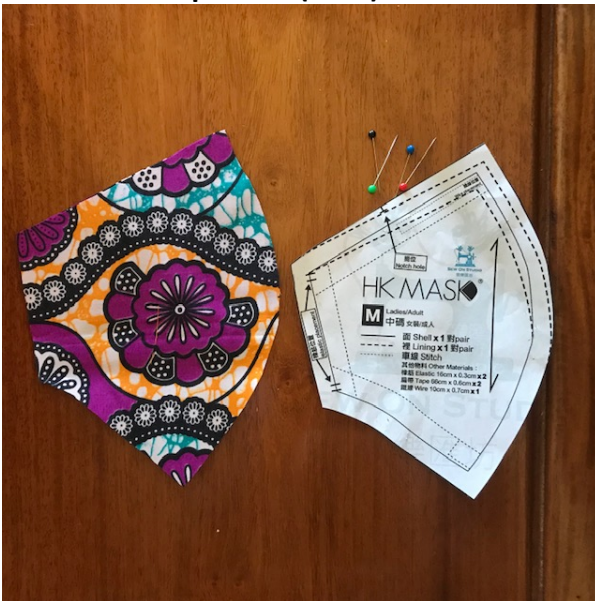
Pattern and Instruction

Courtesy of HK Mask and Sew on Studio:

<https://www.facebook.com/DrKKwongChem/posts/10157951517282158>



1. Cut out the pattern (shell)



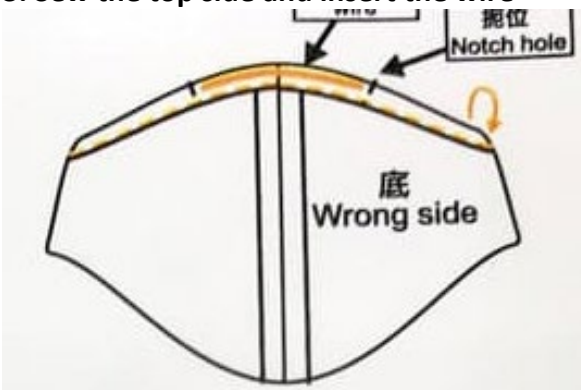
Cut the paper pattern of the shell (according to the SOLID LINE). Fold the fabric in half, pin the paper pattern and cut it along the edge.

2. Sew the centre front



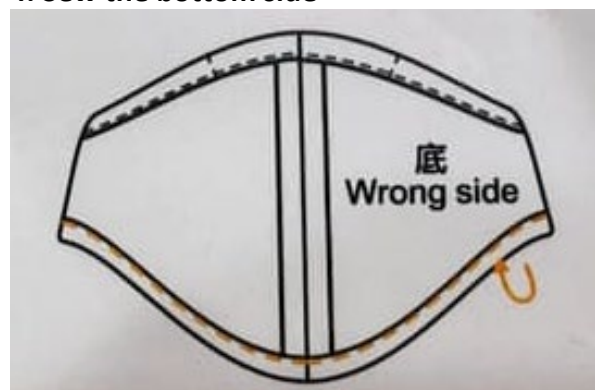
Double check that the shell cloth is facing right side to right side. Sew the centre front and open the seam.

3. Sew the top side and insert the wire



Fold the top side of the shell cloth to the back (about 1cm). Insert the wire in the right position, and use the return stitch to fix the holding position. Sew on both sides of the iron wire to secure the wire.

4. Sew the bottom side



Fold the bottom side of the shell cloth (1cm) and sew accordingly.

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Pattern and Instruction (Continued)



5. Add elastic band



Put elastics on both sides of the shell cloth. Fold the sides (1 cm) and sew. Try not to sew directly on the elastic band or it may break after repeated use.

6. Cut out the pattern (lining)



Cut the paper pattern of the lining (according to the BOLD DOTTED LINE). Fold the fabric in half and cut it along the edge.

7. Sew the centre, top and bottom side



Repeat steps 2, 3 and 4 but without inserting the wire.

8. Sew the shell and lining together



Remember to reverse the lining and have the right side facing up.

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Pattern and Instruction (Continued)



9. Prepare the filter



Prepare 2 pieces of kitchen paper. **Place one piece on top of the other, rotating the top kitchen paper by 90 degrees so the fibre direction is perpendicular to the other.** Placing the kitchen paper at different angles can improve efficiency. Then, place 1 piece of tissue paper on top.

10. Place filter inside the fabric shell



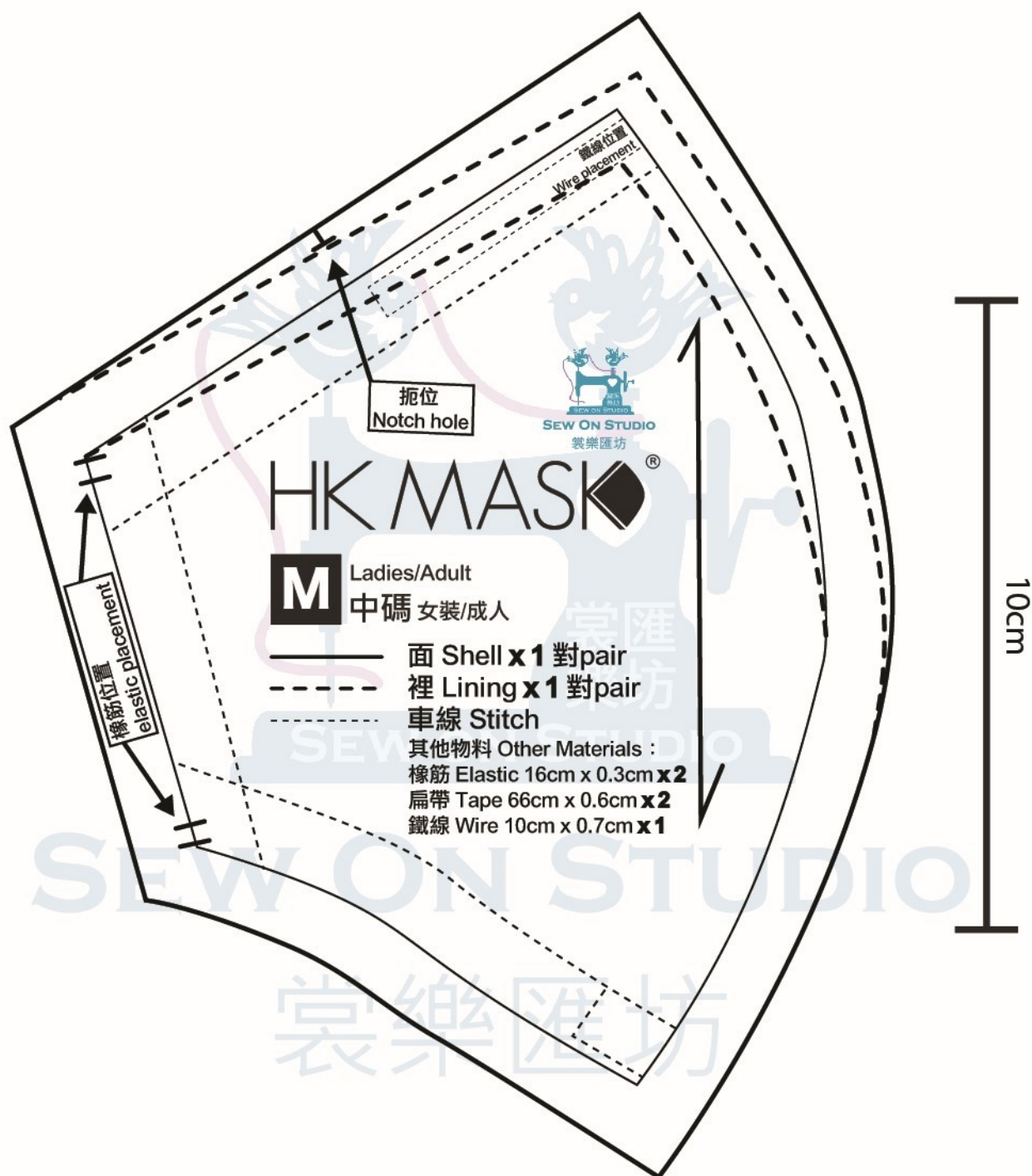
Place the pile on top of the lining, tissue paper at the top.

11. Done!



Note:

- Replace the mask with a new mask as soon as it is damp or ideally after 4 hours
- The filters must be disposed after use
- Please hand wash the fabric mask shell with soap and hot water after each use
- Please refer to the **Appendix** for different filtration efficiency based on the type of filtration material used, and the angle they are placed.



Appendix: Filtration Efficiency

Filter for HK MASK

	Sample	Filtration Efficiency (%) @0.3um particle size	PD (mmH2O) flow rate: 32L/min	
1	Mask only	8.70%	2.3	
2	One tissue paper	45.75%	9.1	
3	Two tissue paper (0+45°)	69.20%	16.8	
4	Two tissue paper (0+90°)	70.10%	16.9	
5	Two tissue paper (0+0°)	69.60%	17.1	
6	Three tissue paper (0+0+0°)	83.00%	24.8	
7	One kitchen paper	73.70%	37.1	
8	Two kitchen paper (0+45°)	89.20%	60.7	
9	Two kitchen paper (0+90°)	91.30%	66.4	
upcoming	MultiH [®] Nanofiber (K. Kwong)	86+/-5%	lower <5.82	Target

Sandwiched with HK MASK

Ranges of surgical masks available in market	7.51-88.2%	0.42-5.82	(13 different masks tested)
N95	>95%		

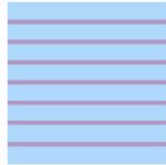
Tested on 20 Feb 2020

- * Higher filtration efficiency = better filtration effect
- * Higher PD flow rate = more difficult to breathe

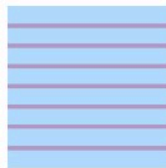
Filter for HK MASK

Examples:

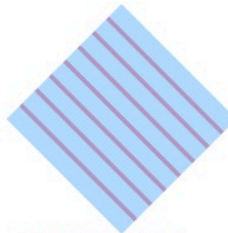
One tissue paper



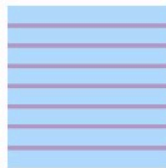
Two tissue paper (0+45°)



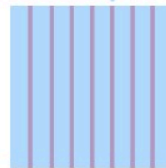
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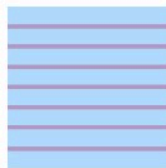
Two tissue paper (0+90°)



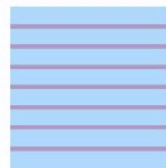
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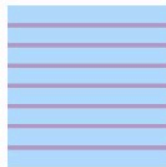
Two tissue paper (0+0°)



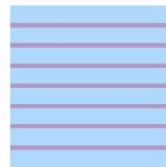
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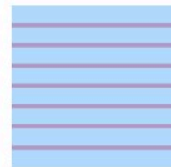
Three tissue paper (0+0+0°)



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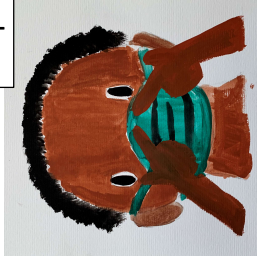
USE YOUR MASKS PROPERLY

Otherwise you will contaminate yourself!

Steps:

1. **WASH YOUR HANDS** before putting on a mask with alcohol-based hand rub or with soap and water
2. **COVER YOUR MOUTH AND NOSE** with the mask and make sure there are no gaps between your face and the mask
3. **AVOID TOUCHING THE MASK** while you are using it
4. **WASH YOUR HANDS** with alcohol-based hand rub or with soap and water if you touch the mask while wearing it
5. **REPLACE THE MASK WITH A NEW MASK** as soon as it is damp or ideally after 4 hours. Do not re-use single-use masks
6. **TO TAKE OFF THE MASK, REMOVE IT FROM BEHIND.** Don't touch the front part of the mask
7. **DISCARD IT IMMEDIATELY** in a closed bin in a designated area
8. **WASH YOUR HANDS** with alcohol-based hand rub or with soap and water afterwards

Step 2



MASKS DO NOT GUARANTEE 100% PROTECTION. YOU MUST ALWAYS:

- Follow the hand hygiene rules with diligence
- Don't touch your face
- Keep your distance (1.5m)

To summarise, wash your hands EVERY TIME:

- Before putting on a mask
- After taking off a mask
- After touching the mask



DON'T wear the mask loosely with openings on the sides



DON'T push the mask under your chin to rest on your neck



DON'T wear the mask so it just covers the tip of your nose



DON'T leave your chin exposed



DON'T wear the mask below your nose



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