

# Water Resistance of Single-Use Masks and Respirators

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## Introduction

Most industrial single-use N95 respirators are not rated for their water resistance, leading some to suggest that they are not suitable for protection against infectious disease. This study examines the water resistance of industrial respirators and compare them to surgical masks.

## Sample Selection

All models of single-use masks and respirators found in the author's home were tested. 3M 9010V and 3M 5N11 are representative of the two common types of surface texture found on respirators, namely non-woven fabric and fleece.

## Test Method

A vertical jet of 1ml water with food coloring was shot from a syringe at a distance of 10cm away. Sample condition was inspected immediately after the shot as well as four hours later.

## Results

Sample	Model	Penetration
A	3M 9010V	No
B	Powecom 1893V.N95	Yes
C	3M 5N11	No
D	Name Brand Surgical Mask 1	No
E	Name Brand Surgical Mask 2	No
F	Unknown Brand Surgical Mask, soaked	Yes
G	Counterfeit Surgical Mask	No

There was no sign of penetration for most samples even after 4 hours. The two exceptions were Sample B, for which water penetrated through the seam, and Sample F, for which water penetrated straight through.

## Conclusion

- Most samples were sufficiently water resistance for normal circumstances even if they have no water resistance rating.
- There is no evidence that industrial N95 respirators have inferior water resistance to surgical masks.
- Masks manufactured by reputable brands appear to be more water resistant, at least for N95 respirators.
- Water resistance of the soaked mask sample was severely compromised, supporting the commonsense recommendation of not reusing masks.

## Photos

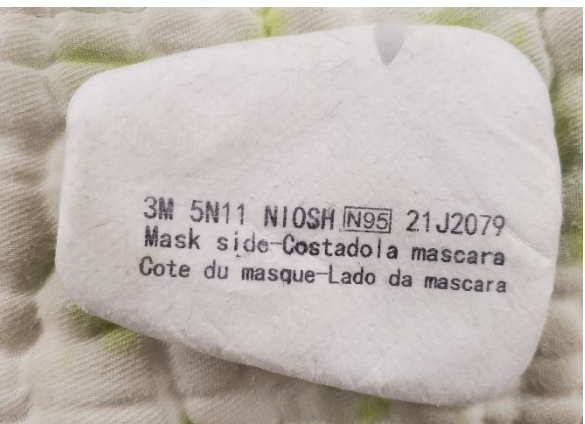
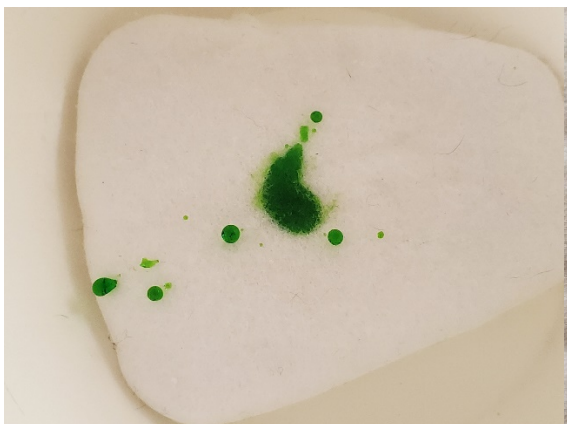
A - 3M 9010V



B - Powecom 1893V.N95



C - 3M 5N11





D - Name Brand Surgical Mask 1



E - Name Brand Surgical Mask 2



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