

# Possible Use for Recycled Disposable Face Masks in Concrete

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## About Possible Use for Recycled Disposable Face Masks in Concrete

Disposable face masks are one of many single use products that are detrimental to the environment. The paper, Possible Use for Recycled Disposable Face Masks in Concrete, addresses a possible way to reuse and recycle disposable face masks. For the experiment, 16 concrete cylinders were prepared using various levels of shredded disposable face masks. Three batches were made, Control, 10 oz. shredded face mask, and 30 oz. shredded face mask.

These cylinders were tested for compressive strength and workability. The results showed that as the amount of shredded face masks in the batch of concrete increased, the workability and compressive strength decreased. The decline in compressive strength can be overcome by decreasing the amount of shredded face mask material per batch and introducing plasticizer.

## Covid-19 Impact

The Covid-19 Pandemic has increased the production and use of disposable and single-use face masks. Often, these masks are not disposed of correctly. Measures should be taken to keep these pollutants from harming the environment.

## Use of Waste Materials in Concrete

Today, various waste materials are being used in concrete to reduce environmental impact. A few examples are fly ash, glass, and tires.



Figure 1: Slump test for Control batch

## Workability

Concrete workability is tested using a slump test. This measures how many inches fresh concrete slumps down. The test followed ASTM std C143.

## Strength Testing

Strength testing of cylinders was performed at seven and 28 days. The strength was measured using a compression testing machine and it is measured in pounds per square inch (psi). The strength testing followed ASTM C31.

## Data and Results

The only batch of concrete that had a slump was the Control. The highest average strength was seen in the Control 28-day batch followed by the 10 oz. 28-day batch. Honey combing can be seen in most of the cylinders that were cast.



Figure 2: Cylinder 7A and 7B 30 oz. before strength testing

## Conclusion

Honey combing in the cylinders could be the result of using aggregate that was too large for a 4x8 form. The cylinders were also poured while a heat advisory was in place in San Luis Obispo, CA. This could result in dry concrete and low workability. This experiment should be redone multiple times using the same methodology.