

# **The study and Comparison of Dust Filtration Efficiency from Cornhusk fiber, Banana peel fiber and Hyacinth fiber**

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## **Abstract**

The purpose of this study was to compare the efficiency of dust filtration by using Cornhusk fibers, Banana peel fiber and Hyacinth fiber. The experimental method of preparing samples of 3 types of plants, namely Cornhusks, Banana husks and Hyacinths, was brought in the three plants were dried for 3 days and then molded into dust filters. Each plant was thoroughly grated and blended. Weigh 1,000 grams each of Cornhusk, Banana peels, and Hyacinths, then boil them with a water to NaOH powder ratio of 3,000 : 5 ml per gram, with a concentration of 0.25 M mixed with 500 ml of water and boil for 2 hours at a temperature of 100 degrees Celsius. When the boiling is finished, the 3 plants are finely blended again, molded and put into a mold sieve with dimensions of 31.5\*32.4 centimeters, then already dried for 3 days. Additionally, a box was fabricated for the experiment by cutting the paper crate in front of the box and the back of the box. The front of the box was cut to fit the fan which was then attached to face outwards. The back of the box was cut and attached to fit the filters made from all 3 plants. The experimental method involved using a dust meter to measure the dust value before filtering the air. The fan was then turned on to test the filtration efficiency of each fiber from 08:00 to 16:00 for 8 hours, The dust value was measured after filtering, and the results were recorded to determine the filtration efficiency. Each fiber was tested 3 times, making the total trial time for 9 days. The Data shows that high efficiency of dust filtration can be achieved by the comparative experiment. The most effective dust filter was Banana fiber, with an average dust filtration value of 35.46 percent, followed by Hyacinth and Cornhusk fibers at 32.89 percent and 29.52 percent, respectively. Therefore, the Banana peel fiber are a viable option for using waste materials to develop into dust filters.

**Keywords:** Cornhusk fiber , Banana peel fiber, Hyacinth fiber