

## **Innovation of Biodegradable Membrane Nanofilter Mask Based on Cellulose Empty Palm Oil Bunches as a Future Mask**

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### **ABSTRACT**

**Background:** Covid-19 has become a public health emergency of international concern that is transmitted through respiratory droplets. Prevention is a very important things to maintain public health, one of which is by using masks. This raises new problems related to mask waste which is non-biodegradable. There needs to be a solution in the form of environmentally friendly masks that are easily biodegradable, one of which is by utilizing the cellulose content in empty palm oil bunches. The purpose of this study was to determine the process of making environmentally friendly masks from empty oil palm fruit bunches, to determine the thickness and biodegradation results of masks.

**Method:** The method used in this research is experimental. In this study, the manufacture of nanofilters, thickness testing, and biodegradation tests were carried out. The process of making environmentally friendly masks from oil palm empty fruit bunches goes through four main stages, namely extraction of cellulose from the waste of oil palm empty fruit bunches, synthesis of cellulose acetate, manufacture of biodegradable nanofilter membranes, and finishing.

**Result:** The results showed that the masks had a thickness of 0.79-0.97 mm and the results of biodegradation tests showed 2.7-7.03% results. These results show a very good indication that it has the potential to be used as an air mask that is feasible to use and environmentally friendly because it is easily biodegradable.

**Conclusion:** The process of making environmentally friendly masks from oil palm empty fruit bunches goes through four main stages, namely extraction of cellulose from the waste of oil palm empty fruit bunches, synthesis of cellulose acetate, manufacture of biodegradable nanofilter membranes, and finishing. Thickness test results yield 0.79-0.97 mm and biodegradation test results show 2.7-7.03% results.

**Keywords:** Biodegradation, Mask, Palm Oil Bunches