

EFFICIENCY OF WOOD DUST FILTRATION BY WOOD DUST MEDIA FILTER

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CHAKITIPORN, Dr.PH., DUSIT SUJIRARAT, M.Sc.**ABSTRACT**

This study was an experimental study. Objectives of the study were to investigate the relationship between; dust weight and collection efficiency, static pressure drop and collection efficiency of a wood dust filter. The wood dust in this study was from the wood processing industry. The wood dust panel filter was made by using coarse wood dust retained on a 1.50 mm sieve and filled into a 1.0x1.0x0.1 m. panel. The filtration efficiency was determined by the amount of small wood dust in the air sample before and after filtrating. The static pressure of the wood dust panel filter was measured during the experiment.

The results of study were found that the collection efficiency was 99.5% and reduced to 77.9% with increasing amounts of small wood dust. The relation between the small wood dust load and collection efficiency showed a high negative relationship ($r < -0.913$ to -0.953) and was significant at 0.01. The static pressure of the panel filter increased due to the increasing amounts of small wood dust. The wood dust load had a high positive relationship ($r < 0.962$) with a static pressure panel filter and was significant at 0.01. Additionally, this study presented two predicted equations of collection efficiency from the wood dust load and static pressure drop of the panel filter. These were (1) Collection efficiency (%) = $105.269 - 2.613 W_t$ (wood dust load) and (2) Collection efficiency (%) = $106.745 - 0.117 Pa$ (static pressure drop).

**KEY WORDS: FILTRATION EFFICIENCY / WOOD DUST FILTER /
STATIC PRESSURE DROP**