

UNIVERSITI TEKNOLOGI MARA

**SETTLING RATE OF CLAY AND SILT
PARTICLES IN A BAFFLED
SEDIMENTATION TANK**

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for the degree of

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ABSTRACT

Sediment can be classified as deposited or suspended. High suspended materials naturally present in water bodies or present by human activities has decrease the quality of water. Removing suspended materials by sedimentation process using sedimentation tanks is commonly practiced. However, not much study on the effect of baffled sedimentation tank has been reported. Use of baffles in sedimentation tanks to lengthen the movement of water requires good understanding on sedimentation process and factors affecting sedimentation process. In this study, laboratory experimental works used prototype model of a baffled sedimentation tank was conducted. Several initial concentrations of clay and silt particles of 0.1, 0.2, 0.3 and 0.4 were tested in tank. Then, samples were collected at several points in a tank and tested for turbidity, total suspended solids and output concentration. The result from turbidity measurement showed that percentage reduction of turbidity in a baffled sedimentation tank were higher than in tank without baffles, which were 84.34%, 79.89%, 82.21% and 75.40% with average of 80.46% compared to 26.29%, 41.64%, 47.84% and 47.30% with average of 40.77%. The results also same in total suspended solids, which for baffled tank were 79.86%, 78.47%, 79.64% and 77.91% compared to 52.23%, 51.21%, 55.67% and 57.83%, with average of 77.91% compared to 54.24% respectively. The reduction of concentration in baffled tank, were 74.66%, 78.79%, 81.96% and 85.41% with average of 80.21%, while reduction in tank without baffles were 54.52%, 64.36%, 70.32% and 76.14% with average of 66.34%. From the results, it is feasible to practice baffles in a sedimentation tank, as baffled sedimentation tank is an effective settling media.

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