

**THE USAGE OF WATER AND WASTEWATER SLUDGE AS A
BRICK**

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ABSTRACT

Sludge is known as waste material or dewatered solid from a commercial or industrial wastewater treatment plant and potable water treatment plants. It consists of clay, microorganisms and chemicals generated from the use of coagulant material. The study of sludge is based on alum coagulant which was carried out at the sedimentation tanks of Perbadanan Bekalan Air (PBA) and Indah Water Konsortium (IWK). The objectives of the study were reused water and wastewater sludge as a mortar brick and to determine the properties of sludge as a mortar brick material for construction compare to normal brick. In order to meet these objectives, several tests were done in the material laboratory such as sieve analysis, water absorption and the compression strength test. The result from this study indicates that the 10%, 20%, 30%, 40% and 50% sludge added did not passed the compressive strength requirements 6.9 N/mm^2 . Furthermore, the 10%, 20%, 30%, 40% and 50% sludge added also did not passed the minimum percent of water absorption requirements 8%. It was concluded that the usage of sludge from water and wastewater treatment plant is not suitable material for construction.

CHAPTER 1

INTRODUCTION

1.1 Background

In water treatment plants, sludge is commonly produced in the following treatment process like as presedimentation, sedimentation and filtration (filter backwash). Where sedimentation precedes filtration, typical suspended solid of water entering the filters ranges from 4 to 10 mg/L. In the direct filtration process, flocculated water is applied directly to the filter. Hence, sedimentation is a process which is the particles or suspended solids carried earlier will then settle. The water flow slowly through a sedimentation tank since its velocity flow becomes zero, so the floc particles can sink to the bottom for removal before the water reaches the effluent end of basins. Anywhere from 70 to 90 percent of suspended matter is removed by sedimentation. Sedimentation tank have depths ranging from 3m to 6m. The depth is governed to provide an undisturbed settling zone above the sludge removal equipment which is installed at the bottom (David , 1998)

As wastewater treatment standards have become more stringent because of increasing environmental regulation, so has been increased the volume of sludge. The further handling, treatment and disposal of sludge municipal as well as industrial wastewater treatment plant has become complex management, economic, regulatory, ecology burden. The clearing process at the wastewater treatment plant is fairly straight forward. First, large solid are settle or screened out of the wastewater. Next the smaller solids and dissolved material are biologically removed from the