

## **Analysis of Quality of Water in Sludge Drying Bed and Reusing Sludge Generated in Bandarapura Water Treatment Plant in Brick Manufacturing**

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The generation of large quantities of Aluminium rich sludge in the treatment process of Water Treatment Plants is an unavoidable problem all over the world. Aluminum sulphate and Aluminium chloride used as the coagulants in the water treatment process mainly cause for the sludge formation. Disposal of this Aluminium rich sludge in an economically and environmentally sustainable way is a major challenge faced by Water Treatment Plants. In Bandarapura Water Treatment Plant, after the dewatering process, dried sludge is being loaded on the ground beside the drying beds due to the lack of proper disposal facilities. This openly disposed of Aluminium rich sludge can cause hazardous effects to the environment as well as to the people. Hence, this urgently requires for a proper sludge disposal method to be in place and also for a feasible option for reusing the waste sludge. Studies have stated of reusing this waste sludge for brick manufacturing by combining with clay mixture after characterizing the sludge properties. Thus, the possibility of using sludge generated in Bandarapura Water Treatment Plants in Badulla in brick manufacturing was investigated in this study. Sludge percentages were increased from 0% to 20% with increments of 5%. Clay sludge mixing and brick preparation were done by hand pressing. Bricks were fired at two temperature batches as 850 and 1000 °C. Brick strength of 0.15 N mm<sup>-2</sup>, water absorption of 13.06%, and Shrinkage of 0.4 cm were monitored. The bricks used for construction purposes require minimum brick strength of 2.0 N mm<sup>-2</sup> which is not achieved by the prepared brick in this study. Nevertheless, the prepared brick can be used as a substitute for Interlocks.

*Keywords:* Water treatment plant, Aluminium rich - sludge, Sludge disposal, Reusing sludge, Brick Manufacturing