

Treatment of a mahewu processing plant wastewater using coagulant Ferrifloc 1820

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Abstract

Wastewater from a mahewu processing plant was collected for characterisation and jar testing using Ferrifloc 1820 and a combination of Ferrifloc 1820 and the polyelectrolyte Magnafloc. Treatment showed that Ferrifloc 1820 caused a statistically significant decrease on both the chemical oxygen demand (COD) and oil and grease content of the wastewater. The mean decrease for the COD using Ferrifloc 1820 was 65.24% with the mean oil and grease reduction using Ferrifloc 1820 being 94.58 %. The polyelectrolyte Magnafloc was shown to have a statistically significant impact when used in combination with Ferrifloc 1820 on the COD. However, it did not show any statistically significant impact in the reduction of the oil and grease content of the wastewater. Although the treatment of the wastewater using Ferrifloc 1820 yielded significant results in the reduction of COD and oil and grease, the resultant results did not meet the Zimbabwean legislative standard for discharge. The resultant decrease of the oil and grease of the mahewu effluent due to this treatment makes it desirable to apply the use of Ferrifloc 1820 as a pre-treatment method for anaerobic digesters. There is need however, to determine the optimal pH and temperature and other operational parameters for Ferrifloc 1820 in the treatment of the mahewu wastewaters.