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## **Removal of Diamozol Blue BRF%150 from simulated textile wastewater in Membrane Bioreactor (MBR) System.**

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### **ABSTRACT**

The textile dyeing industry consumes large quantities of water and produces large volumes of wastewater from different steps in the dyeing and finishing processes. Visually and undesirably, the significant contaminant in wastewater is to be recognized as colour. About 10–15 % of the dyes are lost in the wastewater during the dyeing process. These dyes is also toxic and carcinogenic affect on to aquatic organisms. Especially, treatment of textile wastewater is difficult because the dyes include organic molecules and are durable to light, heat and oxidizing agents. There is a serious need for a process that will be efficient and low-cost application for the removal of contaminants from waste water. Biological treatment methods have attracted much attention due to the relatively simple and ecologically friendly treatment processes as well as their relatively low fixed capital investment and operating costs. Recently, more attention has been paid to the membrane bioreactor (MBR) for wastewater treatment because of its higher efficiency of pollutant removal and excellent effluent quality.

In this research, the decolourization process of Diamozol Blue BRF %150 (C.I. Reactive Blue 221) dye by using activated sludge collected from wastewater treatment facility in Bilecik First Organized Industry Zone was examined in membrane bioreactor

(MBR) system. The Lab/Pilot Scale MBR system had a working volume of 170 L and was equipped with a coarse and fine air bubble creation mechanism for membrane and biological aeration, respectively. The temperature of the aeration tank was controlled at  $25 \pm 1^\circ\text{C}$ , the pH value and the concentration of DO was kept, respectively, in the range of 6,5–7.0 and 2,0-2,5 mg/L in the aeration tank. Experimental analysis had been carried out on the day the samples were taken for analysis from aeration tank and permeate outlet. The initial dye concentration and COD concentration of the synthetic wastewater prepared for decolourisation process were 100 and 1285 mg/L, respectively. The dye concentration, COD concentration value were measured daily in effluent to assess the removal efficiency. Most of the analytical techniques used in this study were mentioned in the standard methods. At the end of the study treatment percentage colour removal was approximately % 90 and COD removal was %85 in 7 days.

**Keywords:** Biodegradation, COD, Decolourisation, MBR, Textile wastewater,