INFLUENCE OF Nano-TiO_2 FIBER ADDITION ON ST 37 STEEL PAINTING PROCESS TO INCREASE RESISTANCE TO CORROSION

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ABSTRACT

Corrosion is one of the main problems in ST 37 steel material used in various industries. To improve corrosion resistance, this study examines the use of epoxy paint with TiO_2 nano powder mixture as a protective coating on ST 37 steel immersed in sulfuric acid solution. The variations used include 0%, 1%, 3%, and 5% TiO_2 nano powder. The results showed that the addition of TiO_2 nano powder can improve corrosion resistance to a certain extent. In the specimen without powder (0%), the highest corrosion rate was recorded at 1.19 g/m2.h, while the 1% and 3% variations decreased significantly to 0.357 g/m2.h and 0.238 g/m2.h, respectively, but in the 5% variation. The corrosion rate increased to 0.417 g/m2.h, presumably due to excessive coating thickness and uneven distribution. From the results of this study, it can be concluded that the optimal composition to improve corrosion resistance is 3% TiO_2 nano powder, while the use of more than 3% can reduce the effectiveness of protection due to the imperfect distribution of particles in the paint layer.

***Keywords**: Corrosion, Epoxy Paint, Nano TiO2 Powder, Sulfuric Acid, ST 37 Stee*