

ABSTRACT

SADEWA, IRFAN ROSYIDI NICE. 2019, "The Effect of Surface Roughness and Electricity Preparation on the Adhesion Strength and Thickness of Electroplating Coatings in Low Carbon Steel". An Undergraduate Thesis. Mechanical Engineering Department, Engineering Faculty, Muhammadiyah University of Metro, Advisor (I) Asroni, S.T., M.T., Pembimbing (II) Eko Budiyanto, S.T., M.T.

Low carbon steel is steel that only consists of iron (Fe) and carbon (C) without any alloying material and other elements that are sometimes found in carbon steels such as Si, Mn, P and so on even though with a very small percentage commonly called impurities. Low carbon steel is one type of metal that is widely applied to the world of industry related to the handling of acids, bases, or salts but this type of metal has limitations in terms of corrosion. Steel with low carbon content has a relatively low strength, but possesses a relatively high tenacity. Electroplating is basically a metal coating technique or commonly called chrome by the general public, aiming to coat the metal to be resistant to corrosion and also to add value to beauty. In addition, it increases the level of hardness of the metal surface. Metal coating can be in the form of zinc, galvanized, silver, gold, copper, nickel and chrome. The purpose of this study is to determine the optimal thickness of the electroplating process. Electroplating is carried out using low carbon steel materials using variations in surface roughness using sandpaper 400, 600 and 800 as well as 4 volt, 8 volt and 12 volt electrical voltages. Tests carried out are thickness measurements using a coupled micrometer. In the test results obtained the largest thickness value of 0.07 mm at 600 roughness sandpaper and 12 volt electrical voltages. Tests carried out are sticky strength tests that get results similar to the value > 20 MPa because the test equipment has reached the maximum limit and thickness measurements using a coupled micrometer. In the test results obtained the largest thickness value of 0.07 mm at 600 roughness sandpaper and 12 volt electrical voltage.

Keywords: Low Carbon Steel, Surface Roughness, Electrical Voltage, Electroplating, Thickness.