*THE EFFECT OF TEMPERATURE AND ACCELERATOR MIXTURE ($HNO_2$) ON THE PHOSPHATING PROCESS IN THE APPLICATION OF MILD STEEL ST 37 POWDER COATING ON PAINT ADHESION AND PAINT HARDNESS*

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## *ABSTRACT*

*This study aims to determine the effect of the value of a mixture of nitric acid as much as 1.8 grams/liter, 2.7 grams/liter and 3.6 grams/liter with room temperature, 45$^oC$ and 55$^oC$ in the manganese phosphating process as much as 75 grams / liter, on powder coating applications on the level of adhesion and hardness of paint. From the results of the coating that has been made, a paint hardness test will be carried out with a pencil hardness tester tool to determine the flatness of the coating, which refers to ASTM D 3633 which is given a load of 750 grams, and the level of paint hardness is tested using a cross cut test where this tool has 6 blades to scratch the paint layer which refers to the ISO 2406: 2007 standard. The results of hardness testing conducted at the Engineering Laboratory, University of Malang obtained the highest hardness value of HB with a mixture of accelerator as much as 1.8 gr/l, 2.7 gr/l and 3.6 gr/l using a temperature of 55$^oC$ and the lowest hardness value in a mixture of $HNO_2$ 1.8 gr/l and 2.7 gr/l using room temperature with a result of 6B. From the results of the adhesion test, the highest value of 4B with a mixture of $HNO_2$ as much as 1.8 gr/l, 2.7 gr/l and 3.6 gr/l using a temperature of 55$^oC$ have a percentage of peeling paint values of 1.696%, 3.179% and 1.696%, while the lowest value with classification 2B with a mixture of $HNO_2$ as much as 1.8 grams/liter using room temperature has a percentage of paint peeling of 17.344%. It can be concluded that the higher temperature and the number of accelerators can increase adhesion and hardness of the paint.*

Keywords: *phosphating, powder coating, adhesion, hardness*