THE EFFECT OF VARIATIONS IN THINNER-TO-VARNISH MIXING RATIO AND SPRAYING DISTANCE ON THE QUALITY OF PAINTING RESULTS ON SPCC STEEL PLATES

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This study aims to analyze the effect of variations in the thinner-to-varnish mixing ratio and spraying distance on the quality of painting results on SPCC steel plates. The mixing ratio variations used were 1:0.35, 1:0.85, and 1:1.35 with spraying distances of 15 cm, 18 cm, and 21 cm. The tests were conducted on paint layer thickness, gloss level, and adhesion using an experimental method with a 3×3 factorial design. Thickness testing was carried out using an elcometer, gloss testing using a glossmeter, and adhesion testing using the ASTM D3359 cross cut test method. The results of this study indicate that variations in the mixture of thinner with varnish and spraying distance affect the thickness of the paint layer. The results of the thickness test show that the highest value is obtained at a ratio of 1:0.85 at a distance of 15 cm with a value of 53.7 µm. While the lowest thickness value is obtained at a ratio of 1:0.35 at a distance of 21 cm with a value of 40.3 µm. The results of the gloss test show that a mixture ratio of 1:1.35 produces the highest gloss level of 90 GU at a spraying distance of 18 cm, while the lowest gloss value is obtained at a ratio of 1:0.35 with a distance of 21 cm of 71 GU. The results of the paint adhesion level in each ratio are in the 2B classification with 15-35% scratch area peeling.

Keywords*: thinner, varnish, spraying distance, paint thickness, paint glossiness, adhesion, painting process, SPCC steel plate.*