

INTISARI

Dewasa ini banyak orang membutuhkan suatu material yang memiliki sifat *self cleaning* atau membersihkan secara mandiri sehingga tidak butuh membersihkan material tersebut secara manual. Untuk mendapatkan material yang membersihkan dirinya sendiri, maka dibutuhkannya modifikasi pada permukaan material tersebut. Agar material dapat memiliki sifat *self cleaning* maka material tersebut harus bersifat hidrofobik. Tujuan penelitian ini adalah terbentuknya lapisan hidrofobik.

Metode pembuatan lapisan hidrofobik yaitu dengan merendam material alumunium di air mendidih yang mengandung larutan kimia etanol (50%), asam stearat (2.6%, 2.8%, 3.0%, dan 3.2%), air deionisasi (50%) selama 15 jam dengan suhu 60°. Sebelum dilakukan proses perendaman alumunium terlebih dahulu dilakukan proses pengamplasan kemudian di anodizing. Hasil treatment alumunium dengan larutan kimia dibersihkan menggunakan etanol dan air deionisasi (Aquadess) agar kotoran yang berada di permukaan alumunium terbersihkan. Lapisan hidrofobik diuji *wettability*, *sudut geser*, *kekasaran*, *kekerasan*, dan *sem*.

Hasil uji hidrofobik semakin tinggi kadar asam stearat, maka semakin tinggi sudut kontak dan sudut gesernya mengecil. Asam stearat 2.6% sudut kontak didapat 120,16° dan sudut geser didapat 22,14°, Asam stearat 3.2% sudut kontak didapat 126,75° dan sudut geser didapat 14,03°. Hasil sudut kontak dan sudut geser berdasarkan dari hasil pengamatan uji sem bahwa tingkat pelapisan yang paling baik ialah pada asam stearat 3.2% dikarenakan sedikit celah, Sehingga air tidak mudah menembus ke permukaan dasar alumunium. Hasil uji nilai kekasaran asam stearat 2.6% didapat sebesar 0,92 µm dan asam stearat 3.2% didapat 0,64 µm. Hasil uji nilai kekerasan asam stearat 2.6% VHN0,01 didapat sebesar 8,65 gf/mm² dan asam stearat 3.2% VHN0,01 didapat sebesar 6,87 gf/mm².

Kata kunci: Hidrofobik, anodizing, sudut kontak, sudut geser, kekasaran, kekerasan, dan sem.

Abstract

Today many people need a material that has self-cleaning properties or cleaning independently so it does not need to clean the material manually. To get material that cleanses itself, it is necessary to modify the surface of the material. In order for the material to have self-cleaning properties, the material must be hydrophobic. The purpose of this study is the formation of a hydrophobic layer.

The method of making a hydrophobic layer is by immersing aluminum material in boiling water containing a chemical solution of ethanol (50%), stearic acid (2.6%, 2.8%, 3.0%, and 3.2%), deionized water (50%) for 15 hours with temperature 60 °. Before the aluminum immersion process is carried out the sanding process is then carried out then anodized. The results of aluminum treatment with chemical solutions are cleaned using ethanol and deionized water (Aquades) so that the dirt on the surface of aluminum is cleaned. The hydrophobic layer is tested for wettability, shear angle, roughness, hardness, and sem.

The hydrophobic test results the higher the level of stearic acid, the higher the contact angle and the shear angle decreases. 2.6% stearic acid contact angle obtained 120.16 ° and shear angle obtained 22.14 °, 3.2% stearic acid contact angle obtained 126.75 ° and the shear angle was obtained 14.03 °. The results of contact angle and shear angle are based on the results of sem test observations that the best coating rate is at 3.2% stearic acid due to a slight gap, so that water does not easily penetrate to the base surface of aluminum. The test results of stearic acid 2.6% roughness values were obtained at 0.92 μm and 3.2% stearic acid obtained 0.64 μm. Test results of stearic acid 2.6% VHN0.01 hardness value obtained at 6.87 gf / mm² and 3.2% VHN0.01 stearic acid obtained at 6.87 gf / mm².

Keywords: Hydrophobic, anodizing, contact angle, shear angle, roughness, hardness, and sem.