

**EFFECT OF IMMERSION TIME ON SURFACE HARDNESS AND
THICKNESS OF OXIDE COATING RESULT OF ANODIZING
ALUMINUM SERIES 6**

Ibrahim Faza¹, Andika Wisnujati²

Jurusan D3 Teknik Mesin Program Vokasi Universitas Muhammadiyah
Yogyakarta

Jl.Lingkar Selatan Tamantirto, Bantul, Yogyakarta 55183 telp : (0274) 387656

E-mail : ibrahimfazza@gmail.com

ABSTRACT

Anodizing is an electrolytic coating process that converts aluminum into aluminum oxide. Anodizing process is widely used in manufacturing industry especially in the use of automotive components, because many have advantages such as resistant to scratches, easy to care and add decorative value. The purpose of this research is to know how the influence of time variation on hardness and thickness of oxide layer in anodizing aluminum series 6 process.

Specimens of aluminum plate 6 series, dimensions 50 mm x 30 mm x 9 mm. The specimen was sandpaper with 3 times sanding process using P1000, P2000 and C5000 series metal sandpaper followed by cleaning process with sodium carbonate (Na_2CO_3) solution. Followed by etching, desmut, anodizing process using concentration of sulfuric acid solution (H_2SO_4) 40% versus 60% reverse osmosis water. The time variations used in the dyeing process are 20 Minutes, 30 Minutes, 40 Minutes, with electric current of 2 Amper and 24 Volt. After that done dyeing and sealing process. Tests carried out include testing of hardness (vikers) and the thickness of the oxide layer (coating thickness gauge).

The results of the mean hardness testing were 108.3 VHN at 20 min intervals, 112.4 VHN at 30 minute dyeing intervals, and 112.9 VHN at 40 minute intervals. The highest hardness value of 112,9 VHN was obtained at 40 minute time variation, then the result of thickness testing of oxide layer yield average layer thickness 3,40 μm at interval time 20 minutes, 4,15 μm at time interval 30 minutes then coat thickness value The highest oxide at a time interval of 40 minutes was 5.07 μm . It can be concluded that the longer the dyeing time in the anodizing process influences the increase of hardness value on aluminum series 6, then the longer the dyeing time on the anodizing process used also affects the increase in the thickness of the oxide layer formed.

Keywords: Anodizing aluminum, Anodizing Time, Hardness, Oxide Coating