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## Corrosion resistance of anodic coatings studied by scanning microscopy and electrochemical methods

J. Kubisztal<sup>1,\*</sup>, M. Kubisztal<sup>1</sup>, S. Stach<sup>2</sup>, G. Haneczok<sup>1</sup>

<sup>1</sup>Institute of Materials Science, University of Silesia,  
41-500 Chorzów, 75 Pułku Piechoty 1a, Poland

<sup>2</sup>Institute of Computer Science, University of Silesia,  
41-200 Sosnowiec, Będzińska 39, Poland

\* corresponding author

Tel.: +48-32-3497525

Fax: +48-32-3497515

E-mail address: julian.kubisztal@us.edu.pl

### Abstract

The paper refers to examination of corrosion resistance improvement of aluminium based material subjected to a sealing procedure. The tests were carried out for non-sealed and sealed anodic coatings using both scanning microscopy and electrochemical techniques. The correlation between electrochemical parameters (i.e. corrosion potential ( $E_{\text{corr}}$ ), corrosion current density ( $j_{\text{corr}}$ ) and contact potential difference ( $CPD$ ) was examined. It was found that in the first approximation  $j_{\text{corr}}$  as well as  $E_{\text{corr}}$  change linearly with  $CPD_{\text{av}}$  (average  $CPD$ ). It was shown also, that a decrease of  $j_{\text{corr}}$  and an increase of  $CPD_{\text{av}}$  caused by anodic oxidation can be explained by an increase in oxide thickness. Further increase in  $CPD_{\text{av}}$  observed for sealed coatings is related to a decrease of root mean square roughness and/or disappearance of surface anisotropy.

### Keywords

corrosion resistance; anodic coatings; contact potential difference; scanning microscopy; surface roughness; surface anisotropy;

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