Performance Comparison of Steam-Based and Chromate Conversion Coatings on Aluminum Alloy 6060

In this study, oxide layers generated on aluminum alloy 6060 (UNS A96060) using a steam-based process were compared with conventional chromate and chromate-phosphate conversion coatings. Chemical composition and microstructure of the conversion coatings were investigated and their corrosion performance was evaluated using potentiodynamic polarization, acetic acid salt spray, and filiform corrosion testing of powder coated specimens. The steam-based process resulted in homogenous growth of oxide layer and superior coverage over intermetallic particles when compared to chromate-based conversion coatings. The coating formed by steam showed improved corrosion resistance, while adhesion to powder coating and filiform corrosion was comparable with chromate conversion coatings.

General information
State: Published
Organisations: Department of Mechanical Engineering, Materials and Surface Engineering
Contributors: Din, R. U., Jellesen, M. S., Ambat, R.
Pages: 839-853
Publication date: 2015
Peer-reviewed: Yes

Publication information
Journal: Corrosion
Volume: 71
Issue number: 7
ISSN (Print): 0010-9312
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 1.95 SJR 0.955 SNIP 1.376
Web of Science (2017): Impact factor 1.927
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.02 SJR 1.075 SNIP 1.511
Web of Science (2016): Impact factor 1.661
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 1.61 SJR 0.887 SNIP 1.52
Web of Science (2015): Impact factor 1.391
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 0.92 SJR 0.488 SNIP 0.899
Web of Science (2014): Impact factor 0.93
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 0.77 SJR 0.552 SNIP 1.349
Web of Science (2013): Impact factor 2.908
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 0.67 SJR 0.482 SNIP 0.883
Web of Science (2012): Impact factor 1.772
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 1.03 SJR 0.596 SNIP 1.438
Web of Science (2011): Impact factor 1.441
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 1