

## Accepted Manuscript

Title: Role of  $\text{Al}_2\text{O}_3$  inclusions on the localized corrosion of Q460NH weathering steel in marine environment

Authors: Chao Liu, Reynier I. Revilla, Dawei Zhang, Zhiyong Liu, Alexander Lutz, Fan Zhang, Tianliang Zhao, Hongchi Ma, Xiaogang Li, Herman Terryn



PII: S0010-938X(17)32204-7  
DOI: <https://doi.org/10.1016/j.corsci.2018.04.007>  
Reference: CS 7473

To appear in:

Received date: 11-12-2017  
Revised date: 13-3-2018  
Accepted date: 6-4-2018

Please cite this article as: Liu C, Revilla RI, Zhang D, Liu Z, Lutz A, Zhang F, Zhao T, Ma H, Li X, Terryn H, Role of  $\text{Al}_2\text{O}_3$  inclusions on the localized corrosion of Q460NH weathering steel in marine environment, *Corrosion Science* (2010), <https://doi.org/10.1016/j.corsci.2018.04.007>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Role of Al<sub>2</sub>O<sub>3</sub> inclusions on the localized corrosion of Q460NH weathering steel in marine environment

Chao Liu<sup>a,b</sup>, Reynier I. Revilla<sup>b</sup>, Dawei Zhang<sup>a</sup>, Zhiyong Liu<sup>a</sup>, Alexander Lutz<sup>b</sup>, Fan Zhang<sup>a</sup>, Tianliang Zhao<sup>a</sup>, Hongchi Ma<sup>a</sup>, Xiaogang Li<sup>a,c✉</sup>, Herman Terryn<sup>b,a</sup>

<sup>a</sup> Key Laboratory for Corrosion and Protection of the Ministry of Education, Institute of Advanced Materials & Technology, University of Science and Technology Beijing, Beijing, China.

<sup>b</sup> Department of Materials and Chemistry, Research Group Electrochemical and Surface Engineering (SURF), Vrije Universiteit Brussel, Brussels, Belgium.

<sup>c</sup> Ningbo Institute of Material Technology & Engineering, Chinese Academy of Sciences, Ningbo, Zhejiang, China.

Corresponding author:

Xiaogang Li: lixiaogang@ustb.edu.cn Tel.: +86 13311227058

## Highlights:

- The role of Al<sub>2</sub>O<sub>3</sub> inclusions in the pitting corrosion initiation stage in a marine environment was studied.
- A high dislocation density region existed around Al<sub>2</sub>O<sub>3</sub> inclusions in the cold rolling Q460NH steel.
- A different mechanism was used to explain the selective dissolution of the matrix around inclusions, rather than the usual existence of a galvanic coupling.
- Al<sub>2</sub>O<sub>3</sub> clusters had a more negative effect on the corrosion behaviour of the Q460NH steel analysed than single inclusions.

## ABSTRACT

The influence of Al<sub>2</sub>O<sub>3</sub> inclusions on the localized corrosion behaviour of Q460NH steel was investigated in a simulated marine environment. According to the current

Download English Version:

<https://daneshyari.com/en/article/7893278>

Download Persian Version:

<https://daneshyari.com/article/7893278>

[Daneshyari.com](https://daneshyari.com)