

## Accepted Manuscript

Effects of accelerated low-temperature ageing on the performance of polymeric coating systems on offshore steel structures

A.W. Momber, M. Irmer, N. Glück

PII: S0165-232X(16)30320-2  
DOI: doi: [10.1016/j.coldregions.2017.04.005](https://doi.org/10.1016/j.coldregions.2017.04.005)  
Reference: COLTEC 2384  
To appear in: *Cold Regions Science and Technology*  
Received date: 3 November 2016  
Revised date: 13 March 2017  
Accepted date: 25 April 2017



Please cite this article as: A.W. Momber, M. Irmer, N. Glück , Effects of accelerated low-temperature ageing on the performance of polymeric coating systems on offshore steel structures, *Cold Regions Science and Technology* (2017), doi: [10.1016/j.coldregions.2017.04.005](https://doi.org/10.1016/j.coldregions.2017.04.005)

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.

**Effects of accelerated low-temperature ageing on the performance of polymeric coating systems on offshore steel structures**

A.W. Momber<sup>1)</sup>

Muehlhan AG, Hamburg, Germany, Schlinckstraße 3, D-21103 Hamburg, Germany

Phone: +49-40-8527-1144, E-Mail: momber@muehlhan.com

<sup>1)</sup> Corresponding author

M. Irmer

Fraunhofer Application Center for Large Structures in Production Engineering (AGP), Albert-Einstein-Straße 30, D-18059 Rostock, Germany

N. Glück

Fraunhofer Application Center for Large Structures in Production Engineering (AGP), Albert-Einstein-Straße 30, D-18059 Rostock, Germany

**Abstract**

Six polymeric coating systems are investigated according to the modification of their performance due to accelerated offshore ageing. The systems featured different resins, hardeners, filler materials, number of layers, and film thicknesses. The ageing procedure consisted of condensation, UV radiation, salt spray, and low-temperature (-60°C) exposure. The following performance parameters were evaluated: chemical composition, surface topography, static contact angle, specific surface energy, hoar frost accretion, pull-off strength, and impact resistance. Ageing modified the performance of the coatings, and the change in performance is an important coating qualification and assessment parameter. Spearman's rank correlations are estimated for all performance parameters in order to assess their susceptibility to accelerated ageing. Some trends could not be explained with aging models based on either UV radiation or NaCl exposure. The cyclic offshore aging procedure is complex, and more systematic investigations are needed in order to fully understand the associated phenomena.

**Keywords**

Ageing; Coatings; Impact; Offshore

Download English Version:

<https://daneshyari.com/en/article/5779399>

Download Persian Version:

<https://daneshyari.com/article/5779399>

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