

Author's Accepted Manuscript

INFLUENCE OF ARTIFICIAL AGING ON STRUCTURAL ADHESIVE CONNECTIONS FOR FAÇADE APPLICATIONS

Klára Machalická, Miroslav Vokáč, Martina
Eliášová



PII: S0143-7496(18)30055-1

DOI: <https://doi.org/10.1016/j.ijadhadh.2018.02.022>

Reference: JAAD2147

To appear in: *International Journal of Adhesion and Adhesives*

Cite this article as: Klára Machalická, Miroslav Vokáč and Martina Eliášová, INFLUENCE OF ARTIFICIAL AGING ON STRUCTURAL ADHESIVE CONNECTIONS FOR FAÇADE APPLICATIONS, *International Journal of Adhesion and Adhesives*, <https://doi.org/10.1016/j.ijadhadh.2018.02.022>

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 galley proof before it is published in its final citable 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.

INFLUENCE OF ARTIFICIAL AGING ON STRUCTURAL ADHESIVE CONNECTIONS FOR FAÇADE APPLICATIONS**Klára Machalická^{1(*)}, Miroslav Vokáč¹, Martina Eliášová²**¹Klokner Institute, Czech Technical University in Prague, Czech Republic²Faculty of Civil Engineering, Czech Technical University in Prague, Czech Republic

(*) Corresponding Author. Email address: klara.machalicka@cvut.cz

Abstract

Contemporary architecture often requires adhesive connections as a bonding method of façade cladding elements to the supporting substructure, due to their visually smooth surface without the interruption by bolts. Low strength, elastic and durable silicone sealants have been used in façades for a long period of time, but there is a lack of information about semi-flexible and semi-rigid adhesives with higher strengths. The building façade is a very specific application for adhesive connections due to the requirements for durability, strict geometrical imperfections and joining of unconventional materials often used in the façade design. The presented paper is focused on experimental analyses of structural adhesive joints exposed to laboratory aging conditions. Due to the absence of a particular code intended for structural adhesive joints in façades, two artificial aging procedures were chosen - ETAG 002 and ISO 9142 - E4 Procedure (Exposure to neutral salt spray and elevated temperature and humidity). The joints are bonded by two different adhesives, Silane Terminated Polymer (STP), and a two-part acrylate adhesive. The joints are composed of blank aluminum with a smooth and roughened surface, anodized aluminum and galvanized steel with a smooth and roughened surface. Mechanical behavior and failure modes of a reference set of specimens are compared with the results of two specimen sets exposed to aging. The degrading effect of demineralized water immersion was more crucial for the STP adhesive than the salt spray test. On the contrary, the effect of the salt spray test was more serious for the acrylate adhesive than immersion in water. The experimental study showed that the degrading effect of a particular aging procedure can be more harmful to one adhesive than the others in dependence on the time of exposure.

Download English Version:

<https://daneshyari.com/en/article/7170953>

Download Persian Version:

<https://daneshyari.com/article/7170953>

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