

Accepted Manuscript

Title: Porosity, mechanical and insulating properties of geopolymer foams using vegetable oil as the stabilizing agent

Authors: Chengying Bai, Tao Ni, Qiaoling Wang, Hongqiang Li, Paolo Colombo



PII: S0955-2219(17)30635-0
DOI: <http://dx.doi.org/10.1016/j.jeurceramsoc.2017.09.021>
Reference: JECS 11456

To appear in: *Journal of the European Ceramic Society*

Received date: 20-8-2017
Revised date: 13-9-2017
Accepted date: 14-9-2017

Please cite this article as: Bai Chengying, Ni Tao, Wang Qiaoling, Li Hongqiang, Colombo Paolo. Porosity, mechanical and insulating properties of geopolymer foams using vegetable oil as the stabilizing agent. *Journal of The European Ceramic Society* <http://dx.doi.org/10.1016/j.jeurceramsoc.2017.09.021>

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.

**Porosity, mechanical and insulating properties of geopolymer foams using vegetable oil
as the stabilizing agent**

Chengying Bai,^{1,*} Tao Ni^{1,2}, Qiaoling Wang¹, Hongqiang Li,³ Paolo Colombo^{1,4}

¹ Department of Industrial Engineering, University of Padova, via Marzolo, 9, 35131, Padova, Italy

² College of Civil and Transportation Engineering, Hohai University, Nanjing, 210098, China

³ College of Civil Engineering, Hunan University, 410082 Changsha, China

⁴ Department of Materials Science and Engineering, The Pennsylvania State University, University Park,
PA 16802, United States

* Corresponding author. Tel.: +39 049 8275634; fax: +39 049 8275505. E-mail:

chengyingbai@163.com

Abstract

Geopolymer foams, as a potential eco-friendly building materials, are increasingly being discussed in the literature. This study reports the synthesis and characterization of geopolymer foams using hydrogen peroxide (H₂O₂) solution as pore-forming agent and oil as the stabilizing agent. The geopolymer foams with low bulk densities ($0.37 < \rho_b < 0.74$ g/cm³), low thermal conductivities ($0.11 < \lambda < 0.17$ W/(m.K)), high porosity ($66 < p < 83$ vol%), and acceptable compressive strength ($0.3 < \sigma < 11.6$ MPa) were successfully fabricated at appropriate conditions. Factors that influence the insulating, mechanical, porous, and microstructural properties were investigated. It was found that the content of the stabilizing

Download English Version:

<https://daneshyari.com/en/article/7898856>

Download Persian Version:

<https://daneshyari.com/article/7898856>

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