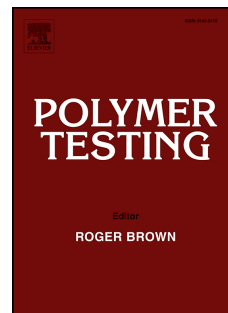


Accepted Manuscript

Porous product with reduced apparent density keeps good mechanical properties.
Extruded composites of poly(vinyl chloride) blown under microwave irradiation

Sławomir Michałowski, Aleksander Prociak, Stanisław Zajchowski, Jolanta Tomaszewska, Jacek Mirowski



PII: S0142-9418(17)30742-0

DOI: [10.1016/j.polymertesting.2017.10.007](https://doi.org/10.1016/j.polymertesting.2017.10.007)

Reference: POTE 5205

To appear in: *Polymer Testing*

Received Date: 21 June 2017

Revised Date: 26 September 2017

Accepted Date: 7 October 2017

Please cite this article as: Sł. Michałowski, A. Prociak, Stanisław Zajchowski, J. Tomaszewska, J. Mirowski, Porous product with reduced apparent density keeps good mechanical properties. Extruded composites of poly(vinyl chloride) blown under microwave irradiation, *Polymer Testing* (2017), doi: 10.1016/j.polymertesting.2017.10.007.

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.

Extruded composites of poly(vinyl chloride) blown under microwave irradiation

Sławomir Michałowski^a, Aleksander Prociak^{a*}, Stanisław Zajchowski^b, Jolanta

Tomaszewska^b, Jacek Mirowski^b

^a *Cracow University of Technology, Department of Chemistry and Technology of Polymers,*

Warszawska 24, 31-155 Kraków, Poland

^b *UTP University of Sciences and Technology, Faculty of Chemical Technology and*

Engineering, Seminaryjna 3, 85-326 Bydgoszcz, Poland

*Corresponding author: *E-mail: aprociak@pk.edu.pl*

telephone number: 0048126283016

Keywords: Poly(vinyl chloride); Composites; Foaming process; Microwave irradiation; Thermal runaway; Cellular structure

Abstract

New foaming method, enhanced by microwave irradiation, was elaborated and applied to obtain porous poly(vinyl chloride) and its composites with fine cell structure. The so called “thermal runaway” effect was observed during the heating of poly(vinyl chloride) under microwave irradiation. The temperature of this effect decreases as a result of additives incorporation into polymer matrix. Microwave irradiation allowed effective heating of extruded poly(vinyl chloride) and its composites with carbon black (CB) filler, behind the extruder head and decomposing azodicarbonamide (ADC) to obtain porous products. The use of CB additive to poly(vinyl chloride) significantly increased its ability to be heated under microwave irradiation as well as improved the cell structure and decreased the apparent density of final products.

Among additionally used fillers (1wt.%) the montmorillonite caused the apparent density decrease of foamed materials ca. 10%, however beneficially influenced on the quality of cells structure, giving the products with isotropic cells and the highest cell density as well

Download English Version:

<https://daneshyari.com/en/article/5205225>

Download Persian Version:

<https://daneshyari.com/article/5205225>

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