

New methylphenylsiloxane resin based on alkoxyasilanes

© **Andrey M. Kontorov**

State Research Center Joint Stock Company "State Scientific-Research Institute of Chemistry and Technology of Organoelement Compounds". Entuziastov Ave., 38. Moscow, 111123. Russia. E-mail: ankont2@yandex.ru

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Abstract

Currently interested in the reaction for producing oligosilsesquioxanes based on acidolysis alkoxyasilanes. In this regard, the author was given the following tasks: development of optimal synthesis conditions; preparation of new methylphenylsiloxane resins with different properties.

In this paper, the properties of new methylphenylsiloxane resins (MPR) with various radicals in silicon were studied. New IFSS were obtained by a new universal technology-acidolysis of a mixture of methyltriethoxysilane (MTEOS) and phenyltriethoxysilane (PTEOS) with various radicals, which are environmentally friendly raw materials. The obtained MPR were characterized by NMR spectroscopy on ^1H and ^{29}Si nuclei. Spectra were recorded at room temperature in deuteroacetone using Bruker AM-360 Fourier spectrometer. ^{29}Si NMR spectra were measured using the pulse program "Inverse Gated Heteronuclear Decoupling".

The content of residual functional groups (Si-OH, Si-OEt) in IFSS was determined by functional analysis methods. Determination of ethoxy groups and hydroxy groups was carried out by iodometric and aluminohydride method, respectively.

Thermogravimetric analysis was performed on the device Derivatograph-H (firm Mom). TGA studies were carried out in the argon atmosphere and in the air at a heating rate of 10 °C/min.

Measurements of kinematic viscosity of 20 % and 50% by weight. toluene solutions of MPR were carried out at 20 °C on the viscometer HPV-2.

The reaction acidolysis of methyltriethoxysilane and oligophenylenes is a convenient and versatile method for the synthesis of new heat-resistant resins methylphenylsiloxanes. In the course of the study, it was found that the resins obtained on the basis of organoalkoxyasilanes are characterized by higher thermal and thermo-oxidative stability.

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