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The influence of functional ingredients on the technological properties of water-oil-swelling rubber sealing elements

© **Evgeny N. Egorov**, **Nikolay F. Ushmarin**, **Sergey I. Sandalov**, **Ivan S. Spiridonov**, and **Nikolay I. Koltsov***+
Department of Fhysical Chemistry and Macromolecular Compounds. I.N. Ulyanov Chuvash State University. Moskovsky Ave., 15. Cheboksary, 428015. Chuvash Republic. Russia. Phone: +7 (8352) 45-24-68. E-mail: koltsovni@mail.ru

*Supervising author; +Corresponding author

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Abstract

The article examines the influence of the nature and content of caoutchoucs, sevilen, vulcanizing group, fillers, plasticizers, directional ingredients on the technological properties (plasticity, annular modulus, density, start time of vulcanization, stickiness) of two rubber compounds. The study was conducted in order to select the basis of rubber mixtures for the manufacture of the outer and inner layers of water-oil-swellable sealing elements (SWOE) for the oil and gas extraction industry. It was established that the rubber mixture for the outer layer of SWOE on the basis of butadiene-nitrile BNKS-18AMN, isoprene SKI-3 and butadiene SKD caoutchoucs, and also the rubber mixture for the inner layer of SWOE on the basis of butadiene-nitrile BNKS-18AMH, butadiene-methyl styrene SKMS-30ARK and butadiene SKD caoutchoucs have satisfactory technological properties. It was shown that these rubber mixtures containing sevilen 11808-340, a vulcanizing group (sulfur + thiazole 2 MBS + guanid F), a combination of fillers (carbon black P 514 + grew 175 + talc + Karelit MK), petroleum resin "Sibplast", directional ingredients (vermiculite + needle punched cloth "Oxypan"), sorption additives (polyacrylamide AK 639 + sodium polyacrylate + perlite + reagent "Kometa-R" + modified silica gel), are characterized by improved technological properties. These rubber compounds can be recommended as the basis for the manufacture of the outer and inner layers of water-oil-swelling sealing elements.

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