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

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Abstract

The article investigated the influence of the nature and content of coutchoucs, sevilens, vulcanizing groups, fillers, plasticizers, ingredients of directional action on the technological properties (plasticity, ring modulus, density, start time of vulcanization, stickiness) of two rubber mixtures. These indicators characterize the processability of rubber compounds in the manufacture of products from them. The study was conducted in order to select the basis of rubber compounds for the manufacture of the outer and inner layers of water-swellable sealing elements (WSSE). It has been established that rubber compounds for the outer layer based on butadiene-nitrile BNKS-18AMN, isoprene SKI-3 and ethylene-propylene SKEPT-40 coutchoucs, as well as the inner layer of WSSE based on butadiene-nitrile BNKS-18AMN, butadiene methylstyrene SKMS-30ARK and ethylene-propylene SKEPT-40 rubbers possess satisfactory technological properties. It was shown that these rubber mixtures which contain sevilen 11808-340, a vulcanizing group (sulfur + thiazole 2 MBS + guanid F), a combination of fillers (talc + grew 175 + Karelite MK), petroleum resin Sibplast, directional ingredients (vermiculite + needle punched cloth "Oksipan"), hydrosorption additives (polyacrylamide AK 639 + sodium polyacrylate), have improved technological properties. These rubber mixtures can be recommended as the basis for the manufacture of the outer and inner layers of water-swelling sealing elements for the oil and gas industry.

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