DOI: 10.31081/1681-309X-2020-0-1-30-36 Specialty 161 (05.17.07)

LIQUID COKING PRODUCTS FOR THE PRODUCTION OF ROAD BITUMEN MODIFIERS

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Coumarone-indene resins are obtained from coumarone-indene fractions by various origins. The resulting products were tested for applicability as modifiers of road petroleum bitumen. The effect of increasing / decreasing the main characteristic of coumarone-indene resins – softening temperature – on the properties of bitumen is studied.

The analysis of physical and technological indicators of bitumen and bitumen modified with coumarone-indene resins was carried out according to standardized methods for determining softening temperature, penetration (needle penetration depth), bitumen ductility, adhesion ("glass adhesion" indicator).

Coumarone-indene resins were prepared by ion co-oligomerization, for which the raw material was pretreated, which consists in draining and removing pyridine bases with sulfuric acid, which in turn reduces the catalyst consumption and increases the yield and softening temperature of the product. Subsequently, the prepared substance was placed in a reactor, the process conditions (duration and temperature, amount of catalyst) were fixed and polymerization was carried out with stirring. The obtained polymerizate was washed with water until it gets a neutral reaction.

As a result of the research, it was found that the coumaron-indene fractions isolated from various liquid coking products of coal can serve as suitable raw materials for the synthesis of coumaron-indene resins by ion co-oligomerization. When kumaron-indene resins are modified with road petroleum bitumen, the softening temperature increases, their penetration and ductility deteriorate, and the adhesion properties of bitumen are significantly improved. The increase in the softening temperature of the coumaron-indene resin itself, as a rule, has a positive effect on the adhesion characteristics of modified bitumen. It is concluded that it is advisable to obtain coumarone-indene resins with such properties that will allow them to be added to petroleum bitumen in small quantities with the achievement of the necessary adhesion and other qualitative characteristics of the modified product in accordance with regulatory documents.

Keywords: liquid products of coal coking, co-oligomerization, coumarone-indene resin, modifier, bitumen.

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