



PRODUCTION AND PROPERTIES OF MODIFIED BITUMEN

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ABSTRACT

World road construction materials , in particular , binders , in particular , asphalt concrete for to bitumen demand However , in our country road of coatings quality current problem become Usually , bitumen based on asphalt concrete coatings today's on the day high traffic jam and in conditions of intensive traffic necessary physical-mechanical features and endurance provide For example , a statistician analysis this shows that bitumen - mineral composites prepared road of coatings service to do deadline standard only 50-70 % organization Low elasticity , prone to cracking endurance enough it's not and temperature range enough not being hot summer and in winter , especially sharp continental climate was in the regions from them prepared from products use This limits the amount of bitumen. to him/her to be placed to the requirements answer to give obstacle to do main are disadvantages. Asphalt concrete physical nature and constructive from the characteristics come came out without, asphalt-concrete of coatings service to do the deadline increase main from the methods one him/her in preparation used organic of binders structure and features is to change.

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is to change. The most wide widespread methods filler substances , surface active substances and polymer additions or their working release waste with modification own inside takes .

Bitumen modification from the methods one to him/her rubbers Rubber to the composition bitumen for new feature - wide temperature between to rubbers typical was elasticity feature gives. New rheological of the situation appearance to be on bitumen plastic features to the absence despite, at low temperatures composition deformative ability provides.

Bitumen-rubber system features seeing on the way out quality change - soften temperature increase observed.

To bitumen rubber when entered soften temperature increase and to that suitable accordingly elasticity and penetration decrease is observed , this in general of the system structure with related to bitumen polymer modifier in preparation Russia's middle region under the circumstances the most many BND 60/90 and 90/130 grades are used bitumen; rubber working release waste was particles with a diameter of 0.5-0.9 mm rubber powder; according to Mooney SKI-3 rubber with a viscosity of 75-85; according to Muni SKEPT-40 rubber (copolymer) with a viscosity of 36-45 in the composition third component as ethylenenorbornene or dicyclopentadiene available) or liquefaction fluidity index is 1.7-2 high pressurized polyethylene (PEVD) is used .

Offer being done PEVD modifier it preparation in the process granule in the form of a film in appearance, this including again used addition without it is possible, this and modifier cost makes it cheaper . Modifier to the composition included rubbers swelling for from used mineral oils use opportunity there is .

Modifier following in a way Prepared at: up to 160°C heated to bitumen rubber powder is added and rubber roar for 1-1.5 hours at 180°C 300 rpm during at speed mixed. Then rubber powder to break up for the purpose temperature gradually up to 250°C rises and another 30 minutes during this at temperature mixing continue is heated. After stopping, the mass reaches 180°C. cooled and mixed standing without to him/her in advance in oil SKI and SKEPT rubbers (or SKI rubber) and in advance on bitumen melted polyethylene) is added.

Rubbers initially on the shafts oil with 1:1 ratio is being suppressed and mixed. Rolled product later bitumen with interference acceleration for order 0.5x5x10 cm size to the ribbons cut. Polyethylene first at a temperature of 160°C on bitumen melts and in a ratio of 1:2 mixed . All components mixture one gender to be Bake at 180°C for 30-60 minutes during mixed, then heated faucet through detachable to the molds is poured. Product in the air cooled , necessary in cases granulation possible . Offer being done bitumen modifier hard, non-sticky mass in appearance It is easy to take. will be cut and designated in proportion heated to bitumen directly road construction or other construction works in place easily addition This is possible. modifier application ready polymer-bitumen the binder heat preserving in special vehicles transportation necessity eliminate will reach.

Offer being done bitumen modifier in the composition rubber technician items working release waste particles with a diameter of 0.5-0.9 mm, in bitumen in advance destroyed rubber powder available. Kroshka secondary again usable polymer from it use precious synthetic polymers spending noticeable at the level reduces and as a result modifier much makes it cheaper. May of the pieces decay rubber vulcanization your net partially to decay take comes and as a result his/her bitumen with one kind to interfere reason will be.

10-25 mass. quantity destroyed of a child availability . % elasticity and one of time in the room taken modifier and his/her based on YUBV high soften temperature provides. From 10% of the area less in quantity use one of time in the room soften temperature high to the value and fragility to the low temperature value achieve opportunity does not give, from which 25% of the mass more than in quantity use and bitumen, both fine and modifier other structural parts with one kind mixture to take opportunity does not give.

Offer being done modifier to the composition less amount of SKI-3 rubber (1- 5%) and SKEPT or high pressurized polyethylene (1-10 wt. %) - glass transition low temperature (-60oC) polymers modifier and his/her based on polyvinyl chloride fragility temperature to reduce help gives . One of time PEVD crystal on the body polymer as melting when the temperature is 105-110oC modifier soften temperature increases.

SKEPT is the same so works, its up to 4% in content double bonds own inside received joints existence because of the modifier preparation in the process on bitumen when heated modifier polymer components with very sparse mutual incoming net harvest to do and this with modifier fragility temperature without exaggeration his/her soften temperature increase possible. Rubbers and From PEVD less in quantity use 1% low brittleness temperature and high soften to the temperature to achieve does not provide, this components modifier in the recipe shown borderline from the amount high to be and his/her features further to improve take it doesn't come, but it's expensive polymers unproductive release expense because of modifier price noticeable at the level increases PEVD by 10 wt. % from more than in quantity application, as well as its homogeneity impact doer modifier other components with compatibility deterioration because of to the goal appropriate it's not.

Offer done modifier mineral oil content amount (1-15 wt.% in the amount of) its in the composition used rubbers amount with is determined because oil high molecular rubber bitumen with interference facilitate for the purpose their roar for Rubber and oil 1:1 ratio of quantity offer being done modifier preparation is optimal for. Oil less in the amount of modifier in the content particles one kind to the distribution achieve difficult, oil more use and modifier soften temperature to decrease and whole composition viscosity noticeable at the level to increase take is coming.

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