The Syntheses Heterocyclic Airwaves Polimetakryl Acids and Study of the Influence upon Low Temperature Characteristic of Diesel Gas

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Abstract

Is investigated structurally - mechanical properties on a basis by polymeric compositions polyvinyl of spirit. The degree of fixing depends as on quantity (amount) of a printed paint, passing to a fabric, and from depth penetration in a fabric. Than the more printed paint passes to a fabric and the more deeply she (it) will penetrate in depth of a fabric, the above expected meaning (importance) of a degree of fixing

Keywords: *synthesis, a monomer, a polymer, an initiator, depressant additive*

Introduction

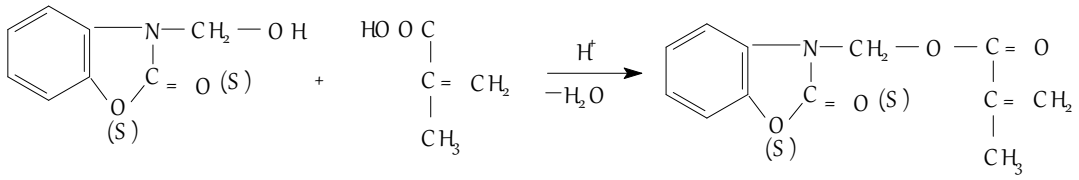
The most economic expedient way of the improvement low temperature characteristics of gas is using polymeric material possessing depressor characteristic. The improvement of working and ecological characteristics of high-quality diesel gas impossible without additive different functionality such as depressor, anti-oxidation, anti-wear, dispersing and others. Creation scientific bases development to technologies of the reception and using diesel gas with depressor additive is a purpose given work. To this effect, the row practical was delivered, technological and scientific problems. For study of the mutual influence different additive in diesel oils were an explored packages additive, containing anti-wear, dispersing cetane increasing additives.

It's known that from all afore-mentioned additives, depressors of the additive are the most wide-spread. The additive them in diesel oils allows not only to raise the temperature an end boiling gas, having enlarged hereunder selection from potential, but also shorten the contents of the kerosene in them. Efficiency depressor additive, as well as anti-wear is founded on superficially - adsorption mechanism of their action, herewith can exist the inevitability of the competitive interaction superficially - an active join additive with metal of the surfaces of friction under their simultaneous presence in fuel. A part superficially - active material depressor additives can absorb on rubbing surface, preventing interaction anti-wear additives and metal.

About action depressor additives speak change the thickness bordering films in the course of test the diesel oil, containing only anti-wear additive, and fuel, containing depressor and anti-wear additives simultaneously. The achievement of maximum importance of the thickness of the border film on rubbing surface occurred quicker in fuel, containing only anti-wear additive, than in fuel, contain together depressor and anti-wear additives. This could be a result that that adsorbed join a depressor of the additive has formed the border layer, prevented adsorptions anti-wear additives.

Experimental work

We synthesized polymethacrylate depressor additives on base of the heterocyclic join such as, benzoksazolone (the BOA), benztiazolon (BEN), benzoksazoltion (the BOAT), benztiazoltion (BTT).
Heterocyclic airwaveses methacryl acids (GEMAK) by synthesized by interactions methacryl acids with hydroxymethyl hydroxymethyl derivatives nitrogen-, oxygen- and sulfur containing heterocyclic join in whitness of catalyst by chamois of the acid in ambience of the toluene at temperature 60 - 80 °C.



For undertaking etherification and offsets equal to reactions aside forming the complex airwaves, deleted water by boiling of the reactionary ambience with accompaniment water dampening agent-toluene. The process of etherification because of high activity formed GEMAK is accompanied the polymerization that reduces leaving the target product.
The accompaniment 1,0 % hydroxinone are in reactionary ambience output monomer of the product possible to enlarge on 15-20 %.

Results and Discussions

All synthesized monomers, identified liquid chromatography, present itself colorless crystalline material, well dissolved in many organic solvent. The composition and construction of GEMAK are installed as of element analysis, as well as methods UV - , IR - , PMR - , EPR - an spectroscope and masses-spectrometry. There are bands of the absorption In IK- spectrum GEMAK under 1745-1800 sm^{-1}, referring to fluctuations carbonyl groups benzoksazolinon and methacrylic radical; in the field of 1640 sm^{-1}, corresponding to typical frequency of the absorption S=S relationship; 1600-1620 sm^{-1} - an valent to fluctuations of the double relationships S=S benzene ring; 1250-1300 sm^{-1} - a valence to fluctuations relationship -N-C-; 1350-1450 sm^{-1} - deformation fluctuations C-H relationship under sp^3 - an hybridization.

In IR - a spectrum ester groups absorption exists in the field of 1000-1200 sm^{-1} that corresponds to deformation and valence to fluctuations relationship C-O. Deformation fluctuations relationship C-H in unsaturated to group - in the field of 950-1000 sm^{-1}; the indicative fluctuations condensed ring of benzoxazolinone - in the field of 680-860 sm^{-1}.

UV - spectrum of GEMAK are characterized by maximum of the absorption in the field of 273-275 nm. In spectrum PMR heterocyclic airwaves metacryl acids (GEMAK) exist the signals under 7,20-7,50 m.d. corresponding to proton aromatic ring; 5,71 and 6,12 m.d. - a methylen to group double relationship; 6,00 m.d. - a proton -N-CH2-O- groups; as well as metacryl derived there are signals under 1,91 m.d., referring to proton CH3- groups.

Synthesized GEMAK have been polymerized on liberally radical mechanism in ambience of the arctic organic solvents. The composition and structure got homopolymers is confirmed given element analysis and UV - , IR - , MNR(magnetic nuclear resonance) - a spectrum.

The process production polymethacryl additive (PMKP) consists of two main stages: etherification of methacryl acids with hydrocsymethyl compound hydroxymethyl derivatives by heterocyclic join. As hydrocsymethil derived use hydroxymethyl benzoxazolone, hydroxymethyl benzoxazoltion, hydroxy methyl benzothiazolinhydroxymethyl-benztiazoltina, methacryl acid, solvent, sulfuric acid (as catalyst), water solution of ammonia, benzoyl peroxide (the initiator), butter- diluent. The explored influence of the nature synthesized depressor additive on the temperature of solidification (congelation) diesel oil Dts 989:20 01. It is seen that PBOO lowers the temperature of congelation diesel oil on 14 os, PBOT on 16 os, PBTO on 17 os, PBTT on 19 os accordingly. The Estimation depressor to activities GEMAK have shown that she increases with increase the arctic groups in heterocyclic join.
For study depressor characteristics of synthesized heterocyclic airwaves polymethacryl acids (GEPMAK) studied physic-mechanical characteristics of diesel oil of Bukhara oil refinery plant (the indicator panel).

Table 1 Physic-mechanical characteristic of the diesel oil in whitness of GEPMAK

Name of indicators	Dts 989: 2001	ПБОО	ПБОТ	ПБТО	ПБТТ
Cetane number	45	53	55	56	58
Fractional composition: 50% distils at a temperature above 0C 96% distils at a temperature of 0C	 280 360	 259 355	 258 354	 256 356	 255 356
Kinematic viscosity at 20 0C: kV. mm/s (cSt)	3,0-6,0	4,6	4,3	4,2	4,0
Pour point 0C not more than	-10	-24	-26	-27	-29
Cloud point 0C, not above, the temperate climatic zone	-5,0	-8	-10	-12	-13
Mass fraction of sulfur in the fuel:% less than	0,2	0,13	0,14	0, 16	0,32
Water soluble acids and alkalis	is absent				
Concentration of actual pitches: 100 mg per cm3 of fuel not exceeding	40	34	29	28	27
Acidity: mg KOH per 100 cm3 of the fuel is not more	5,0	is absent			
Iodine number: g iodine per 100 g consumption of not more than	6,0	4,2	4,0	3,8	3,6
Sol content,%, not more	0,01	0,001	0,001	0,001	0,001
Carbon residue 10% residue is less than	0,02	0,016	0,014	0,012	0,010
Filterability coefficient more	3,0	2,1	1,7	1,5	1,4
Solids content of not more than	is absent				
Water content,% (wt.)					
Density at 20 0C kg/m3, no more	860	841	836	831	827

Conclusions

It is seen that physico-chemical and mechanical characteristic diesel gas completely meet the demands standard and have perfected low-temperature of the feature such as the temperature congelation and the temperature of the clouding

Thereby, when entering polymethacryl depressor additive in small amount (0,1-1,0 %) bring about essential reduction of the temperature congelation and improvement to fluidity under low temperature.

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